INTERNATIONAL CENTRE FOR SETTLEMENT OF INVESTMENT DISPUTES
WASHINGTON, D.C.

In the arbitration proceedings between

NIKO RESOURCES (BANGLADESH) LTD.
(Claimant)

and

BANGLADESH PETROLEUM EXPLORATION & PRODUCTION COMPANY LIMITED ("BAPEX")
(Second Respondent)

BANGLADESH OIL GAS AND MINERAL CORPORATION ("PETROBANGLA")
(Third Respondent)

(jointly referred to as Respondents)

ICSID Case No. ARB/10/11
and
ICSID Case No. ARB/10/18

DECISION ON LIABILITY

Members of the Tribunals
Mr Michael E. Schneider, President
Professor Campbell McLachlan QC
Professor Jan Paulsson

Secretary of the Tribunals
Ms Frauke Nitschke

Date of Decision: 28 February 2020

TABLE OF CONTENTS

GLOSSARY AND ABBREVIATIONS

(see also Section 8.1)

Abel Report	*Expert Report by L. William Abel, PE, 8 June 2015*
Adams Report	*Expert Report by Dr Neal Adams, 31 August 2015*
API	*American Petroleum Institute*
API-RP	*API Recommended Practice*
BAPEX	*Bangladesh Petroleum Exploration & Production Company Limited, the Second Respondent*
bbl	*Barrel (42 US gallons)*
B-CD.1	*BAPEX's Counter-Memorial Concerning the Compensation Declaration, 30 January 2014*
B-CD.2	*BAPEX's Rejoinder Concerning the Compensation Declaration, 25 September 2014*
B-CD.3	*BAPEX's Comments on the Reports of the Tribunal Experts, 31 August 2015*
B-CD.4	*BAPEX's Request for Leave to Submit One Additional Pleading and Counterclaims, 25 September 2015*
B-CD.5	*BAPEX responsive Comments on the Tribunal-Appointed Expert Reports, 30 September 2015*
B-CD.6	*BAPEX Submission concerning the Full Scope of Liability approach and related issues, 6 October 2015 (first letter)*
B-CD.7	*BAPEX Submission concerning the November 2015 Hearing, 6 October 2015 (second letter)*
B-CD.8	*BAPEX Submission identifying additional obligations and breaches by the Claimant, 12 October 2015*
B-CD.9	*BAPEX's Submission on Various Procedural and Legal Issues, 19 October 2015*
B-CD/PM	*BAPEX's Request for Provisional Measures, 13 August 2015*
Bcf	*Billion cubic feet*
BDT	*Bangladeshi taka*
BGSL	*Bakhrabad Gas System Ltd.*
BHA	*Bottom Hole Assembly*
Blowout	*Uncontrolled flow of well fluids (including gas) or formation fluids from the wellbore; the blowouts in the present case occurred in the Chattak field on 7 January and 24 June 2015*
B-MD	*BAPEX Memorial on Damages, 25 March 2016*
BOP	*Blowout preventer*
C-CD.1	*Niko's Memorial concerning the Compensation Declaration, 27 September 2013*

C-CD.2	*Niko's Reply concerning the Compensation Declaration, 29 May 2014*
C-CD.3	*Niko's Comments on the Tribunals Experts' Reports Concerning the Compensation Declaration, 31 August 2015*
C-CD.4	*Niko's Comments on BAPEX's Comments on the Reports of the Tribunal Experts Concerning the Compensation Declaration, 30 September 2015*
C-CD.5	*Niko's Submission concerning the Full Scope of Liability approach and related procedural issues, 5 October 2015*
C-CD.6	*Niko's Defence in Principle to New Allegations Raised by BAPEX's Expert, 9 October 2015*
C-CD.7	*Niko's Submission on Newly Alleged Breaches, 23 October 2015*
C-CD/PM	*Niko's Opposition to BAPEX's Request for Provisional Measures in the Counterclaim Declaration, 21 August 2015*
C-MJ.1	*Claimant's Memorial on Jurisdiction, 1 April 2011*
C-MJ.2	*Claimant's Second Memorial on Jurisdiction, described as Claimant's Response to the Respondents' First Counter-Memorial on Jurisdiction for the Payment Claim, and the Claimant's Memorial on Jurisdiction for the Compensation Claim, 30 June 2011*
C-MJ.3	*Reply to the Respondents' Response with respect to the Compensation Declaration, 10 October 2011*
C-PHB	*Claimant's Post-Hearing Brief, 22 January 2016*
Centre or ICSID	*International Centre for Settlement of Investment Disputes*
Chattak field	*One of the gas fields to which the JVA relates (see below Section 8.2.2)*
Compensation Claims	*Claims for compensation brought in the Money Suit*
Compensation Declaration	*The declaration requested by the Claimant concerning the Compensation Claims*
Convention or ICSID Convention	*Convention on the Settlement of Investment Disputes between States and Nationals of Other States*
Corruption Claim	*Claim filed by BAPEX and Petrobangla on 25 March 2016 and decided by a decision of this Tribunal on 25 February 2019*
CPTDC	*China Petroleum Technology and Development Corporation, the Drilling Contractor engaged by Niko*
Crore	*10 million in the South Asian numbering glossary*
EMW	*Equivalent Mud Weight*
Exclusivity Decision	*Decision pertaining to the exclusivity of the Tribunal's jurisdiction, 19 July 2016*
February 2016 Hearing	*Hearing on Liability that took place 21-22 February 2016*

Feni field	*One of the gas fields to which the JVA relates*
ft	*Feet*
GOB or Government	*The Government of the People's Republic of Bangladesh, the First Respondent until the Decision on Jurisdiction*
GSM	*GSM Consulting Petroleum Engineers, of Robert Grace*
GWC	*Gas Water Contact*
First Enquiry Report	*Report of an Enquiry Committee on Blowout of Well Chattak No 2 on 7 January 2005, dated 7 February 2005 (Exhibit R-3)*
Framework of Understanding (FoU)	*Framework of Understanding for the Study for Development and Production of Hydrocarbon from the Non-producing Marginal Gas Fields of Chattak, Feni and Kamta executed on 23 August 1999 between BAPEX and Niko (attached to the JVA)*
GPSA	*Gas Purchase and Sale Agreement of 27 December 2006 between Petrobangla and the Joint Venture Partners BAPEX and Niko*
HSE	*Health, Safety, Environment*
HT [and date]	*Hearing Transcript of the November 2015 and February 2016 Hearings, with the date in the order of year, months, day; page references are to the corrected version of the transcript*
ICSID Arbitration Rules	*Rules of Procedure for Arbitration Proceedings*
IWCF	*International Well Control Forum*
JMC	*Joint Management Committee (JVA Article 6)*
IPR	*Inflow Performance Relationship*
Joint Venture Partners	*BAPEX and Niko*
JVA	*Joint Venture Agreement between BAPEX and Niko, dated 16 October 2003 (Exhibit C-1)*
KT	*Kick Tolerance*
LOT	*Leak-off Test*
MFE	*Marginal Field Evaluation (Annex B to JVA)*
MGS	*Mud Gas Separator*
Ministry	*Ministry of Power, Energy and Mineral Resources, unless otherwise specified*
Money Suit	*Proceedings brought by GOB and Petrobangla in the Court of the District Judge in Dhaka against Niko and others (see below Section 6 with further reference)*
Moulavi Bazar	*also Maguchora, an exploration well drilled by Occidental Petroleum in the Sylhet area*
Niko, Niko Bangla-desh or NRBL	*Niko Resources (Bangladesh) Ltd., the Claimant*
Niko Canada	*Niko Resources Ltd., the Canadian parent company of the Claimant*

November 2015 Hearing	*Hearing on Liability that took place 2-7 November 2015*
ONGC Manual	*Well Control Training Manual of the Well Control School at the Institute of Drilling and Technology, Oil and Natural Gas Corporation Limited, Dehradun, India*
Operator	*Niko's function under the JVA*
Payment Claims	*Claims to payment under the GPSA for gas delivered (subject matter of ARB/10/18)*
Petrobangla	*Bangladesh Oil Gas and Mineral Corporation, the Third Respondent*
Petroleum	*Any naturally occurring hydrocarbon, whether in gaseous, liquid or solid state, or mixtures thereof (JVA Article 1.46)*
Petroleum Operations	*Operations of Development and Production and all other operations pertaining to Petroleum as provided in the JVA (JVA Article 1.47)*
The Procedure	*Procedure for Development of Marginal/Abandoned Gas Fields, prepared in 2001 and attached as to the JVA as Annex C*
ppg	*Pounds per Gallon*
PSC	*Production Sharing Contract*
psi	*Pounds per Square Inch*
psi/ft	*Pressure per foot (gradient)*
R-CMJ.1	*Respondents' Counter-Memorial on Jurisdiction, 16 May 2011*
R-CMJ.2	*Supplemental Counter-Memorial, described as Respondents' Response to the Claimant's Presentation of its Position with respect to the Request for the Compensation Declaration, 28 September 2011*
R-PHB	*BAPEX's Post-Hearing Brief, 22 January 2016*
Reservoir	*Porous and permeable stratum capable of producing Petroleum, considered a unit with respect to exploitation (JVA Article 1.53)*
RfA I	*Request for Arbitration, dated 1 April 2010 and received by the Centre on 12 April 2010 (ARB/10/11)*
RfA I Clarification	*Claimant's response of 18 May 2010 to the Centre's request for clarification of 7 May 2010*
RfA II	*Request for Arbitration, dated 16 June 2010 and received by the Centre on 23 June 2010 (ARB/10/18)*
R-Preliminary Objections	*Preliminary objections raised by the Respondent in the letter of 21 June 2010 (ARB/10/11)*
R-RJ	*Respondents' Rejoinder on Jurisdiction for the Payment Claim, 30 August 2011*
Spud date	*Date of start of drilling*
TD	*Target Depth*
Tengratila	*Village in the Sylhet area, neighbouring the Chattak 1 and 2 wells*

TEH	*Exhibit produced at the Tribunal's initiative at the November 2015 Hearing*
Tk	*Bangladeshi taka (also BDT)*
Tribunal	*Collectively, the two Arbitral Tribunals constituted in ICSID Case No. ARB/10/11 and ICSID Case No. ARB/10/18*
TVD	*Total Vertical Depth*
Wright 1	*Expert Report by John Wright, PE, 29 May 2014*
Wright 2	*Supplemental Report by John Wright, PE, 23 October 2015.*

1. INTRODUCTION

1. This is the sixth decision by the two Tribunals, referred to as "**the Tribunal**", in the two proceedings brought by Niko Resources (Bangladesh) Ltd. (**Niko**), the Claimant, against the Bangladesh Petroleum & Production Company, Limited (**BAPEX**), the Second Respondent, and Bangladesh Oil Gas and Mineral Corporation, the Third Respondent (**Petrobangla**), the two being hereinafter referred to as "the Respondents"; with respect to the First Respondent, the Government of Bangladesh, the Tribunal decided that it did not have jurisdiction.

2. The proceedings relate to a Joint Venture Agreement for the Development and Production of Petroleum from the Marginal/Abandoned Chattak and Feni fields of 16 October 2003 between BAPEX and Niko (the **JVA**) and a Gas Purchase and Sale Agreement for gas from the Feni field of 27 December 2008 between Niko/BAPEX Joint Venture and Petrobangla (the **GPSA**).

3. The present decision concerns specifically the liability of Niko for the blowout that occurred on 7 January 2005 during Niko's drilling in the Chattak field and a second blowout that occurred on 24 June 2005 during the drilling of the first relief well that was intended to extinguish the first blowout.

4. Following Legal Notice of 27 May 2008, Petrobangla and the Government of Bangladesh commenced on 15 June 2008 legal action in the Court of District Judge, Dhaka, against Niko and others, seeking compensation on the order of Tk746.5 crore as damages for the two blowouts (the **Money Suit**). To the knolwege of the Tribunal, these proceedings are still pending.

5. In the present ICSID arbitrations the Claimant seeks, among other relief, a declaration that it was not liable for damages in relation to the two blowouts and, in case liability were found, the determination of the amount of that liability (the **Compensation Declaration**).

6. The proceedings related to the liability for the two blowouts had advanced through Hearings in November 2015 and February 2016 and were ready for the Tribunal's decision when, on 25 March 2016, the Respondents raised a claim that both contracts had been obtained by corruption and

that, consequently, no claims of the Claimant could be entertained in international arbitration (the **Corruption Claim**). The Tribunal suspended all proceedings other than that on the Corruption Claim. It heard evidence and argument with respect to that claim, ultimately dismissing it by a Decision of 25 February 2019.

7. The Tribunal has thereafter resumed its examination of Niko's liability and now renders its decision on that issue, reserving matters of quantum for the remaining stage of the two arbitrations.

2. THE PARTIES AND THE ARBITRAL TRIBUNAL

2.1 The Claimant

8. The Claimant in both cases is Niko Resources (Bangladesh) Ltd. It is a company incorporated under the laws of Barbados. The Claimant and its nationality were discussed in Section 5 of the Decision on Jurisdiction.

9. Since August 2013, the Claimant is represented in these arbitrations by

Mr Barton Legum and Ms Anne-Sophie Dufêtre
Dentons Europe LLP
5, boulevard Malesherbes
75008 Paris, France

and

Mr Gordon Tarnowsky, Q.C.
Dentons Canada LLP
850 – 2nd Street SW
15th Floor, Bankers Court
Calgary, Alberta T2P 0R8, Canada

and

Mr Rokanuddin Mahmud and Mr Mustafizur Rahman Khan
Delta Dahlia (level 8)
36, Kamal Ataturk Avenue
Banani, Dhaka 1213
People's Republic of Bangladesh.

During the initial phase of the proceedings up to the Decision on Jurisdiction, the Claimant was represented by

Mr Kenneth J. Warren QC, Mr James T. Eamon QC, Mr John R. Cusano and Ms Erin Runnalls
Gowlings
1400,700 - 2nd Street S.W.
Calgary, Alberta
Canada T2P 4V5

and

Mr Ajmalul Hossain QC
A. Hossain & Associates
3B Outer Circular Road
Maghbazar, Dhaka 1217
People's Republic of Bangladesh

2.2 The Respondents

10. The Respondents remaining in these arbitrations are

    (a) Bangladesh Petroleum Exploration & Production Company Limited ("BAPEX"), the Second Respondent
    and
    (b) Bangladesh Oil Gas and Mineral Corporation ("Petrobangla"), the Third Respondent.[1]

11. Petrobangla is a statutory corporation created by the Bangladesh Oil, Gas and Mineral Corporation Ordinance 1985.[2]

12. BAPEX is a wholly owned subsidiary of Petrobangla incorporated under the Bangladesh Companies Act 1994.[3] By Notification issued on 8 June 2003 the Ministry of Power, Energy and Mineral Resources granted to BAPEX "complete administrative and financial freedom by the Government".[4]

13. The legal status of these two corporations and their relationship with the Government of Bangladesh was discussed in Sections 6 and 7 of the Decision on Jurisdiction.

14. While the Joint Venture partner of Niko is BAPEX and the case concerning liability essentially has been argued in the name of that company, the Tribunal continues to refer jointly to the Respondents, except where a specific identification of BAPEX appeared necessary.

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[1] The sequence in which the three Respondents are presented is that adopted by the Claimant in the First Request for Arbitration, even though a different sequence was adopted in the Second Request for Arbitration.
[2] Request for Arbitration, dated 16 June 2010 (RfA II), Attachment G.
[3] Hearing on Jurisdiction, HT 2011.10.13 (Day 1), page 42.
[4] Exhibit 2, Appendix B to Respondents' Counter-Memorial on Jurisdiction, 16 May 2011 (R-CMJ.1).

15. The Respondents are represented in these arbitrations by

Mr Md. Ruhul Amin and Mr Syed Ashfaquzzaman
Petrobangla
Petrocentre
3 Kawran Bazar C/A
Dhaka 1215, GPO Box 849
People's Republic of Bangladesh

and

Mr Md. Abdul Hannan
BAPEX
Level-6, BAPEX Bhabon
4 Kawran Bazar C/A
Dhaka 1215
People's Republic of Bangladesh

and

Mr Paul S. Reichler, Mr Derek C. Smith, and Ms Tafadzwa Pasipanodya
Foley Hoag LLP
1717 K Street NW
Washington, DC 20036
United States of America

16. Between June and July 2015, the Respondents' external counsel were

Mr Kay Kian Tan
Watson Farley & Williams (Thailand) Limited
Unit 902, 9th Floor
GPF Witthayu Tower B
93/1 Wireless Road
Patumwan,
10330 Bangkok
Thailand

17. Between 2011 and June 2015, the Respondents were represented in these proceedings by

Mr Luis Gonzalez Garcia and Ms Alison Macdonald
Matrix Chambers, Griffin Building, Gray's Inn
London WC1R 5LN
United Kingdom

18. Between 2011 and December 2014, the Respondents were also represented in these proceedings by

Mr Tawfique Nawaz, Senior Advocate,
and Mr Mohammad Imtiaz Farooq,
Juris Counsel
59/C, Road #4
Banani, Dhaka 12 13
People's Republic of Bangladesh

2.3 The Arbitral Tribunal

19. The Arbitral Tribunal constituted on 20 December 2010, is composed of Professor Jan Paulsson, appointed by the Claimant, Professor Campbell McLachlan QC, appointed by the Respondents, and Mr Michael E. Schneider, President of the Tribunal, appointed per the agreement of the Parties.

3. THE PROCEEDGINGS LEADING TO THE PRESENT DECISION

20. The present proceedings were started by two successive Requests for Arbitration against the two Respondents and the Government, one filed with the International Centre for Settlement of Investment Disputes (**ICSID** or the **Centre**) on 1 April 2010 (the **First Request** or **RfA I**) and registered as ARB/10/11; the other filed with ICSID on 16 June 2010 (the **Second Request** or **RfA II**) and registered as ARB/10/18. In these requests Niko sought an award for payment of the outstanding invoices for the gas delivered (the **Payment Claim**) and a declaration that it was not liable for damages in relation to the blowouts (the **Compensation Declaration**).

21. Because of some common features of the cases in these two requests, identical tribunals were formed in the two arbitrations and the proceedings were conducted together as agreed during the Joint First Session on 14 February 2011 in Geneva. While related, the disputes arising out of each of these contracts nevertheless raise very different issues. In addition to the substantive questions arising in the context of these disputes, a number of other issues arose during the course of the proceedings, in particular issues concerning the jurisdiction of the Tribunal, the interrelation of the present proceedings and proceedings before the courts of Bangladesh, and allegations of corruption. The Tribunal addressed these issues in subsequent stages and issued decisions on them.

22. A detailed account of the procedural history in the two arbitrations up to the Third Decision on the Payment Claim is set forth in the Decisions of 19 August 2013, 11 September 2014, 14 September 2015 and 16 May 2016. The subsequent procedural history concerned essentially the Respondents' allegations of corruption and was set out in the Tribunal's decision of 25 February 2019.

23. These accounts need not be repeated here. The Tribunal at this stage recapitulates only those parts of the past proceedings which are relevant for its present decision concerning the requested Compensation Declaration and specifically the Liability for the two blowouts in January and June 2005.

3.1 The proceedings up to the Decision on Jurisdiction

24. The Claimant seeks a declaration that "*Niko breached no obligation or law as concerns the two blowouts in 2005 at Chattak field and is not liable to BAPEX, its predecessors, assignors, successors or assigns*".[5]

25. The Joint First Session of the two Tribunals was preceded by a Preliminary Procedural Consultation. It was agreed that the two cases were to proceed in a concurrent manner and that the two Tribunals could issue their decisions in the two cases in a single instrument.

26. In the two arbitrations the three Respondents objected to the Tribunal's jurisdiction under the ICSID Convention. In a first phase of the arbitrations, the Tribunal ruled on their jurisdictional objections in a decision of 19 August 2013 (the **Decision on Jurisdiction**). The Tribunal held that it had jurisdiction with respect to the Claimant's claims against BAPEX and Petrobangla but not with respect to the Government, which was hence no longer a party to these arbitrations. The Tribunal refers to this decision for a detailed account of the initial phase of these arbitrations and the underlying facts.

27. Specifically, with respect to the Claimant's request for the Compensation Declaration and the liability for the blowouts, the Respondents had reserved at the Preliminary Procedural Consultation of 14 February 2011 the possibility of presenting a counter-claim for damage compensation related to the blowouts. In view of this possibility, the Respondents were not required to present in the Counter-Memorial on Jurisdiction for the Payment Claim any objections to jurisdiction with respect to the Claimant's Compensation Declaration. At that time, the Respondents did not avail themselves of the possibility of making such a counter-claim. The Claimant therefore specified in its Second Memorial on Jurisdiction of 30 June 2011, as required under the Preliminary Procedural Consultation and Procedural Order No. 1, that it continued to seek the Compensation Declaration and presented its position in respect to the corresponding request.

28. In the Procedural Consultation of 15 September 2011, the Respondents requested authorisation to file a submission setting out their objections to

[5] Relief requested in successive submissions, last in its Post-Hearing Brief of 22 January 2016 (see below Section 4.1).

jurisdiction concerning the Compensation Declaration; they were authorized to do so by Procedural Order No 2 of 19 September 2011. On 28 September 2011 they submitted their Response to the Claimant's Presentation of its Position with Respect to the Request for the Compensation Declaration.[6] They argued that the blowouts were not covered by the JVA and that the dispute over these blowouts "is not a contractual dispute under the JVA".[7] The Claimant replied on 10 October 2011, addressing the Respondents' arguments specific to the Compensation Declaration and arguing that the well blowouts were within the scope of the Arbitration Clause.[8]

29. In the Decision on Jurisdiction, the Tribunal held that it had jurisdiction also with respect to the Compensation Declaration. The Tribunal noted that the Arbitration Clause provided for arbitration of disputes "arising in connection with the performance or interpretation" of the JVA. It also noted that Article 26.2.4 required that Niko as the Operator must:

> *… conduct all Petroleum Operations in a diligent, conscientious and workmanlike manner, in accordance with the applicable law, this JVA and generally accepted standards of international Petroleum industry designed to achieve efficient and safe development and production of Petroleum and to maximize the ultimate economic recovery of Petroleum from the JVA Area.*

30. This contractual provision concerning Niko's performance as the Operator included its obligation to conduct Petroleum Operations "in accordance with the applicable law". The Tribunal held that its jurisdiction *ratione materiae* included not only compliance with specific contractual obligations but had to be understood in a wider sense including

> *sources of liability other than the agreement itself. The question what these sources are and which obligations, contractual or other, fall to be considered concerns the substance of the dispute and is not determined at this stage of the arbitration.*[9]

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[6] Referred to as R-CMJ.2
[7] R-CMJ.2, title at page 7.
[8] Claimant's Reply to the Respondents' Response with respect to the Compensation Declaration, 10 October 2011 (C-MJ.3).
[9] Decision on Jurisdiction, 19 August 2013, paragraph 505.

31. Thereafter, the proceedings were divided into two tracks, running partly in parallel, one dealing with the Payment Claim, the other with the Compensation Declaration. The proceedings on the Payment Claim are summarized in the Tribunal's respective decisions of 11 September 2014 and 14 September 2015 and need not be repeated here.

3.2 The Proceedings on Liability

32. Following its Decision on Jurisdiction the Tribunal consulted the Parties with respect to the organisation of the further proceedings. It then gave directions on 19 September 2013 and fixed the **Procedural Calendar**, including the proceedings concerning the Compensation Declaration. The directions then were confirmed in **Procedural Order No 3** of 15 November 2013.

3.2.1 The Parties' initial submissions

33. The Claimant was invited as a first step to file a short initial submission

(i) specifying the scope of the liability concerning the two blowouts which it wishes the Declaration to cover and
(ii) stating whether and by whom any such liability has been invoked.

34. The Claimant addressed these points in its **Memorial Concerning the Compensation Declaration** (C-CD1), which it produced on 27 September 2013, together with factual exhibits (C-1 to C-6) and legal authorities (CLA-1 to CLA-2). The Claimant specified that it was seeking, in particular, an award that it was "not liable to BAPEX, its predecessors, assignors, successors or assigns", and, in the alternative, that the Tribunal fix the amount of such liability. The Claimant also specified that it was seeking a declaration that Niko is entitled to compensation for the damages caused by the Money Suit. The details of the requested relief are reproduced below in Section 4.

35. The Procedural Calendar had identified as the next step concerning the Compensation Declaration the submission of **BAPEX's Counter-Memorial** concerning this declaration (B-CD1), to be filed by 30 January 2014. The Tribunal gave the following directions on 19 September 2013 and confirmed them by Procedural Order No 3 of 15 November 2013:

BAPEX shall file a First Memorial addressing the scope of liability to which the Declaration may extend and the particulars of the claims concerning Niko's alleged liability for the two blow-outs and damage allegedly caused by Niko, including its quantum. If BAPEX intends to rely on expert reports these reports must be included in the First Memorial. If BAPEX relies on the testimony of witnesses, it must include short written statements setting out the essential points of this testimony. Any documentary evidence on which BAPEX intends to rely and which has not yet been produced, must accompany this memorial.

36. BAPEX filed its Counter-Memorial on 30 January 2014, accompanied by exhibits (R-1 to R-6), legal authorities (RLA-1 to RLA-17), and an annex entitled "Investigations into the blowouts and their consequences" together with appendices 1-5.

37. In this submission, BAPEX addressed the Tribunal's decision on jurisdiction, the factual background of the two blowouts, and BAPEX's understanding of its obligations under the JVA. BAPEX did however not discuss the Claimant's liability, nor did it file any fact witness testimony or expert opinions. It requested the relief reproduced below in Section 4.2, seeking a declaration that there was no dispute between BAPEX and Niko and, in the alternative, that BAPEX has no obligations to indemnify Nico for any damage resulting from the Money Suit.

38. Further to the Procedural Timetable, the **Claimant** filed its **Reply** on 29 May 2014 (C-CD2). In its Reply, the Claimant discussed at length the factual, technical and legal issues relating to the two blowouts and responded to BAPEX's Counter-Memorial. The Reply was supported by exhibits (C-7 to C-91) and legal authorities (CLA-3 to CLA-8), as well as the witness statements of Brian Adolph, Randal Glaholt and William Hornaday, and expert reports of William Cline, Robert Kemp and John Wright. The Claimant repeated its request for relief as stated in its Memorial.

39. On 25 September 2014 **BAPEX** filed its **Rejoinder** (B-CD2). The Rejoinder was accompanied by exhibits (R-7 to R-13) and legal authorities (RLA-18 to RLA-31).

40. BAPEX stated in this submission *inter alia* that it "ha[d] never invoked Niko's liability for the two blowouts" and that "this case involves no dispute between Niko and BAPEX concerning the blowouts". BAPEX further declared that it had no involvement in the findings of the Committee Reports which dealt with the blowouts and added that "it has little or nothing to add in response to Niko's description of the facts". As in the Counter-Memorial, BAPEX did not discuss the factual and legal issues related to the question whether Niko breached any obligation or law and whether Niko has any liability with respect to the blowouts. No witness testimony or expert opinions were attached to BAPEX's submission.

3.2.2 Procedural Order No 7 and Appointment of the Tribunal's Expert

41. As a consequence of the position stated in the Respondents' Rejoinder, the Claimant's argument and evidence in support of its request for a Compensation Declaration had not been contested by the Respondents in any substantive manner; at the same time BAPEX continued to request the Tribunal to dismiss the Claimant's request for a declaration of non-liability based on other grounds. In addition, neither party had identified in its written pleadings with specificity the applicable laws and standards based on which the Claimant's non-liability under the JVA or otherwise was to be assessed by the Tribunal.

42. Against this background, the Tribunal issued on 17 October 2014 **Procedural Order No 7**, in which it dealt with this situation in the following terms:

> *The question whether Niko complied with these obligations under the JVA clearly must be determined according to the procedure prescribed by the JVA itself, i.e. ICSID arbitration. The Tribunals considered this matter in their Decision on Jurisdiction under the heading "Jurisdiction ratione materiae" (section 10.2) which may also be referred to as subject matter jurisdiction. The Tribunals found that they have jurisdiction to decide whether Niko is liable under the JVA for the two blowouts (paragraph 497). In addition the Tribunals also found that "it may well be possible that [they] can make findings concerning liability on grounds other than the JVA" (paragraph 506), but left the question open for further consideration.*
>
> *[…]*

In these circumstances, the Tribunals must continue with the examination of Niko's request for the Compensation Declaration and the issues which are raised by that request. In particular, they must examine the question whether Niko is liable for the two blow-outs and the damage caused by them.

Given the technical nature and the complexity of many of the issues arising in this context, the Tribunals do not wish to proceed in the absence of a critical review of the technical issues arising from the Claimant's case. In the circumstances the Tribunals require the opinion of an independent expert or, given the diversity of the relevant substance matters, several experts.

43. The Tribunal identified three subject matter areas in which it intended to seek assistance in examining the evidence put forth by the Claimant in the absence of experts produced by the Respondents:

(a) the well design and drilling of the Chattak-2 well and the design and execution of the relief well operation for Chattak-2A;

(b) the quantum of gas lost as a result of the Chattak-2 and Chattak-2A blowouts; and

(c) the air quality and greenhouse gas emissions due to these incidents and resulting monetary loss or damage.

44. By Procedural Order No 7, the Tribunal invited the Parties jointly to propose the names of experts in these three subject matter areas, and informed the Parties that the dates for the merits hearing on the Compensation Declaration, originally scheduled to be held in November 2014, were vacated.

45. Procedural Order No 7 also allowed the Respondents one final opportunity to submit within three months a written, substantive submission in the Compensation Declaration proceedings. The Tribunal specified that in the event the Respondents availed themselves of this opportunity, the Tribunal would reconsider its rulings in Procedural Order No. 7. The Respondents however did not seize this opportunity.

46. The Parties were subsequently unable to jointly propose the names of independent experts for the subject matter areas identified by the Tribunal. On 7 November 2014, the Tribunal issued **Procedural Order No 8**, providing directions to the Parties regarding matters the Tribunal wished to discuss during a procedural consultation which included, *inter alia*, the procedure designed to elicit the contributions of the Tribunal appointed expert, as well as the further procedure in relation to the Compensation Declaration.

47. The **Procedural Consultation** took place on 12 November 2014 by telephone and video conference during which the President discussed with the Parties *inter alia*: (i) the expert appointment procedure, (ii) the expert(s)' mandate(s), (iii) the documents to be reviewed by the expert(s), (iv) communications between the expert(s), the Parties and the Claimant's experts, (v) the expert(s)'s reporting obligations, and (vi) the conduct of the expert(s)'s examination during the oral procedure. The scope of a hearing on the Compensation Declaration and possible hearing dates were also discussed.

48. As previously indicated by the Tribunal in Procedural Order No. 7 and as discussed with the Parties during the Procedural Consultations, the Tribunal intended to seek assistance from the International Centre for Expertise of the International Chamber of Commerce (ICC) to identify a pool of qualified experts. A draft request for proposals addressed to the ICC was sent to the Parties in November 2014 for their comments. Taking the Parties' observations into account, a finalized request for proposals of experts in the three subject matter areas was sent to the ICC Center for Expertise on 4 December 2014.

49. On 22 January 2015, the ICC Centre for Expertise provided the Tribunal with the names of nine experts. On 26 January 2015, the Tribunal invited the Parties to indicate whether any of the experts so proposed should be excluded from the Tribunal's consideration, requesting the Parties further to rank the remaining experts according to each party's preference.

50. Having received these rankings, the Tribunal informed the Parties by letter of 31 March 2015 that it had decided to select the following three experts from the persons proposed by the ICC:

    (i) Gas Well and Relief Well Design and Execution: Mr Leo William Abel;

(ii) Quantification of Gas Lost: Mr Keith Brian Masters; and
(iii) Air Emissions: Mr Ian Wallis.

51. Taking into account the discussions with the Parties during the November 2014 Procedural Consultation and subsequent correspondence, the Tribunal also provided the Parties with draft terms of reference for each expert for the Parties' comments. In terms of procedure, the Tribunal proposed that each expert prepare a written report which would be sent to the Parties for their observations, allowing each party subsequently, in a second round, to comment on the other party's observations. The experts would be available for examination during the evidentiary hearing. By the same letter, the Tribunal provided the Parties with an estimate of each expert's budget to complete the anticipated work and attend a hearing. The Parties were given an opportunity to comment on (i) the draft terms of reference, (ii) the further expert procedure, and (iii) were invited to propose mutually agreeable hearing dates for a 6-day hearing during the month of November 2015.

52. Having received the Parties' comments, the **terms of reference for each of the three experts** were finalized on 14 April 2015, and sent to each expert. Each of the three experts subsequently signed the terms of reference, provided a disclosure statement and was given access to the documents which the Parties and the Tribunal had agreed should be made available to each of them, *i.e.* the Parties' pleadings, the Committee Reports and the expert reports and witness statements filed by the Claimant in relation to the Compensation Declaration proceedings.

53. In accordance with the procedural calendar for the expert procedure as agreed between the Parties and the Tribunal, the three experts appointed by the Tribunal were given 5 weeks to prepare their reports. The reports so prepared, were provided to the Parties on 10 June 2015. The Parties were given until 15 July 2015 to file their observations.

3.2.3 Appointment of New Counsel by the Respondents

54. By letters of 28 May 2015, 8 June 2015 and 15 June 2015, the Respondents informed the Secretariat that Ms Alison Macdonald and Mr Luis Gonzalez Garcia no longer represented BAPEX and Petrobangla in these arbitrations and that the Respondents would thenceforth be represented by Mr Syed Ashfaquzzaman of Petrobangla, Mr Md.

Atiquzzaman of BAPEX and Mr Kay Kian Tan of Watson Farley & Williams (Thailand) Limited.

55. On 9 July 2015, the Respondents informed the Secretariat that Mr Kay Kian Tan no longer represented BAPEX and Petrobangla in these proceedings. They informed the Secretariat that Messrs Paul S. Reichler and Derek C. Smith of Foley Hoag LLP would be added as external counsel for BAPEX and Petrobangla.

3.2.4 Continuation of the Tribunal Experts' procedure

56. On 9 July 2015 the Respondents' newly appointed counsel requested an extension of the 15 July 2015 deadline for the Parties to file observations on the three reports prepared by the Tribunal appointed experts. By the same letter, they also indicated that they intended to transmit together with their observations their own expert evidence.

57. In response, the Tribunal invited the Respondents to clarify the scope of their intended submissions on the three reports prepared by the Tribunal experts, while also recalling the scope of the Parties' observations as previously determined. The Tribunal further invited the Claimant to comment on the Respondents' request. The Tribunal subsequently received the Respondents' clarification on 17 July 2015 and the Claimant's comments on 27 July 2015.

58. Having considered the Parties' 17 and 27 July 2015 letters, the Tribunal issued on 19 August 2015 **Procedural Order No. 11**,[10] extending the time period for the Parties' observations on the three expert reports to 31 August 2015. At the same time, the Tribunal recalled the relevant procedural history which preceded the Respondents' 9 July 2015 request,[11] specifically referencing the multiple counsel changes, the many opportunities afforded to the Respondents to file expert evidence in relation to the Compensation Declaration proceedings, and concluding that the Tribunal did not see sufficient justification for revising the previously agreed procedure and its scope as requested by the Respondents in their 9 an 17 July 2015 letters.

[10] Procedural Order Nos. 9 and 10 dealt with matters related to the Payment Claim proceedings.
[11] Procedural Order No. 11, paragraphs. B.3 to B.15.

59. The Tribunal also explained that the expert procedure had been added to the procedural calendar to seek a critical review of the technical issues raised by the Claimant's case through independent experts, particularly given the absence of a substantive presentation by the Respondents. The Tribunal pointed out that the expert phase was designed in the interest of ensuring that the Tribunal heard "more than one side of the argument and thus afforded an additional protection to the Respondents, even in the absence of their own argument and evidence". With regard to the scope of the Parties' observations on the three expert reports, the Tribunal ruled that the Parties' observations on these three reports may be accompanied by observations of the Parties' own experts, provided that these observations remain within the limits of each expert's terms of reference and within the limits of their report.

60. On 31 August 2015, both Parties filed their **Comments on the Reports of the Tribunal Experts** (C-CD3 and B-CD3). The Respondents' submission was accompanied by observations from Dr Neal Adams, Mr Ian Borthwick and Mr Parthasarathi Bandyopadhyay.

61. On 30 September 2015, each party filed **Responsive Comments** on the other Party's 31 August 2015 observations (C-CD4 and B-CD5).

3.2.5 BAPEX's Provisional Measures Request and subsequent withdrawal of evidence and redaction of expert opinions

62. On 13 August 2015, BAPEX filed a **request for provisional measures** (B-CD/PM), together with one new exhibit (R-14), two video recordings (Exhibits R-14 and R-14 B) and two legal authorities (RLA-32 and RLA-33). The request referred to gas seepages in the area of the Chattak 2 Well and asserted that they were due to the failure of the Second Relief Well to halt the flow of gas caused by the blowouts; produced the Chattak Present Seepage Report of July 2015 and two videos showing gas seepages;[12] asserted in particular health risks to the local population and relied on Niko's obligations under the JVA; and requested provisional measures in the following terms:

[12] Exhibits R-14, R-14A and R-14B.

(i) that Niko provide for the immediate relocation as needed of the people affected by a continued flow of gas from the Chattak reservoir, and

(ii) that Niko take all necessary steps, in a safe and prudent manner under the supervision of an internationally recognized shallow gas well control specialist approved by BAPEX, to stop the flow of leaking gas caused by the 2005 blow-outs.

63. Following an invitation by the Tribunal, the **Claimant** filed its **Opposition to BAPEX's Request for Provisional Measures** on 21 August 2015 (C-CD/PM). The Claimant objected that there was nothing either provisional or urgent about the request, which in the Claimant's view was in fact a "counterclaim for specific performance". The Claimant asserted that the gas seepages existed before Niko undertook any drilling and that, in any event, BAPEX knew about them long before. According to the Claimant, BAPEX had prevented Niko from taking measures to reduce the seepages. The Claimant requested the Tribunal to reject the request and to order that the three exhibits produced with the request "shall not be considered in the merits of the Compensation Declaration".

64. On 4 September 2015, **BAPEX withdrew its 13 August 2015 request for provisional measures** without any explanations.

65. The Claimant took note of the withdrawal on 10 September 2015. It reiterated its position that the new evidence filed by the Respondents with the request for provisional measures be excluded from consideration. It further asserted that the Respondents' comments on the report of the Tribunal appointed Experts had relied on new evidence and expert opinion and that the comments set out "an entirely new case theory". The Claimant concluded that its objections to the new evidence also extended "to the merits submission based on such experts".

66. In a letter of 10 September 2015, BAPEX commented on certain points of Procedural Order No 11 concerning the organisation of the hearing, in particular the timing of legal argument and the examination of the experts. The letter referred to the Procedural Consultation of 12 November 2014 and statements by the President that the hearing would include "legal points that have been raised" and would allow "argument about the legal issues which both parties have raised". The letter requested *inter alia* that

three days be set aside at the hearing for legal argument and made reference to "arguments that BAPEX had not developed before on legal issues raised by Niko" and asserted that it was "common for parties to expand on and make new legal arguments at the hearing".

67. On 17 September 2015, the Claimant addressed certain issues concerning the Pre-Hearing Conference and the organisation of the November 2015 Hearing. The Claimant objected to the Respondents' announcement of new legal argument and stated that it did not accept "that BAPEX should be permitted to present at the hearing new legal arguments for the first time".

68. Commenting on the Claimant's Opposition, BAPEX wrote on 17 September 2015 to express agreement with the Claimant insofar as the issues relating to gas seepage "do not relate to the subject matter of the dispute" and "are outside the jurisdiction of the Tribunal". BAPEX announced that it withdrew Exhibits R.14, R-14A and R-14B and "those aspects of its arguments and expert observations relating to damage caused by gas seepage". BAPEX declared that it withdrew the Observations of Mr Bandyopadhyay and that it struck "any reference to the continued seepage from the Observations of Dr Neal Adams and Dr Ian Borthwick". BAPEX informed the Tribunal that it had filed a Notice of Dispute with Niko and its parent company as required by the JVA "in order to pursue its claims arising from gas seepage caused by Niko's blowouts at the Chattak field after 9 October 2005"; a copy of the that Notice was attached to BAPEX's letter.

69. With their letter of 17 September 2015, the Respondents submitted redacted versions of the Observations of Dr Adams and Dr Borthwick; and on 22 October 2015 a redacted version of their comments of 31 August 2015 on the Reports of the Tribunal Experts.

70. By letter of 23 October 2015, the Tribunal communicated its position on the Respondents' withdrawal and redactions, stating "*documentary evidence, once produced in the arbitration, cannot be withdrawn from the record without the consent of the Parties and the Tribunal. This also applies to reports that have been produced in support of certain factual allegation, even if the party having made these allegations no longer wishes to rely on*" the allegations or wishes to redact the report. The Tribunal decided that

> *all submissions of the Respondents, including expert reports and documentary evidence remain on the record in an unredacted form.*

3.2.6 The Ministers' Meeting Request and scheduling of the Pre-Hearing Conference

71. In Procedural Order No 11, the Tribunal announced that it envisaged to hold a procedural consultation during the week of 19 October 2015 prior to the hearing that had been fixed for the period 2 to 6 November 2015. The Parties jointly agreed to request that the Pre-Hearing Conference be held at an earlier date and, if it were more convenient for the Members of the Tribunal, "the President may conduct the pre-hearing conference alone, on behalf of the Tribunals".[13]

72. During the course of the exchanges in preparation of this consultation and the hearing, counsel for the Respondents wrote on 10 September 2015 conveying a message from the Honourable Nasrul Hamid MP, State Minster, Ministry of Power, Energy and Mineral Resources and the Honourable Anisul Huq, Minster for Law, Justice and Parliamentary Affairs:

> *While the Government of Bangladesh is not a party to the proceedings instituted by Niko against BAPEX, the decision of the Tribunal will inevitably affect the interests of the Government. The Government thus has an interest in the conduct and outcome of these proceedings. In accordance with this interest, the Honorable Ministers respectfully request that the Tribunal hold the procedural consultation in person in London the week of 5 October 2015 in order that they be able to attend and address the Tribunal.*

73. The requested date for such a meeting was subsequently modified to a date during the week of 10 October 2015. The Claimant responded, noting that, since the Government was not a party to the proceedings, the presence of the Ministers was admissible only if no party objects. "In deference to the position that they hold, however, Niko does not object to the Ministers being present as observers". The Claimant added:

> *The ICSID rules permit the Tribunals to hear only "the parties, their agents, counsel and advocates, and … witnesses and experts." While the rules require these persons to respond to questions from the*

[13] Claimant's letter of 17 September 2015, presenting organisational points on which the Claimant and BAPEX had agreed and those on which they had not agreed. BAPEX confirmed its agreement with the joint proposal by email of 18 September 2015.

Tribunals, they impose no such obligation on non-parties. BAPEX has not designated the Ministers as its agents, counsel or advocates. Absent such a designation, the rules provide no scope for non-parties such as these to address the Tribunals. The Ministers' request that they address the Tribunals must be denied on the current record.

74. On 21 September 2015, the Tribunal proposed a number of solutions for holding the pre-hearing conference in some form before the week of 19 October, but had to inform the Parties that the Members of the Tribunal were unable to find a date prior to the week of 19 October 2015 at which all three could be available for a pre-hearing conference. On 22 September 2016, BAPEX withdrew the request, "taking into account the proximity of the hearing and the difficulty in scheduling an in-person pre-hearing conference".

3.2.7 BAPEX's new procedural requests and the expansion of the case

75. By **a submission of 25 September 2015** (B-CD4), BAPEX requested an opportunity to **file an additional pleading and to present counter-claims**.[14] BAPEX asserted that its "prior counsel made grave errors in judgment and material omissions that resulted in the deprivation of BAPEX's right to be heard and an inequality of arms". According to BAPEX. previous counsel "failed to understand the nature of these proceedings and the consequences of his actions on the rights of his clients".

76. Relying on Article 45 of the ICSID Convention, BAPEX argued that it thus found itself in the position of a party that has failed "to appear or to present his case at any stage of the proceedings". BAPEX recognised that, in Procedural Order No 7, the Tribunal had offered BAPEX an opportunity to request within a period of three months from the notification of that Procedural Order, another occasion to submit a substantive reply to the Claimant's request for relief in the Compensation Declaration; but BAPEX had failed to seize this opportunity. In the letter of 25 September 2015, BAPEX stated that the "circumstances have now changed" and, quoting Schreuer, the "hitherto uncooperative party is about to cooperate".[15] BAPEX requested the Tribunal to "restore party equality of arms and

[14] BAPEX responsive Comments on the Tribunal-Appointed Expert Reports, 30 September 2015 (B-CD.5).
[15] BAPEX's letter of 25 September 2015, page 11, quoting Schreuer et al, *The ICSID Convention: a Commentary*, paragraph 10, page 711.

BAPEX's right to be heard," and to provide BAPEX with an opportunity to file an additional pleading and present counter-claims.

77. On 28 September 2015, the Tribunal wrote to the Parties, explaining that, from the submissions, expert reports and recent correspondence, it had concluded that the central issue to be addressed was the scope of the arbitrations, an issue that also impacted the November 2015 Hearing and a number of related issues. The Tribunal noted that these communications "have introduced aspects of possible liability of the Claimant which seem to exceed substantially the scope resulting from the request as initially defined." Moreover, BAPEX's Notice of Dispute of 17 September 2015, concerning separate but possibly related claims, and its request to file an additional submission and counter-claims, made it "critical for the further conduct of the present proceedings that their scope be clearly defined and, if required, be distinguished from actual or possible other proceedings concerning the same or related substance matters".

78. The Tribunal therefore requested the Claimant to "clarify with precision the declaration it seeks in these proceedings and to specify whether any of the issues arising from the submissions and requests by BAPEX and its experts do not in its view fall within the scope of the present arbitrations."

79. On 30 September 2015, the Claimant confirmed the requests set forth in its 2013 Memorial, *i.e.* that it was seeking a broad declaration in the Compensation Declaration proceedings, asking the Tribunal to

> *a. Declar[e] that Niko breached no obligation or law as concerns the two blowouts in 2005 at Chattak field and is not liable to BAPEX, its predecessors, assignors, successors or assigns;*
>
> *b. In the alternative, and in the event that the Tribunals find liability on the part of Niko, [fix] the amount of any compensation due for any damages to BAPEX, its predecessors, assignors, successors or assigns …*

3.2.8 The 1 October 2015 Pre-Hearing Conference and the "Full Scope of Liability Approach"

80. Further to the Parties' joint request of 17 September 2015, the date for the Pre-Hearing Conference was fixed as 1 October 2015, and was conducted

as a telephone conference between the Parties and the President on behalf of the Tribunal.

81. The telephone conference was recorded, and sound recordings were subsequently provided to the Parties and the Members of the Tribunal. On the day following the telephone conference and given the tight schedule for the procedure leading up to the November 2015 Hearing, the President summarised the procedural choice that Claimant had to make. The Tribunal prepared Summary Minutes of this conference call which were distributed to the Parties on 5 October 2015. The Respondents made comments, in letters dated 6 and 19 October 2015, on the President's summary and the Summary Minutes and objected to certain passages thereof.

82. Considering recent developments and procedural requests, the Tribunal noted at the Pre-Hearing Conference that

> *The Respondents agreed that they had ample opportunity to present their position during the course of these arbitrations. They also accepted that the recent submissions and their expert reports exceeded the scope set by Procedural Order No 11.*[16]

83. Concerning the scope of the case to be decided, the Claimant confirmed that it sought a "broad declaration", in the terms quoted above. The Claimant accepted that aspects of its potential liability included matters which had been newly introduced into the arbitrations by recent submissions and expert observations filed by the Respondents.

84. Against this background, the option was put to the Claimant whether the Tribunal was to determine the Claimant's non-liability

(i) within the limited scope in which it had been pleaded by the Claimant thus far (this approach was then referred to as "**the base approach**") or

(ii) by extending the proceedings to the full scope of possible liability as it had been described in BAPEX's submissions of September 2015

[16] Summary Minutes of the Pre-Hearing Conference held on 1 October 2015, paragraph 4; in its letter of 19 October 2015, BAPEX contested that its submissions and experts reports exceeded the scope of Procedural Order No 11 and asserted it "understood at the time it filed its Comments on the Reports of the Tribunal Experts that it did so in accordance with the Tribunal's instructions in Procedural Order No 11".

(this approach was then referred to as the "**alternative approach**" and the "**Full Scope of Liability Approach**").

85. It was pointed out that applying the "base approach" would permit the Compensation Declaration proceedings to proceed as envisioned by Procedural Order No. 3 and the November 2015 Hearing dates would be preserved. No additional evidence would be admitted, and the hearing would be limited to the examination of witnesses and experts within the confines previously identified. The resulting decision by the Tribunal would thus be limited considering the requested declaration of non-liability in these limits. The "alternative approach", dealing with the full scope of possible liability would require a further round of submissions, as BAPEX had requested. BAPEX had stated that it required five months to prepare its full submission, including the quantification of the damage resulting from the two blowouts and its counter-claim. Adopting this request would result in the postponement of the November 2015 hearing.

86. The President therefore examined with the Parties the possibility of bifurcating the proceedings on the Compensation Declaration. The alternatives were summarised as follows:

> *If the proceedings in a first phase would be limited to the question of possible breaches of the obligations and the law in relation to the blow-outs, the November 2015 hearing could be preserved, the Claimant could be given an opportunity to respond to the newly alleged breaches, including new evidence and expert explanations, with possible responses by BAPEX at the opening of the hearing.*
>
> *[…]*
>
> *Determining the damage possibly flowing from any breaches determined by the Tribunals and the counter-claim would then be considered in a further phase of the arbitration. At the present stage, BAPEX declared that it was not in a position to substantiate its counter-claim.*[17]

[17] Summary Minutes of the Pre-Hearing Conference held on 1 October 2015, paragraphs 12 and 14.

87. The discussion on this alternative approach was concluded by the following observations, as recorded in the Summary Minutes:

> *Recognising that the need for these modifications to the procedure was the result of their failure to make their submissions in due time, the Respondents undertook to make every reasonable effort in this alternative approach, to limit the disruptive effects of these modifications. They stated that this alternative approach as discussed at the Pre-Hearing Conference satisfied the request, as it had been made in BAPEX's letter of 25 September 2015. The Claimant accepted that such a modification was feasible in theory, but reserved its position as to whether such a change should be admitted at this late stage of the proceedings.*[18]

88. At the Pre-Hearing Conference, the President also considered with the Parties the programme of further submissions and evidence in preparation of the November hearing, assuming the "alternative approach" were adopted. Matters of hearing organization for the hearing scheduled from 2 to 7 November 2015 in London were also considered and certain directions were given in this respect.

3.2.9 <u>The Further Pre-Hearing Written Procedure, in particular concerning the scope of liability to be considered, the Money Suit, and a request for cost</u>

89. On 5 October 2015, the Claimant informed the Tribunal that it chose the "alternative approach," and specified the time limits by which it would be able to make the submissions relating to it. It also addressed certain legal issues, in particular the limitation of liability under the JVA, BAPEX's alleged breach of warranties, and the costs of the proceedings.

90. Subsequent correspondence between the Parties and the Tribunal dealt with: the decision on the scope of liability to be considered by the Tribunal, the identification of the relevant sources of liability, related evidence, and other issues in preparation of the hearing. The principal submissions and rulings in this respect were:

[18] Summary Minutes of the Pre-Hearing Conference held on 1 October 2015, paragraph 15. In its submission of 19 October 2015, page 27, BAPEX contested that it had identified all possible sources of liability prior to the Pre-Hearing Conference. It also stated that it did not accept that its request in its 25 September letter for an additional pleading had been satisfied.

(i) Two submissions from BAPEX, dated 6 October 2015 objecting to the Full Scope of Liability approach and related issues (first letter, B-CD6) and certain legal issues and the schedule leading to the November hearing (second letter, B-CD.7);

(ii) Two letters from the Tribunal dated 7 October 2015, addressing issues concerning the scope and standards of liability (first letter) and questions of further submissions and presentation of evidence prior to the hearing (second letter, B-CD.8);

(iii) Further to BAPEX's request of 6 October 2015 the Tribunal instructed the Claimant on 7 October 2015 to provide an outline in "sufficient detail to permit BAPEX to begin to prepare a response and to make informed decisions on the required scope of its response"; this outline was presented by the Claimant in the form of Niko's Defence in Principle to New Allegations raised by BAPEX's Expert, filed on 9 October 2015 (C-CD.6). On 16 October 2015, the Claimant provided information about additional evidence which it intended to produce;

(iv) A submission from BAPEX dated 12 October 2015 (B-CD.8), responding to the Tribunal's invitation to identify additional obligations and breaches by the Claimant; the submission also addressed issues concerning to the Money Suit;

(v) BAPEX's submission of 19 October 2015 (B-CD.9) on legal issues, in particular in response to the Claimant's letter of 5 October 2015, details on the Money Suit, the cost allocation, and certain issues concerning the hearing organisation;

(vi) The Claimant's objection to the scope of BAPEX's letter of 19 October 2015, which it described as an "unauthorised submission" and a "second rejoinder".

(vii) The Tribunal's **Procedural Order No 12 of 21 October 2015** addressing some of the issues raised in these submissions from the Parties ;

(viii) The Claimant's pre-hearing submission of 23 October 2015, entitled "Niko's Submission on Newly Alleged Breaches" (C-CD.7), accompanied by a second witness statement of Mr William Hornaday and a supplemental expert report by Mr John Wright (Wright 2); and

(ix) Bapex's 23 October 2015 communication, indicating its intention to have Md Abdul Baqi testify at the November 2015 Hearing. The Claimant subsequently objected. The Tribunal considered his testimony possibly relevant and instructed the Respondents to

inform the Claimant and the Tribunal forthwith of the tenor of Mr Baqi's testimony, in the form of a witness statement or otherwise. On 27 October 2015, the Respondents filed Mr Baqi's witness statement, and on 30 October 2015 introduced a further document into evidence (Exhibit R-38).

91. With respect to the **scope of further proceedings**, BAPEX objected to the Full Scope of Liability Approach in its first letter of 6 October 2015, stating that the "Parties' pleadings have not addressed in any substantive manner the breaches under laws or legal instruments other than the JVA". BAPEX mentioned that "the standard of tort liability under Bangladesh law" and "liability under the environmental laws of Bangladesh" as examples for breaches under laws and legal instruments other than the JVA. Contrary to its submission of 17 September 2015, BAPEX submitted that

> *… the scope of the upcoming hearing must be limited to a determination of Niko's liability under the independent JVA standard.*

92. The Tribunal responded on the following day, by the first of its 7 October 2015 letters. It summarised the situation in which the issue arose, starting by recalling the Claimant's request for a declaration that it "breached no obligation or law as concerns the two blowouts and is not liable to BAPEX, its predecessors, assignors, successors or assignees". The Tribunal then continued:

> *The Respondents were given ample opportunity to present a full defence to this petition. They failed to do so pursuant to the schedule for these arbitrations established in Procedural Order No. 3. The Respondents' present counsel have explained that this failure was due to the failings of prior counsel and have requested a new opportunity to present a defence. (The Tribunals take no position as to this evaluation of the work of the Respondents' prior counsel, but observe that the Respondents not only chose their original counsel, but also had time to monitor their performance over the course of several years.) Without waiting for a ruling on this extraordinary request, and in disregard of the directions in Procedural Order No 11, the Respondents produced argument and expert reports which sought to expand the scope of the arbitration by identifying obligations which, in their opinion, Niko had breached; they also identified damage allegedly caused by such breaches, beyond the breaches and*

damage previously referred to by the Claimant. The Respondents requested that their statements be admitted in the arbitrations and that they be allowed to make additional submissions.

93. The Tribunal added that the approach that emerged from the Procedural Conference on 1 October 2015 allowed the Respondents a full opportunity to present their defence as requested, without causing excessive disruption to the proceedings. This was possible by dividing the Respondents' presentation of the issues of liability and damages. The Respondents said they were ready to argue the liability issue but required additional time for the quantum. The Tribunal accommodated this concern by reserving the quantum to a later phase in the arbitrations and thus afforded the Respondents yet another opportunity to present the argument and evidence which they had previously failed to present in accordance with the procedural calendar. The Tribunal concluded:

> *Having accepted the change in the scope of the procedure requested by the Respondents and the resulting expansion of the arbitrations, the Tribunals will decide the Claimant's request for a declaration on the basis of the obligations identified by the parties and will consider the obligations so identified as complete for the purpose of the requested declaration. They will not accept that for the purposes of their decision on the Claimant's request for a non-liability declaration any issues concerning breach and liability be reserved.*

94. BAPEX then wrote on 12 October 2015, responding to the Tribunal's invitation to "identify additional obligations and breaches by the Claimant, specifying the source of each obligation and its precise content". BAPEX wrote:

> *BAPEX provides the requested information to indicate further areas where Niko might be liable, on which Niko would have the burden to prove that it is not liable under the extremely broad scope of its requested relief, not as claims against Niko. In addition to the breaches of the JVA identified in the expert reports before the Tribunal, BAPEX identifies the following sources of liability resulting from the blowouts …*

95. BAPEX then mentioned specifically "General Tort Liability", "Environmental Liability" and "Fraudulent Misrepresentation"; and it insisted that Niko had the burden of proof. Then BAPEX concluded:

> *[i]n these circumstances, BAPEX respectfully submits that the Tribunal must either refuse to address the matters that are not before it or find that Niko has not met its burden to prove it is not liable under these standards and issue an award denying the relief sought. While questions of Niko's liability under the JVA have been addressed in the pleadings, it is irrefutable that Niko has not pleaded, much less proven, its lack of liability under Bangladeshi tort and environmental law.*

96. The Tribunal addressed the issue in Procedural Order No 12. It explained:

> *In their letter of 12 October 2015 the Respondents insisted that it was the Claimant which had the burden of proof but added that "BAPEX will meet [the Tribunal's] request". The Respondents then stated that, in the courts of Bangladesh and specifically in the Money Suit, Niko is pursued under general tort liability and environmental liability; but the Respondents did not identify with specificity any additional Laws or Standards which Niko's operations had breached, and thereby caused the damage flowing from the blow-outs. The Tribunals must conclude that the Respondents have no further Breaches to add which the Tribunals must consider when examining whether to make the requested declaration.*
>
> *For the avoidance of doubt, the Tribunals add that identifying the Applicable Laws and Standards does not affect the burden of the Claimant to establish that it has complied with these Laws and Standards or that they are not applicable in the circumstances. The Tribunals further add that the question concerning such alleged breaches of the Applicable Laws and Standards is different from that relating to the legal basis for any liability flowing from any such Breaches.*

97. In these circumstances and in light of these considerations, the Tribunal concluded in Procedural Order No 12:

The list of Breaches of Applicable Laws and Standards that must be considered by the Tribunals when making their determination concerning the requested declaration is now complete. The Tribunals will examine by reference to the Breaches alleged until now the Claimant's request for a declaration according to which "Niko breached no obligation or law as concerns the two blowouts in 2005 at Chattak field".

98. With respect to the **Money Suit**, the Claimant asserted in its submission of 5 October 2015 that

> *For the first time, Niko faces in two different forums affirmative claims for precisely the same liability as concerns the two blowouts: the claims of BAPEX for lost gas production and environmental damages before these Tribunals; and the claims asserted by Petrobangla and the Government for precisely the same liability and damages in the Money Suit. The present situation is irreconcilable with Article 26 of the ICSID Convention, pursuant to which "[c]onsent of the parties to arbitration under this Convention shall … be deemed consent to such arbitration to the exclusion of any other remedy.*

99. The Claimant argued that "the Tribunals' early clarification of this question will be critical to the effectiveness of the ultimate award and the preservation of procedural rights".

100. BAPEX objected on 6 October 2015 (second letter) and rejected "the extension of the hearing to cover legal issues that are not directly related to the question of whether Niko is liable for the blowouts"; it defined the issue of liability as the question of "whether or not Niko is liable for the blowouts – that is, did Niko breach the standard of care under the Joint Venture Agreement (JVA) and thereby cause or contribute to the blowouts?". BAPEX added that the decision now sought by Niko concerned "issues on which Niko and BAPEX's prior counsel did not provide adequate briefing. The only issue that is ripe for decision is the question whether Niko breached the standard of care under the JVA".

101. The Tribunal addressed the issue of the Money Suit in their second letter of 7 October 2015 by inviting BAPEX to provide a precise indication of

> *(i) the status of the proceedings on the Money Suit,*

(ii) the progress made in the Money Suit proceedings during the time since the Tribunals' 2013 Decision on Jurisdiction and

(iii) the anticipated duration of the Money Suit proceedings until a decision by the court, assuming that the Respondents decide to pursue the Money Suite despite the explanations in the Decisions of the Tribunals.

102. BAPEX responded on 19 October 2015. It stated that it was not party to the Money Suit and that the claims made in that suit were not based on the JVA but on "tortious liabilities" pursued as "independent rights of the people of Bangladesh vested in the Republic and being protected by the actions of the Government and the Ministry in the Money Suit". BAPEX provided information about these proceedings, commenced on 15 June 2008, stating in particular that Niko had applied for their stay. BAPEX also provided a forecast of the time that might be required to complete those proceedings, including appeals before the High Court Division and the Appellate Division of the Supreme Court of Bangladesh.[19]

103. As discussed at the Pre-Hearing Conference,[20] the Claimant included in its submission of 5 October 2015 (C-CD.5) a **Request for costs**, seeking that the following "heads of cost should be paid by BAPEX as a result of its very late assertion of breaches by Niko, and this regardless of the outcome of the Compensation Declaration":

> *the entirety of Tribunals' fees and expenses and the Centre's charges, and the related expenses, relating to the Tribunals Experts (which would have been completely unnecessary had BAPEX complied with the Tribunals' orders), as well as the legal and expert costs incurred by Niko in this respect; and half of all of the preceding categories of costs as concerns the written phase of the Compensation Declaration (which in material part addressed claims of breach that BAPEX later did not press).*

104. BAPEX responded to the request in its 19 October 2015 submission (B-CD.9) in the following terms:

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[19] BAPEX's Submission on Various Procedural and Legal Issues, 19 October 2015 (B-CD.9), pages 22 and 23. For further details on the Money Suit see in particular below Section 5.4.
[20] Summary Minutes of the Pre-Hearing Conference held on 1 October 2015, paragraph 19.

BAPEX hereby informs the Tribunal that it agrees to reimburse to Niko its share of the Tribunals' fees and expenses and the Centre's charges, and the related expenses, relating to the Tribunal Experts, as well as the reasonable legal and expert costs incurred by Niko specifically attributable to the Tribunal Expert process. As is customary in legal proceedings, BAPEX understands that any award of costs resulting from BAPEX's agreement herein may be set off against any eventual award on the merits or of other costs in favour of BAPEX.[21]

3.2.10 Procedural Order No 12 and the Tribunal's Note on the Scope of Examination at the November 2015 Hearing and Questions for Consideration

105. In Procedural Order No 12 the Tribunal summarised the recent exchanges concerning the scope of the proceedings and, as quoted above, noted that the "List of Breaches of Applicable Laws and standards that must be considered by the Tribunals when making their determination concerning the requested declaration is now complete". Further to a request expressed by the Parties at the Pre-Hearing Conference, the Tribunal endeavoured to provide guidance as to the issues arising in the context of its examination of the Claimant's requested declaration and to be considered in the hearing, in particular concerning the introductory presentations by the experts. The Tribunal provided this guidance in the form of a "**Note on the Scope of Examination and Questions for Consideration**", attached to Procedural Order No. 12. The Tribunal emphasised:

> *… this Note is preliminary and provisional in nature, prepared on the Tribunal's present understanding of the issues. It does not prejudge in any manner the Tribunal's decision.*

106. In the Note itself, the Tribunal further clarified:

> *The questions and issues outlined below were drafted by the Tribunals in light of the Parties' written submissions and expert reports filed to date. They are provisional and may not be taken as prejudging any of the issues that remain to be decided; nor do they*

[21] BAPEX's Submission on Various Procedural and Legal Issues, 19 October 2015 (B-CD.9), pages 1 and 2.

restrict the Tribunals with respect to questions and issues the Tribunals may raise at the hearing.

107. The Tribunal identified what it had understood as the overall principles governing Niko's obligations concerning the conduct of the operations under the JVA and other obligations relating to such operations. It referred to all obligations under the applicable law, the JVA and generally accepted standards of the international Petroleum Industry as the "**Applicable Laws and Standards**". It added:

> *The Tribunals understand that, in order to rule on the Claimant's request for a declaration of non-liability, they will have to examine and, following that examination and the Parties' argument, decide in the first phase of this part of the arbitrations*
>
> > *(i) whether, in the conduct of drilling the Chattak 2 well and the relief operations following the first blow-out, Niko breached any of the Applicable Laws and Standards ("Breaches");*
> >
> > *(ii) whether any such Breaches are causal for the blow-outs; and*
> >
> > *(iii) to the extent to which they were causal for the blow-outs, whether such Breaches could have caused any damage (loss of gas, damage to the population and the environment or otherwise).*
> >
> > *(iv) The questions whether any such damage actually did occur, the importance of such damage, and its quantification, are reserved for a subsequent phase of the arbitrations.*

108. In the remainder of the Note, the Tribunal explained that it wished to identify the sources of the Applicable Laws and Standards, identified factual aspects and assumptions which it had identified as possibly relevant and alleged Breaches that had to be examined. The Tribunal invited the "Parties and their experts to correct, or complement, where necessary, the identification and description of these Breaches".

3.2.11 Organisation of the November 2015 Hearing

109. As the Parties had expressed diverging views on the organisation of the November 2015 Hearing, the Tribunal provided the Parties with an indication of the approach it intended to adopt. It did so in the form of a **Preliminary Note on the Organisation of the November 2015 Hearing** of 27 October 2015. The Note confirmed that the principal objectives of the hearing were:

> *… to determine*
>
> *(i) the nature and content of the laws and standards which apply to Niko's conduct of the drilling and the relief operations (the "Applicable Laws and Standards");*
>
> *(ii) whether any breaches of these Applicable Laws and Standards occurred which caused or contributed to the blow-outs and the damage caused by them (the "Breaches").*
>
> *When considering these two issues, a distinction should be made between (a) the drilling of the Chattak 2 well and (b) the relief operations.*
>
> *(iii) In addition, both Parties have raised issues concerning the rules governing Niko's liability for any Breaches that may have occurred.*

110. The Tribunal explained that it wished to examine issues (i) and (ii) first and suggested to reserve the first four hearing days for these issues, followed by issues of liability. The Tribunal also explained the proposed sequence of expert and factual presentations and questioning, as well as the time for submissions by counsel.

3.2.12 The 2 to 7 November 2015 Hearing

111. The hearing in the Compensation Declaration proceedings took place from Monday 2 November 2015 to Saturday 7 November 2015 in London. Besides the three Members of the Tribunal and the Secretary, the following persons attended the hearing:

For the Claimant:
Mr Barton Legum, Ms Anne-Sophie Dufetre, Ms Brittany Gordon, Ms Ananya Mitra, and Ms Leonor Vincens of Dentons, Paris; Mr Gordon Tarnowsky, Mr Anthony Cole, and Mr Frank Alexander (as from 4 November 2015) of Dentons, Calgary, counsel for the Claimant;
Messrs Rokanuddin Mahmud and Mustafizur Rahman Khan of Rokanuddin Mahmud & Associates, Dhaka, co-counsel for the Claimant;
Messrs William Hornaday and Brian Adolph of Niko Resources Ltd.;
Mr John Wright of Wild Well Control and Mr Rawdon Seager of Gaffney Cline & Assocs (present 3 to 6 November 2015), as experts.

For the Respondents:
Mr Derek Smith, Ms Tafadzwa Pasipanodya, Ms Erin Argueta, Ms Oonagh Sands, Ms Alejandra Torres Camprubi, Ms Anna Aviles-Alfaro, and Ms Aundry Padilla of Foley Hoag LLP, Washington, D.C., counsel for the Respondents;
Messrs Moin Ghani and Mr Imtiaz Uddin Ahmad Asif, Dhaka, co-counsel for the Respondents;
Mr Md. Atiquzzaman, Managing Director of BAPEX and Mr Abdul Baqi (present as from 4 November 2015);
Mr Istiaque Ahmad, Petrobangla, identified as shareholder of BAPEX;
Dr Neal Adams of the University of Houston, as expert;
Ms Melinda Bruce of DOAR Litigation Support.
and
Minister Nasrul Hamid, Government of Bangladesh, presented as shareholder of BAPEX
No objections were raised against the presence of a representative of the Government of Bangladesh which, as a result of the Tribunal's decision on jurisdiction, is no longer a party to the arbitration proceedings.

Tribunal's Expert
Mr William Abel of Theon.

112. In their opening statements the Parties presented their respective position and also addressed the issues which the Tribunal had outlined prior to the hearing. In the course of the Opening Statements and subsequently during the hearing, it was clarified that the Claimant was seeking a declaration of

non-liability only in respect of those breaches of Applicable Laws and Standards which were causal for the two blowout incidents, and not an assessment of the Claimant's operation in general terms.

113. The Tribunal explained that, before examining the specific factual aspects of the two blowouts, the arbitrators wished to obtain from the experts a better understanding of the technical issues as they arise in the context of drilling and relief operations and the relevant laws, standards and practices. After the Parties' opening statements, the Tribunal therefore invited Mr Abel, the expert appointed by the Tribunal, to deliver a presentation on these matters and to answer specific questions from the arbitrators. The two experts appointed by the Parties then commented on Mr Abel's explanations and provided their own views in an open discussion among the three experts.

114. Subsequently, Mr Wright delivered a presentation on drilling operations and answered questions from the Tribunal, with Mr Abel and Dr Adams also being requested by the Tribunal to provide their views on various issues in the form of an interactive discussion. This was followed by a presentation by Dr Adams, with questions from the Tribunal and a discussion in the same format. Subsequently, Mr Wright was cross-examined by counsel for the Respondents, followed by cross-examination of Dr Adams by counsel for the Claimant, who then also posed questions to Messrs Abel and Wright. This was followed by further examination by counsel for the Respondents, the Claimant and the Tribunal.

115. After this initial clarification of the technical issues concerning drilling and relief operations and the relevant laws, standards and practices, the Tribunal turned to the factual questions of what actually happened when the blowouts occurred. The Tribunal started by examining Mr Adolph, who was also examined by counsel for the Claimant and cross-examined by counsel for the Respondents. Thereafter Mr Hornaday and Mr Baqi were examined by the Tribunal and counsel of the Parties.

116. Having completed the fact witness testimony, the Tribunal turned to issues specific to relief operations and sought clarification from the three experts. The three experts addressed specific issues related to the relief well operations identified by the Tribunal and were examined by the arbitrators and the Parties' counsel, following the same procedure of an interactive discussion under the direction of the Tribunal.

117. The three experts had disclosed in their written reports that they knew each other well. This was apparent at the hearing. They also stated that they knew Mr Grace well, who had been engaged by Niko for the relief operations. It was understood that all four were included in the small number of industry specialists who had experience in drilling relief wells. They had worked with each other in one form or another on other projects; some of them also were engaged in the context of the Moulavi Bazar blowout in Bangladesh. No objection was raised against any of the experts and their qualifications to provide expert opinions in these arbitrations.

118. It was agreed during the hearing that legal argument regarding breaches and bases for liability would be addressed in written submissions, followed by a two-day hearing. Agreement was also reached regarding the procedural calendar for a) the further written and oral procedure on liability and b) the further written and oral procedure on damages. At the conclusion of the hearing the Parties agreed on the schedule for the remainder of the proceedings on the Compensation Declaration, providing for simultaneous Post-Hearing Briefs on Liability, addressing in particular the Applicable Laws and Standards, identifying breaches and bases for liability, followed by a hearing in Paris on liability. Thereafter, the Respondent was scheduled to present its Memorial on Damages, followed by the Claimant's Counter-Memorial and a hearing on damages in Paris.

119. At the end of the November 2015 Hearing, the Tribunal enquired whether the Parties were satisfied with the conduct of the oral procedure and if there were any complaints they wished to raise. No such complaints were raised by the Claimant and the Respondents.

120. Transcripts of the hearing were prepared by Ms Georgina Ford and Mr Ian Roberts of Briault Reporting Services. A copy of the transcript was sent to the Parties and the Members of the Tribunal on each hearing day. They were subsequently corrected by the Parties. Sound recordings were made of the hearing and uploaded to the electronic file sharing account created for this proceeding for access by the Parties and the Tribunal.

121. The Tribunal prepared Summary Minutes of the Hearing which were sent to the Parties on 12 January 2016, together with three sketches prepared by the experts during the course of the Hearing (Exhibits RH-6 and TEH-3 and TEH-4).

3.2.13 Post-Hearing Briefs and the Tribunal's note on Possible Issues

122. Further to a request by the Parties, on 6 January 2016 the Tribunal provided them with a note on **Possible Issues for the Post-Hearing Briefs**, setting out the arbitrators' understanding of the competing contentions which the Tribunal had gained from the hearing. The Tribunal emphasised that the arbitrators' understanding was provisional, that they kept an open mind in anticipation of the Parties' forthcoming submissions, and that they did not wish to restrict the Parties' explanations and choice of issues to highlight.

123. In this note the Tribunal also described the provisional understanding it gained concerning the factual circumstances of the first blowout and possible causes, as well as the possible actions that could have prevented it and the distinction between design and operational causes. The Tribunal invited the Parties to specify points where they disagreed and the evidence which supported each side. It also invited the Parties to address the question on which grounds a blowout caused by the circumstances so identified would justify any liability of Niko.

124. The Tribunal's note provided a similar presentation with respect to the blowout at the relief well 2A. These points and the manner in which the Parties dealt with them will be addressed in further detail below in Sections 8 and 9 in the context of the two blowouts and Niko's responsibility for them.

125. In accordance with the schedule agreed at the close of the November 2015 hearing, each party filed its **Post-Hearing Brief** on 22 January 2016, together with accompanying legal authorities.

3.2.14 Matters following the November 2015 Hearing: Pre-Hearing Conference of 28 January 2016, Niko's Well Control Manual and Information on other cases

126. On 28 January 2016, the Tribunal, represented by the President, held a **Pre-Hearing Conference** with the Parties by telephone. In the course of the conference, questions of hearing procedure and general organizational matters relating to the February 2016 Hearing were discussed and agreed upon, including an agreed tentative agenda for that hearing. Certain other matters that had arisen after the November 2015 Hearing also were discussed and resolved in part.

127. The telephone conference was recorded and the recording was subsequently provided to the Parties and the Tribunal. The Tribunal further prepared Summary Minutes of this conference call which were distributed to the Parties and the other Members of the Tribunal on 3 February 2016.

128. One of the issues discussed at the Pre-Hearing Conference concerned **Niko's Well Control Manual**. At the November 2015 Hearing, reference had been made to a passage in **CPTDC**'s Technical Proposal (Exhibit C-100) where it was stated in Section 5.3, entitled "HSE management system", that "Niko's document for well control manual will be the ruling Project document".[22] At that occasion Mr Adolf confirmed that such a manual existed and explained that the manual "was constantly updated"; he said that the current version could be produced without difficulty but that he was not sure about the availability of the version to which the CPTDC proposal in 2004 referred. The Tribunal requested that this Well Control Manual be produced in the available version and, if possible, also in the version in force at the end of 2004.[23]

129. At the Hearing, the Claimant produced a document entitled "SHEMS Drilling and Workover SWP Manual", first edition, dated February 2005 (referred to as the "**2005 SWP Manual**").[24] As this manual is dated February 2005, *i.e.* after the award of the contract to CPTDC, and deals primarily with HSE issues, the Respondents queried whether this manual was indeed the one to which the CPTDC proposal referred. The Claimant's counsel pointed out that the reference to the Niko manual in the CPTDC proposal was contained in a section on HSE;[25] he promised, however, that Niko was looking for any manual that was meeting the description in the CPTDC proposal.[26]

130. After the Hearing, the Respondents wrote on 9 December 2015, referring to the discussions at the November 2015 Hearing, and requesting that the Claimant provide "any version of its well control or 'drilling control' manual from before 2005 through 2015 in its possession or control".

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[22] Exhibit C-100, Section 5, page 8 of 17, pdf page 143.
[23] HT 2015.11.06, pages 1033 – 1035, 1044 – 1046.
[24] Exhibit C-110; HT 2015.11.06,page1163.
[25] HT 2015.11.06, page 1380.
[26] HT 2015.11.06, page 1342.

131. The Claimant responded on 12 December 2015, explaining that the 2005 SWP Manual contained a specific chapter on "well control" and that the reference in the CPTDC proposal was contained in the section on Health, Safety and Environment. The Claimant concluded that "the 2005 SWP Manual is the document that best responds to the Tribunal's request", adding that the current version of this manual was that of 2014. The Claimant stated that this version was "wholly irrelevant" but that it was prepared to provide it if so directed by the Tribunal.

132. The issue was discussed at the 28 January 2016 Pre-Hearing Conference; the Parties reiterated their positions. As announced at this conference, the Tribunal communicated its decision on 14 February 2016. It noted that the Claimant had asserted that, despite substantial efforts, it was unable to locate a copy of an earlier version of the manual produced as Exhibit C-110 and specifically the version that was in force in 2004. The Tribunal considered the request for a pre-2005 version of the manual as moot, since it saw no purpose in ordering the Claimant to produce a document which it was unable to locate. Concerning the 2014 version, the Tribunal invited the Respondents, if they still wished the Tribunal to order its production, to state why this version would be relevant for the Tribunal's decision.

133. The Respondents pointed out, in their letter of 17 February 2016, that Mr Adolph had referred to the 2014 version of the SWP Manual and confirmed that it was readily available and that the Claimant had offered to provide it. The Respondents explained the manual was "evidence of Niko's current practice" and

> *… could be relevant evidence of what is considered diligent conduct. In addition, the manual may include mention of the blowouts or an indication of lessons learned and the impact on Niko's operating procedures. Niko has questioned the existence of standards, and the manual may provide relevant information of how Niko directs its operators to plan and conduct operations.*

134. At the February 2016 Hearing, the issue of the 2014 version of the SWP Manual arose again. The Tribunal noted that the Claimant considered this version as irrelevant but was prepared to deliver it to the Respondents, if so ordered by the Tribunal. The Tribunal requested the Claimant to deliver the document to the Respondents without taking any position with regards

to its relevance.[27] On 21 March 2016 the Respondents informed the Tribunal that their request for the production of this manual still had not been complied with. In another letter of the same day, however, the Respondents requested the Tribunal to defer its decisions until after their submissions on the alleged bribery by Niko had been filed.

135. By its letter of 14 February 2016, the Tribunal requested the Parties to address certain technical aspects related to casing and drilling operations at the forthcoming February 2016 Hearing. It also requested **information about other cases** concerning well blowouts and to provide copies of such decisions. The Tribunal asked:

> *Has any decision ever been issued anywhere by a court, an arbitral tribunal or other legal or regulatory body, which relates to a well blow-out and the operator's responsibility for such blow-out?*

136. In response, the Claimant wrote on 19 February 2016, stating that it had "identified in excess of 20 authorities meeting the stated criteria". It excluded "authorities addressing blowouts allegedly resulting from defective equipment and authorities lacking substantial discussion of the drilling operations conducted before the blowout" and transmitted five authorities from US courts.[28] The Respondents also "found a number of cases of varying relevance to the present case that met the stated criteria". In addition to the cases presented by the Claimant, the Respondents presented on 20 February 2016 a court decision in the Deepwater Horizon case and filed it as Exhibit RLA-115.

3.2.15 The Respondents' Document Production Request and the Site Visit of 5 and 6 February 2016

137. On 8 January 2016, the Respondents filed a **request for production of documents**, requesting (i) data from a 2004 seismic survey undertaken by the Claimant, (ii) data from the wells drilled by the Claimant on Chattak field, and (iii) environmental monitoring reports. The Respondents explained that they had unsuccessfully requested the documents from the

[27] Summary Minutes of the 21-22 February 2016 Hearing (see below), paragraph 13.3 and HT 2016.02.22, pages 509 - 510.
[28] These decisions were admitted in the record at the February 2016 Hearing with the reference numbers CLA-59, CLA-60, CLA-61, CLA-67 and CLA-69.

Claimant on 23 December 2015 and needed them urgently for BAPEX submission on damages.

138. Following an invitation by the Tribunal, the Claimant filed its observations on these requests on 18 January 2016. The Claimant stated that the request concerned 35 categories of documents or specific documents and objected to it. The Claimant argued that (i) a document production phase had not been agreed in this phase of the arbitrations, (ii) ordering production of the requested documents was not necessary for the outcome of the case and (iii) the request was "overly broad and otherwise inadmissible under standards that apply when Parties do agree to document disclosure".

139. The issue was addressed during the pre-hearing telephone conference on 28 January 2016. The Respondents were invited to clarify whether their request was made under the JVA, and if not to respond to the Claimant's objections concerning grounds and modalities of document production in ICSID proceedings.[29] It was agreed that the Respondents would be given one further opportunity to clarify its 8 January 2016 request for document production.

140. The Respondents responded in a letter of 4 February 2016. They relied on the provision in the JVA concerning geological and drilling information obtained or compiled by Niko regarding the Chattak field. The Respondents stated that under the JVA Niko controlled all information related to operations at the Chattak field, but did not regularly provide all that information to BAPEX. The Respondents also argued that Niko "wanted the broadest possible finding by the Tribunal" and that for the damage phase the Parties could present argument and evidence which they had previously failed to present. The Respondents explained that "principles of fairness and due process" required that the Tribunal order the production which "is essential to BAPEX's right to marshal evidence and fully present its case". The Respondents presented in detail their view on the relevance of each document or category of documents.

141. On the days following this letter, on 5 and 6 February 2016, a **site visit** took place at the Chattak field in the absence of the Tribunal. The Claimant informed the Tribunal on 10 February 2016 about this event, stating that "beginning on 5 February 2016 Niko hosted a site visit by the Respondents

[29] Summary Minutes of the 28 January 2016 Pre-Hearing Conference, paragraphs 14 to 16.

at Chattak" at which "Niko permitted inspection of all documents concerning Petroleum Operations that Respondents wished to review". The Claimant wrote:

> *Over 70 persons visited the Chattak site, including the Minister of Energy, a score of personnel from BAPEX and its sister company Sylhet Gas Fields Limited, four representatives of Foley Hoag, numerous technical and/or environmental experts retained by BAPEX, an intelligence officer, two ambulance attendants, five fire service employees and 33 police officers. Niko made available to BAPEX's team all documents on site arising from Petroleum Operations as defined under the JVA. BAPEX's legal team scanned hundreds of pages of these documents.*

142. The Claimant asserted the Respondents' letter of 4 February 2016 contained "a range of erroneous or misleading statements" and that "BAPEX assertions concerning the necessity of a Tribunal order have been overtaken by events". It also stated that, following the search of its records requested by the President during the 28 January 2016 pre-hearing conference, it had identified letters transmitting to both BAPEX and the Department of Energy all but one of the Environmental Reports requested by BAPEX.

143. By letter of 14 February 2016, the Tribunal requested the Respondents to respond to the information provided by the Claimant regarding the 5 February 2016 site visit, specifying whether or not the Respondents maintained their 8 January 2016 document production request.

144. By letter of 17 February 2016, the Respondents provided a status update regarding the site visit. They confirmed that a site visit took place on 5 and 6 February 2016 and explained that "BAPEX exercised its rights under the Joint Venture Agreement to inspect documents on the site through its legal representative, Foley Hoag LLP". The latter, they explained, had been granted access to inspect and copy some documents but not others. The Respondents pointed out that the "documents were by no means presented in an organised fashion"; many of the documents were irrelevant and their condition "was less than ideal having been exposed to the elements, dust, and pests for the past ten years". The Respondents concluded

… the documents obtained at the site visit do not obviate the Respondents' request for documents. Accordingly, BAPEX maintain its request for the documents listed in its letter of 23 December 2015.

145. With respect to the Claimant's explanations concerning the Environmental Reports, the Respondents added: "The fact that the documents were at one time transmitted to BAPEX does not negate BAPEX's request for these documents".

146. Following the Respondents' 17 February 2016 letter, the Tribunal invited the Claimant to provide a list identifying for each of the categories of documents requested by the Respondents those documents which, according to the Claimant, have been made available to the Respondents during the 5 February 2016 site visit. The Claimant responded by letter of 20 February 2016 that it was unable to prepare such document list given the absence of its counsel during this site visit.

147. On 20 February 2016, the Respondents supplemented their 8 January 2016 document production request, now also requesting documents related to Niko's investments in the Chattak field, documents related to payments to local inhabitants and medical records.

148. The Respondents' document request and the controversy related to it was then addressed at the February 2016 Hearing which was held on 21 and 22 February 2016. The Tribunal discussed each of the requests with the Parties and settled them as follows:

The Claimant confirmed its willingness to cooperate with BAPEX in the context of the JVA and invited representatives of BAPEX to its Dhaka office in order to examine whether any of the requested documents existed and would be required by BAPEX. This procedure applied to all document requests of the Respondents, except for the following:

- *The 2004 3D seismic survey referenced in the Respondents' 23 December 2015 letter which the Respondents confirmed to be in their possession.*

- *With regard to the 11 Monthly Environmental Reports requested by the Respondents in their 23 December 2015 letter, the Claimant*

stated that it had been able to retrieve 10 of them, including the transmittal sheets evidencing that these 10 Monthly Environmental Reports had been delivered to the Department of Energy.[30] *The Claimant nevertheless accepted to deliver an additional copy of each of these reports to the Respondents. As to the 11th report the Claimant undertook to conduct further research, including in Niko's offices in Dhaka and at the Chattak field. If and when this report will be retrieved, the Claimant will deliver it to the Respondents.*

• *With regard to the photo documentation prepared by Mr Glaholt (para. 12 of the 23 December 2015 letter), the Claimant undertook to follow up with Mr Glaholt and produce the documentation that can be retrieved.*

• *The Respondents confirmed that they were in the possession of the Geosyntec study referenced in paragraph 16 of the Respondents' 23 December letter.*

• *Documents related to payments to local inhabitants and medical records were considered irrelevant for the Tribunals' decision on the quantification of damage; the Respondents did not insist on their production.*[31]

3.2.16 The February 2016 Hearing

149. On 21 and 22 February 2016, a 2-day hearing was held in Paris. The hearing was attended by the three Members of the Tribunal, the Secretary and the following persons:

For the Claimant:
Mr Barton Legum, Ms Anne-Sophie Dufetre, Ms Brittany Gordon, Ms Ananya Mitra, and Ms Tania Iakovenko-Grasser of Dentons, Paris; Mr Gordon Tarnowsky, Mr Anthony Cole, and Mr Frank Alexander of Dentons, Calgary, Counsel for the Claimant;
Mr Mustafizur Rahman Khan of Rokanuddin Mahmud & Associates, Dhaka, Co-Counsel; and

[30] In the letter of 18 January 2016 the Claimant referred to the Department of the Environment.
[31] Summary Minutes of the February 2016 Hearing, item 13.4.

Mr Brian Adolph of Niko Resources Ltd.

For the Respondents

Mr Derek Smith, Ms Tafadzwa Pasipanodya, Ms Oonagh Sands, Ms Alejandra Torres Camprubi, and Ms Anna Aviles-Alfaro of Foley Hoag LLP, Washington, D.C., Counsel for the Respondents;

Messrs Moin Ghani and Mr Imtiaz Uddin Ahmad Asif, Dhaka, co-counsel;

Mr Md. Atiquzzaman, Managing Director of BAPEX and Mr Syed Ashfaquzzaman, Secretary of Petrobangla;

Minister Nasrul Hamid, State Minister of Power, Energy and Mineral Resources, Ms Khadiza Nazneen, Ministry of Power, Energy and Mineral Resources, and

Ms Stephanie O'Connor of DOAR Litigation Support.

150. The Claimant stated that it had no objections to the presence of the representatives from non-parties.

151. The Parties presented on 21 February 2016 their Opening Statements, which, as agreed during the 28 January 2016 pre-hearing conference, consisted of their full legal argument on liability and answered questions from the Tribunal. Rebuttal presentations were delivered on the following day. Subsequently, each side presented its final observations in the form of a further rebuttal.

152. In response to an observation from the Respondents, the Tribunal reminded the Parties that the scope of the hearing and of the Tribunal's forthcoming decision had been described in Procedural Order No 12 and its accompanying annex. Accordingly, the scope included the question of the effect of Niko's operations on the long-term viability of the Chattak field, as it had been identified in item 4(vi) of the annex to that Procedural Order.

153. The following documents were entered into the record during the February 2016 Hearing:

- CH-8 – Outline of Niko's Oral Argument,
- CH-9 – Niko's Opening Presentation on the Legal Issues Relevant to Liability
- CH-10 – Niko's Rebuttal Presentation on the Legal Issues Relevant to Liability

- CH-11 – Niko's Rebuttal Presentation on the Technical Issues Relevant to Liability

- RH-7 – BAPEX's Presentation on Legal Issues
- RH-8 – BAPEX's Rebuttal Presentation on Shallow Gas Reservoirs
- RH-9 – BAPEX'S Rebuttal Presentation
- RH-10 – BAPEX's Rebuttal Presentation on Classification of Damages
- RH-11 – BAPEX's Rebuttal Presentation on Reasonable Operator Standard.

154. The Claimant objected to the reliance by the Respondents on independent opinions expressed by Mr Abel, the expert appointed by the Tribunal, in his report and during the November 2015 Hearing. The Claimant further recalled its written submissions made in this regard in its 31 August 2015 comments on the reports issued by the three Tribunal appointed experts. The Tribunal pointed out that it had heard three qualified experts, *i.e.* Mr Wright, Dr Adams and Mr Abel, and that it did not consider it justified to generally give less weight to the views of Mr Abel than to those of the other two experts. The Claimant's counsel agreed with this position, confirming that the best evidence for the Tribunal to turn to when determining the liability questions is the evidence of these three experts. The Claimant's counsel emphasised the differences in the standards and certain calculations applied by Mr Abel in his report. The Tribunal reiterated that it did not consider itself bound by any particular opinion or calculation of any of the experts and that the Tribunal members would apply their own minds to the issues they have to decide.[32]

155. During the afternoon of 22 February 2015, outstanding procedural questions were addressed. These included:

- The Respondents' 8 January 2016 document production request, as amended on 20 February 2016, was resolved.[33]
- On 19 February 2016 the Claimant had filed additional legal authorities stating that they were in response to the Respondents' 22 January 2016 Post-Hearing brief. The Respondents objected to

[32] See in particular Summary Minutes of the 21/22 February 2016 Hearing, item 13.2. The role of the Experts is discussed in further detail below in Section 7.5.
[33] See above Section 3.2.15.

the introduction of these documents by letter of 20 February 2016. At the Hearing the Tribunal allowed these decisions in the record.

- As pointed out above,[34] the Tribunal also addressed the Respondents' request for a 2014 version of exhibit C-110 (Well Control Manual) and requested the Claimant to deliver this document to the Respondents, without, however, taking any position with regard to its relevance.

156. All documentation introduced into the record in the course of the February 2016 Hearing were identified in the Summary Minutes, which were prepared by the Tribunal and distributed to the Parties after the hearing.

157. The hearing was recorded and the audio recording was uploaded subsequently to the file sharing account established for these proceedings. A verbatim transcript was also prepared by Ms Georgina Ford and Mr Ian Roberts of Briault Reporting Services Limited, which was distributed to the Parties and the Tribunal on each hearing day. As the hearing completed the proceedings on liability and no further submissions were foreseen, a simplified process for correcting the transcript, limited to checking references, was agreed at the end of the hearing.

3.2.17 Post-hearing developments: the Respondents' unsolicited submissions on shallow gas, open document production issues, and the suspension of the proceedings on Liability

158. Following the February 2016 Hearing, the Respondents wrote on 5 March 2016, asserting that, on the last day of the February 2016 Hearing, the Claimant had presented new arguments relating to "the definition of shallow gas and the extent to which Niko knew or should have known that it faced shallow gas risks prior to drilling the Chattak 2 Well". The Respondents alleged that the Claimant had distorted the facts and requested leave to respond to the new arguments. The Respondents did, however, not await a decision from the Tribunal on the admissibility of such a response but developed their argument over several pages.

159. The Respondents' letter was accompanied by a document from Niko entitled "Chattak Field Development Plan, December 2004" which, as the Respondents asserted, "BAPEX encountered […] two days ago when it was given access to documents in Niko's office in Dhaka". They requested that

[34] Section 3.2.14.

the document be admitted into the record, identified as Exhibit R-47. They added that "this document is also relevant for the Damages phase of the proceedings", adding that they would enter it on the record with the forthcoming submission on Damages.

160. The Respondents concluded by requesting "that the Tribunal recognize [BAPEX's] right to respond by accepting the present submission in response to new arguments related to shallow gas raised by Niko at the second Hearing on Liability".

161. The Tribunal considered this submission and on 14 March 2016 gave the following instructions:

> *The Claimant is invited to comment on this new submission by Wednesday 16 March, limiting its comments to the admissibility of this submission. If the Tribunals decide to admit the Respondents' 5 March 2016 submission and the new evidence, the Claimant will be given an opportunity to respond to the submission and the evidence in substance at a later time.*

162. In its submission of 16 March 2016, the Claimant objected to the Respondents' submission and described it as an "unsolicited post-post-hearing brief [and] an abuse of procedure that should be rejected". It asserted that the "new" points to which the Respondents referred had been argued previously and discussed in detail at earlier occasions where the issue of shallow gas had been addressed. The Claimant stated that the arguments in the 5 March 2016 submission could have been made at the February 2016 Hearing. "There is no justification for BAPEX's decision to wait until after the hearing to respond to points raised in Niko's Post-Hearing Brief and further articulated at the February Hearing."

163. Concerning the new exhibit, the Claimant wrote:

> *The new exhibit sought to be introduced to justify its untimely rebuttal is nothing more than pretext. This exhibit adds nothing new to the record. There has also been no opportunity for this document to be analysed and addressed by the witnesses or experts in this proceeding.*

164. The Claimant also objected to what it described as "new factual allegations without the slightest evidentiary support" and indicated some such factual allegation. It concluded by requesting the Tribunal "to deny BAPEX's request and rule it inadmissible".

165. By letter of 21 March 2016, BAPEX provided the Tribunal with a status update on the documents the production of which the Parties had agreed during the hearing at the February 2016 Hearing, specifying those **documents that remained outstanding**, and requesting the Tribunal to order the Claimant to produce the documents identified in that letter.

166. The request was overtaken by another request made by the Respondents, in a letter of 21 March 2016, by which they announced "new, recently obtained evidence of Niko's use of bribes and corrupt means to procure the JVA and GPSA". They concluded that "the Tribunal should not issue any further decision or award in the two proceedings without considering that evidence and our statements on it" and requested the "Tribunal defer its decision until after the 25th [March] and after its review of our pleading on this issue".

167. BAPEX and Petrobangla then filed their **Corruption Claim** in two separate documents on 25 March 2016, BAPEX's Memorial on Damages and a separate letter by Petrobangla. The Tribunal invited submissions from the Parties about the procedure for addressing this claim. The Tribunal issued Procedural Order No 13 on 26 May 2016. It decided to examine the Corruption Claim with priority and suspended all other proceedings, with the exception of a request for provisional measures that had been filed by the Claimant on 19 May 2016 in relation to the Payment Claim.[35]

168. With respect to the two procedural requests pending in the proceedings on the Compensation Claim, the Tribunal ordered:

> *The suspension applies to the Parties' procedural requests concerning the Compensation Claim, in particular the Claimant's request of 16 March 2016 concerning the Respondents' submission of 5 March 2016 and the Respondents' request of 21 March 2016 concerning a drilling manual of Niko and other documents. If these requests are still*

[35] Decision on the Corruption Claim, 25 February 2019, paragraph 66.

pertinent and pursued when the Tribunals' examination of the Corruption Issue has been completed, the Parties may renew them.

169. The Decision on the Corruption Claim was issued on 25 February 2019. When communicating that decision to the Parties the Tribunal informed them that:

> *The Tribunals will now resume their work on the decision concerning liability for the blowouts which had been put on hold by the Respondents' Corruption Claim. The Tribunals will then consult the Parties concerning further directions for the completion of the Arbitrations.*

170. Since then neither Party has renewed the procedural requests that had been reserved in Procedural Order No 13, as quoted above. The Tribunal nevertheless considered the requests concerning the Respondents' submission of 5 March 2016 with Exhibit R-47 and the Claimant's objections of 16 March 2016 below in Section 8.4.2, *in fine*. Concerning the documents which the Respondents had identified as still outstanding in their letter of 21 March 2016 and the explanations that had been provided by the Respondents on their relevance and materiality, the Tribunal concluded that they were not of critical importance for its Decision on Liability. It was comforted in this conclusion by the absence of a renewed request from the Respondents.

171. The Tribunal concludes that there are no procedural requests outstanding and that the Parties had full opportunities to provide argument and evidence in support of their positions concerning the liability for the blowouts. It resumed its deliberations and now makes its decision on liability, within the scope set out below in Section 6.

4. THE RELIEF REQUESTED

4.1 The Claimant

172. In its Notice to Arbitrate of 8 January 2010, Niko announced its intention to commence arbitration proceedings against BAPEX, Petrobangla and Bangladesh in respect to a dispute defined as follows:

> *(a) All claims held jointly or severally by any of Bapex, Petrobangla and Bangladesh to damages or losses alleged to arise from the blow outs of two wells which were then being drilled by Niko under the JVA in the gas field in Bangladesh known as the Chattak gas field (the "Compensation Claims"), including those arising from the matters alleged in either the Legal Notice dated May 27, 2005 issued on behalf of Petrobangla to Niko (a copy of which is attached) and/or in the pleadings filed on behalf of Petrobangla in the suit filed June, 2008 by Petrobangla and the Government of Bangladesh against Niko and others in the Court of District Judge, Dhaka, Bangladesh, no. 224 of 2008;*
>
> *(b) Whether Niko is liable for any of the Compensation Claims in whole or in part, and if it is liable, determination of the amount of liability;*
>
> *(c) [description relating to the Payment Claim]*[36]

173. In RfA I, dated 1 April 2010, Niko referred to the Notice to Arbitrate and quoted the definition of the Compensation Claim contained therein, stating its intent to have that Claim resolved by ICSID arbitration.

174. At the Preliminary Procedural Consultation and First Session on 14 February 2011, the Claimant's request for relief was defined as

> *… a declaration that it has no liability for any damage that may have arisen from the two well blow-outs which occurred on the Chattak wells and that it owes no compensation for such damage.*[37]

[36] Attachment D to the Request for Arbitration, dated 1 April 2010 (RfA I).
[37] Procedural Order No 1, second paragraph.

175. The Claimant specified its requested relief in its Memorial concerning the Compensation Declaration of 27 September 2013, seeking an award by the Tribunal

> *a. Declaring that Niko breached no obligation or law as concerns the two blowouts in 2005 at Chattak field and is not liable to BAPEX, its predecessors, assignors, successors or assigns;*
>
> *b. In the alternative, and in the event that the Tribunals find liability on the part of Niko, fixing the amount of any compensation due for any damages to BAPEX, its predecessors, assignors, successors or assigns;*
>
> *c. Declaring, for the purposes of the preceding declarations, that BAPEX is in all relevant respects the successor and assignee of the Government of Bangladesh and Petrobangla;*
>
> *d. In the event that BAPEX is not in all relevant respects the successor and assignee of the Government of Bangladesh and Petrobangla, declaring that BAPEX breached its warranty in the JVA that it had been assigned all relevant obligations and responsibilities of the Government of Bangladesh and Petrobangla;*
>
> *e. Declaring that Niko is entitled to any and all damages resulting from the continued pursuit of the Money Suit by the Government of Bangladesh and Petrobangla in Dhaka court as a consequence of the breach of the arbitration clause of the JVA and/or the warranty that BAPEX had been assigned all relevant obligations and responsibilities of the Government of Bangladesh and Petrobangla in the JVA;*
>
> *f. Ordering BAPEX to pay to Niko as compensation for said breach the amount corresponding to (i) all attorneys' fees, expert fees and other costs incurred by Niko in defending itself and its officers in the Money Suit; and (ii) any pecuniary difference between the findings of these Tribunals as to the extent of Niko's liability for the 2005 blowouts and the findings of any final judgment in the Money Suit;*

g. *Ordering that all sums awarded be in freely transferable and exchangeable funds, in accordance with the requirements of Article 26.1.6 of the JVA;*

h. *Ordering BAPEX to pay to Niko the costs of this arbitration, including professional disbursements;*

i. *Ordering BAPEX to pay to Niko interest on all sums awarded; and*

j. *Ordering such other and further relief as the Tribunals deem appropriate in the circumstances.*[38]

176. In its Reply concerning the Compensation Declaration of 29 May 2014, Niko presented a slightly modified request for relief as follows:

> *Niko respectfully submits that the Tribunals should issue an award in its favor and against BAPEX:*
>
> *(a) Declaring that Niko breached no obligation or law as concerns the two blowouts in 2005 at Chattak field and is not liable to BAPEX, its predecessors, assignors, successors or assigns;*
>
> *(b) In the alternative, and in the event that the Tribunals find liability on the part of Niko, fixing the amount of any compensation due for any damages to BAPEX, its predecessors, assignors, successors or assigns;*
>
> *(c) Declaring that BAPEX breached its warranties and misrepresented in the JVA that it had been vested with and assigned all relevant rights, obligations and responsibilities of the Government of Bangladesh and Petrobangla;*
>
> *(d) Declaring that Niko is entitled to any and all damages resulting from the pursuit of the Money Suit by the Government of Bangladesh*

[38] Niko's Memorial concerning the Compensation Declaration, 27 September 2013 (C-CD.1), paragraph 23

and Petrobangla in Dhaka court as a consequence of the abovementioned breach of warranty and misrepresentation;

(e) Ordering BAPEX to pay to Niko as compensation for said breach and misrepresentation the amount corresponding to (i) all attorneys' fees, expert fees and other costs incurred by Niko in defending itself and its officers in the Money Suit; and (ii) any pecuniary difference between the findings of these Tribunals as to the extent of Niko's liability for the 2005 blowouts and the findings of any final judgment in the Money Suit;

(f) Ordering that all sums awarded be in freely transferable and exchangeable funds, in accordance with the requirements of Article 26.1.6 of the JVA;

(g) Ordering BAPEX to pay to Niko the costs of this arbitration, including professional disbursements;

(h) Ordering BAPEX to pay to Niko interest on all sums awarded; and

(i) Ordering such other and further relief as the Tribunals deem appropriate in the circumstances.[39]

177. In the Post-Hearing Brief of 22 January 2016, Niko presented the relief requested as an award in its favour and against BAPEX in the following terms:

(a) Declaring that Niko breached no obligation or law as concerns the two blowouts in 2005 at the Chattak field and is not liable concerning the blowouts to BAPEX, its predecessors, assignors, successors or assigns;

(b) In the alternative, and in the event that the Tribunals find liability on the part of Niko, fixing in the hearing on quantum scheduled for

[39] Niko's Reply concerning the Compensation Declaration, 29 May 2014 (C-CD.2), paragraph 315.

August 2016 the amount of any compensation due for any damages to BAPEX, its predecessors, assignors, successors or assigns;

(c) Declaring that the Tribunals' determination of Niko's liability concerning the blowouts and any damages resulting therefrom is final and binding upon BAPEX and all of its predecessors, assignors, successors and assigns;

(d) Declaring that BAPEX breached its warranties and misrepresented in the JVA that it had been vested with and assigned all relevant rights, obligations and responsibilities of the Government of Bangladesh and Petrobangla;

(e) Declaring that Niko is entitled to be made whole for any and all damages resulting from the pursuit of the Money Suit by the Government of Bangladesh and Petrobangla in Dhaka court as a consequence of the above-mentioned breach of warranty and misrepresentation;

(f) Ordering BAPEX to pay to Niko as compensation for said breach and misrepresentation the amount corresponding to all attorneys' fees, expert fees and other costs incurred by Niko in defending itself and its officers in the Money Suit;

(g) Ordering BAPEX to pay on Niko's behalf the full amount of any damages assessed against Niko by a final judgment or decree in the Money Suit;

(h) Ordering BAPEX to pay to Niko the costs of this arbitration, including professional disbursements;

(i) Ordering BAPEX to pay to Niko interest on all sums awarded to Niko;

(j) Ordering that all sums awarded to Niko be in freely transferable and exchangeable funds, in accordance with the requirements of Article 26.1.6 of the JVA; and

(k) Ordering such other and further relief as the Tribunals deem appropriate in the circumstances.[40]

178. The relief requested in the Post-Hearing Brief was confirmed and clarified at the February 2016 Hearing.[41] In particular the Claimant confirmed that the "predecessors, assignors, successors and assignees" include Petrobangla and the Government.[42]

4.2 The Respondents

179. In response to the Requests for Arbitration and during the initial phase of the Arbitrations, the Respondents denied the Tribunal's jurisdiction with respect to all claims and requested their dismissal.

180. Following the Tribunal's Decision on Jurisdiction, BAPEX requested in its Counter-Memorial concerning the Compensation Declaration of 30 January 2014, at paragraph 89 that the Tribunal:

> *a. Declare that there is no legal dispute between BAPEX and Niko under the JVA;*
>
> *b. In the alternative, declare that BAPEX is not obligated to indemnify Niko for any damage resulting from the pursuit of the Money Suit by the Government of Bangladesh and Petrobangla in the Bangladesh courts;*
>
> *c. Dismiss all of Niko's claims against BAPEX;*
>
> *d. Award all costs, including legal representation, incurred by BAPEX in this proceeding.*[43]

181. In its Rejoinder concerning the Compensation Declaration of 25 September 2014, BAPEX continued to argue that Niko's real claim was against acts

[40] Niko's Post-Hearing Brief on Liability, 22 January 2016 (C-PHB), paragraph 431.
[41] HT 2016.02.21, page142 *et seq.*
[42] HT 2016.02.21, page 145.
[43] BAPEX's Counter-Memorial concerning the Compensation Declaration, 30 January 2014 (B-CD.1), paragraph 89.

of third parties and that there was no claim for BAPEX to answer. It concluded:

> *… the Tribunal should dismiss the claim in its entirety and award costs in [BAPEX] favour.*[44]

182. In its Post-Hearing Brief of 22 January 2016, BAPEX concluded:

> *The evidence on the record and testimony at the hearing demonstrate that Niko has not met its burden to prove that it is entitled to the relief it seeks. This Tribunal should reject Niko's request for a declaration on non-liability and its request for a finding of breach of warranty.*[45]

183. In its Memorial on Damages of 25 March 2016, the relevant parts of BAPEX's request stated the following relief:

> *BAPEX requests that the Tribunal:*
>
> *[…]*
>
> *f. In the alternative, should the Tribunal determine that the JVA is not voidable or voided, declare that Niko must compensate BAPEX for the harms arising from Niko's breaches of the JVA, including all losses resulting from the two blowouts that occurred at the Chattak Field;*
>
> *g. Order Claimant to pay damages of $118 million for BAPEX's losses;*
>
> *h. Should the Tribunal make a determination of the Government's losses, order Claimant to pay damages of $896 million for the Government's gas losses and between US$ 8,461,463 and $8,642,493 to cover the expenses of monitoring, surveying and abatement and to hold this proceeding open until such time as a complete survey and monitoring of the Tengratila area can be*

[44] BAPEX's Rejoinder concerning the Compensation Declaration, 25 September 2014 (B-CD.2), paragraph 103.
[45] BAPEX's Post-Hearing Brief on Liability, 22 January 2016 (R-PHB), paragraph 308.

conducted and BAPEX can provide the fullest possible accounting of environmental and health related losses;

i. Order prejudgment and post-award interest on all sums awarded;

j. Order Claimant to pay all the expenses and costs associated with defending against these proceedings, including BAPEX's attorneys' and expert witnesses' fees and expenses, the fees and expenses of ICSID and the members of the Tribunal, and the charges for the use of hearing facilities;

k. Grant BAPEX any other remedy that the Tribunal considers appropriate.[46]

184. On 29 April 2016 BAPEX modified its requests, making a change in item (f) and leaving items (g) to (k) unaltered:

f.) In the alternative, should the Tribunal determine that the JVA is not voidable or voided and proceed to adjudicate Niko's claims, declare that Niko must compensate BAPEX for the harms arising from amount it determines is owed by Niko for Niko's breaches of the JVA, including all losses resulting from the two blowouts that occurred at the Chattak Field.

[46] BAPEX's Memorial on Damages, paragraph 400.

5. SUMMARY OF THE RELEVANT FACTS

185. The facts of the disputes underlying these arbitrations have been broadly set forth in several of the Tribunal's earlier decisions. The brief summary below sets out the essential facts relating to the Chattak field and the present Decision, providing the background to the two blowouts which will be addressed in further detail below in Sections 8 and 9.

186. The **Chattak** field, sometimes also referred to by the name of the neighbouring village of **Tengratila**, in the Sylhet area in the far north-east of Bangladesh, was discovered in 1959 by Pakistan Petroleum Ltd., the predecessor of Petrobangla. The first well, Chattak 1 Well, was drilled in 1960, operated for some 25 years, producing some 26 bcf of gas. Increased water production forced Petrobangla to shut down the well in 1985.[47] This Chattak 1 Well is situated in the western part of the field, which is distinguished from the Eastern part, as described in particular in Section 9.5.1 of the Decision on the Corruption Claim.

187. In 1997, a blowout occurred in the **Moulavi Bazar** well, sometimes also referred to as Maguchora,[48] an exploration well drilled by Occidental Petroleum also in the Sylhet area.[49] The Parties disagree as to whether information concerning this well and this blowout was available to Niko before it drilled in the Chattak field.

188. Niko and its parent company Niko Resources Ltd (Niko Canada) were in contact with the Government of Bangladesh and the Respondents since 1997. In August 1999 Niko and BAPEX concluded a **Framework of Understanding** pursuant to which the produced in February a joint study on three marginal/abandoned fields, including the Chattak field. This study, entitled "**Marginal Field Evaluation Chattak, Feni and Kamta**", gathered information on the three fields.[50] It was decided that the Chattak and the Feni fields were promising enough to proceed. After protracted negotiations in which the Government and Petrobangla were actively involved, BAPEX and Niko concluded the JVA on 16 October 2003 relating

[47] Marginal Field Evaluation (Annex B to the JVA)(MFE), page B-6.
[48] *E.g.* in the Report on Environmental and Forrestry Losses (Annex R-1)
[49] Expert Report of John Wright, 29 May 2014 (Wright 1), page 17 and cross section at Figure 3-4 at page 18; Witness Statement of Brian Adolph, 28 May 2014 (WS Adolph), paragraph 77; Witness Statement of Mohammed Abdul Baqi, 27 October 2015 (WS Baqi), paragraphs 19 to 21.
[50] Both the Framework of Understanding and the Marginal Field Evaluation are attached to the JVA, Exhibit C-1.

to the Feni and the Chattak field. Niko was assigned the role of the Operator.

189. Following the conclusion of the JVA, the Joint Venture started its work in the Feni field where it drilled several wells, expecting that the Feni 3 Well could start production in July 2004. Production in the Feni field actually started on 2 November 2004.[51]

190. With respect to the Chattak field, Niko proposed, in addition to the agreed work programme, that a 3D Seismic Study be conducted during the dry season, starting in May 2004. The proposal was accepted at the 3rd meeting of the Joint Management Committee on 28 February 2004. On this occasion Niko also announced its intention to use for Chattak "the same drilling rig engaged for Feni [...] without demobilising the drilling rig from Bangladesh. This will save the joint venture over two million US dollars in mob and demob costs".[52]

191. On 24 November 2004, Niko announced to BAPEX that the drilling rig was being moved from Feni to Chattak and that it was in a position to start drilling in Chattak in early January 2005.[53]

192. On 14 December 2004 Niko sent to BAPEX the Chattak-2 Well Proposal. In its cover letter it stated that the proposal was "for your information and taking necessary actions".[54] No reaction from BAPEX had been received when, on 31 December 2004, Niko started drilling the **Chattak 2 Well**.

193. When the depth of 305m was reached, 13 3/8" casing and a Blowout Preventor (BOP) were installed, and the casing shoe set at 305m. Drilling continued to 807m when, **on 7 January 2005**, the drilling crew performed a wiper trip. In the course of that trip, **the first blowout occurred at 19:50h**. Details will be discussed below in Section 8.2.

194. The loss and damage caused by the blowout will be considered in further detail in the next phase of the proceedings, when the Tribunal will quantify the damage. The brief explanations here provide an overview of the events

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[51] For details about the production from the Feni field see in particular Decision on the Corruption Claim, pages 146 *et seq.*
[52] Minutes of the Joint Management Committee (JMC) Meeting, 28 February 2004, Exhibit C-12.
[53] Niko's Letter to BAPEX, 24 November 2004, Exhibit C-14.
[54] Niko's Letter to BAPEX, attaching Chattak-2 Well Proposal, 14 December 2004 (Chattak-2 Well Proposal), Exhibit C-15.

that followed and are without prejudice to the findings of the Tribunal in that future phase.

195. During the night of the blowout gas mixed with debris erupted from the Chattak 2 Well and blew up to 100m in the air. The rig collapsed and fell into the crater that had formed. The gas ignited and burned for several days.

196. Niko's personnel escaped safely, and no persons were injured; but damage was caused to the surrounding habitats and environment.

197. Niko's report of 11 January 2005 stated *inter alia*:

> *There were no injuries or fatalities. The flow was sweet dry gas with no liquids of any description.*
>
> *On 9 January 2005 at 09:30 am, flow diminished and extinguished.*
>
> *Area inspection indicated small flares through fissures in and around the drill site.*
>
> *Gas flare continues to decrease daily. The field is being monitored with daily site visits.*
>
> *Full investigation is underway by all parties concerned.*[55]

198. The First Enquiry Report by the Committee set up by the Government to determine the causes of the blowout noted as follows in its report of 7 February 2005:

> *Information gathered from eyewitnesses indicate that the flare height was maximum during first 42 hrs. (9 pm at 7.1.05 to 3 pm of 9.1.05). The flare height occasionally decreased during this period. The main fire ceased in the afternoon of 9 January 2005 but there were number*

[55] Chattak 2 Well Control Incident and Blowout – Draft Report, 11 January 2005 (Draft Report), Exhibit C-21.

of seepages where gas was burning. The height of these fire were 2 – 5 ft.[56]

199. Niko engaged Safety Boss Inc., a Canadian well control and safety consultant, whose representatives arrived on site on 9 January 2005. They issued a summary report on 24 January 2005, recommending further action.

200. The report of Safety Boss concluded that surface intervention was no longer possible and that sub-surface intervention, *i.e.* a relief well, remained the only option.[57]

201. Niko engaged GSM Consulting Petroleum Engineers (**GSM**) **the company of Robert Grace** by a consulting agreement dated 7 January 2005 (the date of the blowout[58]) for the relief well design and operation.[59] GSM prepared a Relief Well Program which Niko submitted to BAPEX on 13 February 2005, requesting a meeting on 15 February and a meeting of the JV Joint Management Committee (**JMC**)on 22 February 2005.[60]

202. The Joint Management Committee Meeting was held on 22 February 2005, but the revised minutes were completed only on 27 March 2005. In the meantime, BAPEX wrote on 16 March 2005, advising as to the desirability of an observation well and shifting the location of the position of the relief well; it requested that this comment be included in the minutes of the meeting of 22 February 2005.[61] On 17 March Niko requested Mr Grace to comment on the requested observation well. Mr Grace advised against drilling such a well. This exchange was attached to the revised minutes of 27 March 2005 which concluded that "observation well will not be required prior to drilling of the relief well".[62]

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[56] First Enquiry Report on Blowout of Well Chattak 2 on 7 January 2005, 7 February 2005 First (Enquiry Report), Exhibit R-3, paragraph 6.18. For a list of these reports, see below in this section.
[57] Safety Boss, Summary Report Covering the Period from 9 to 12 January 2005, Exhibit C-23.
[58] Mr Hornaday explained at the November 2015 Hearing that the date used was that of the blowout, but the contract was not signed on that date; HT 2015.11.05 (Day 4), page 1130.
[59] Consulting Agreement between Niko and GSM Consulting Petroleum Engineers, 7 January 2005, Exhibit C-18.
[60] Niko's Letter to BAPEX, attaching Relief Well Programme, 13 February 2005 (Relief Well Program), Exhibit C-28.
[61] BAPEX's letter to Niko, 16 March 2005, Exhibit R-36.
[62] Revised Minutes of JMC Meeting held on 22 February 2005, Exhibit C- 31.

203. The preparation of the relief well drilling required preparatory works and additional equipment which had to be brought to site, some of it from abroad. GSM prepared the drilling procedure for the relief well, **referred to as Chattak 2A Well**.[63] Drilling the relief well started on 30 May 2005 some 100m away from the blowout at the Chattak 2 Well. The Chattak 2 A Well also suffered **a blowout on 24 June 2005**. When the truck pumping water into the well ran out of fuel, the gas flow from the well ignited.

204. GSM then prepared drilling plans for (i) a **Data Acquisition Well** (referred to as **Chattak 2C well**) and, on the basis of the information from Chattak 2C and the previous wells and blowouts, for (ii) a **further relief well**, referred to the **Chattak 2B Well**. The drilling programmes for both wells was approved by the JMC at the meeting of 28 July 2005.[64]

205. The second relief well eventually was successfully completed on 9 October 2005, as Niko reported to BAPEX at a meeting of 16 October 2005.[65] The Parties disagree, however, about the question whether the relief operation fully prevented all gas flowing from Sands 1 and 2.[66]

206. Niko proposed to resume drilling in the Chattak field, drilling the **Chattak 3 well**. No agreement was reached between BAPEX and Niko in this regard.[67] Neither Chattak 3 nor any other well was drilled thereafter. The Claimant denies that the Chattak field was abandoned.[68]

207. Following the blowouts, several investigations were performed in Bangladesh. BAPEX described them in the annex to its Counter-Memorial concerning the Compensation Declaration of 30 January 2014;[69] and the Claimant discussed them in its Reply of 29 May 2014.[70] They can be grouped according to the subject matters:

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[63] Chattak 2A Relief Well Plan and Drilling Procedure, Exhibit C-86.
[64] Minutes of JMC Meeting, 28 July 2005, Exhibit C-3, page 6, Decision 1.
[65] WS Adolph, paragraphs 108 and 109.
[66] See *e.g.* BAPEX letter of 22 November 2005, Exhibit C-4, paragraph V and page 4 and WS Adolph, paragraph 108.
[67] WS Adolph, paragraphs 170 to 178; BAPEX's letter to Niko, 22 November 2005, Exhibit C-4.
[68] HT 2016.02.22,page 515.
[69] B-CD.1, Annex: Investigations into the blowouts and their consequences.
[70] C-CD.2.

208. The **causes of the two blowouts** were examined by

(a) An Enquiry Committee that produced an "Enquiry Report on Blowout of Well Chattak No. 2 on 7 January 2005", the report is dated 7 February 2005 (referred to below as the "**First Enquiry Report**");[71]

(b) A second Enquiry Committee examining the causes of the blowout of the relief well Chattak 2A; it produced a report on "The Blowout of Relief Well Chattak 2A (24th June 2005)", dated 13 August 2005 (referred to as the "**Relief Well Enquiry Report**").[72]

209. The **losses of gas** were examined by:

(a) The Committee for Estimating Gas losses caused by Blowout in Chattak-2, which produced its report on 4 June 2005;[73]

(b) The Committee for Estimating Gas Losses Caused by Chattak 2A Relief Well Blowout, which produced its report on 27 August 2005.[74]

210. The **environmental losses** were examined by:

(a) The Committee for Estimation of Environmental and Forestry Losses caused by the fire created in Tengratila Gas Field in Sunamgonj which produced its report dated 17 January 2005;[75]

(b) The Committee formed to estimate the amount of environmental losses caused by blowout explosion in Tengratila Gas Field, which produced its report dated 13 April 2005;[76]

(c) The Committee formed to estimate the amount of environmental losses due to the second blowout in Chattak Gas Field (Tengratila)

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[71] Enquiry Report, Exhibit R-3.
[72] Report of the Enquiry Committee on the Blowout of Relief Well Chattak 2A, 13 August 2005, Exhibit R-6.
[73] Report of the Committee for Estimating Gas Losses Caused by Blowout in Chattak 2, 4 June 2005, Exhibit R-2.
[74] Report of the Committee for Estimating Gas Losses Caused by Chattak 2A Well Relief Well Blowout, 27 August 2005, Annex R-4.
[75] Report of the Committee for Estimation of Environmental and Forestry Losses Caused by the Fire Created in Tengratila Gas Field, 17 January 2005, Annex R-1.
[76] Report of the Committee Formed to Estimate the Amount of Environmental Losses due to Blowout Explosion in Tengratila Gas Field, 13 April 2005, Annex R-2.

of Doarabazar Sub-District of Sunamganj District, which produced its report dated 15 September 2005.[77]

211. The **local losses** were estimated by the Committee formed to estimate the amount of local losses due to the fire incident in Tengratila Gas Field, which produced its report dated 8 June 2005.[78]

212. Niko also engaged specialists to examine the consequences of the blowouts and for environmental monitoring, in particular Mr Randal Glaholt and his company TERA Environmental Consultants, Canada, and Crown Agents, UK. This activity has been described in particular in Mr Glaholt's witness statement and 20 Environmental Monitoring Reports, as listed in this witness statement, of which some have been produced in the arbitrations.[79]

213. The Government of Bangladesh and Petrobangla, following a legal notice of 27 May 2008, initiated on 15 June 2008 legal action in the Court of District Judge, Dhaka against Niko and others. The proceedings, referred to as the **Money Suit**, and other court proceedings in Bangladesh related to Niko's contracts, have been discussed in previous Decisions of the Tribunal, most recently in Sections 2.5 and 2.6 of the Decision on the Corruption Claim.

214. In the Money Suit, the Government and Petrobangla claim compensation for "losses sustained due to burning of gas and destruction of mineral resources and natural resources which are mainly losses of movable property".[80] These losses relate to the loss and damage caused by the two blowouts in the Chattak field which are the subject matter of the present arbitrations. They are then specified in four Schedules with the following titles:

Schedule A: Gas burnt at Chattak field,

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[77] Report of the Committee Formed to Estimate the Amount of Environmental Losses due to 2nd Blowout in Chattak Gas Field, 15 September 2005, Annex R-5.
[78] Committee Formed to Estimate the Amount of Local Losses due to Fire in Tengratila Gas Field, 8 June 2005, Annex R-3.
[79] *E.g.* Tera's Environmental Site Inspection Report, 26 January 2005, Exhibit C-25, and Crown Agents and Tera Consultants Biweekly Reports, the first of which dated 28 February 2005, Exhibit C-29.
[80] Complaint, *People's Republic of Bangladesh v. NIKO Resources (Bangladesh) Ltd.*, Money Suit No. 224/2008 (2d Court of Joint District Judge) (Bangl.) , Exhibit C-6, paragraph 65.

Schedule B: Sub-surface loss at Chattak field,
Schedule C: Additional sub-surface loss at Chattak field,
Schedule D: Environmental Losses at Chattak Gas Field.

215. The Respondents reported on the status of the Money Suit in their submission of 19 October 2015.[81] By that time, an application for a stay of the proceedings by Niko was pending. The Respondents expressed the view that, given Niko's applications, "the Money Suit is unlikely to be completed within the next two years".[82]

216. Subsequently, the Claimant informed the Tribunal that Petrobangla was "actively and vigorously pursuing" the Money Suit and that the court was "currently hearing witness testimony from various officers and representatives from Petrobangla, the Government of Bangladesh, and BAPEX on the blowouts and the consequences of the blowouts at Chattak". It added that on 25 July 2016, "Niko filed an application for adjournment based on the Tribunals' Decision on Exclusivity" and that this application was rejected on 8 August 2016. The Claimant also mentioned that on 24 May 2016 the High Court Division directed the Money Suit court "to proceed to complete the trial of the suit as expeditiously as possible preferably within 4 (four) months from the date of receipt of this order."[83]

217. The latest information made available to the Tribunal about these proceedings are references to the Money Suit contained in the written version of the *Alam* Judgment of November 2017. The judgment mentions information provided by counsel, stating that the case is "now pending".[84]

[81] B-CD.9, pages 24 – 28.
[82] B-CD.9, page 26.
[83] Claimant's letter of 12 August 2016, quoted in the Decision on the Corruption Claim, paragraph 355.
[84] See Decision on the Corruption Claim, paragraph 358.

6. THE SCOPE OF THE PRESENT DECISION

6.1 The issues relevant for the Compensation Declaration

218. On the basis of the Parties' requests for relief, in their latest versions as set out above in Section 4, the Tribunal has identified the following issues for determination in the proceedings related to the Compensation Declaration:

(i) Clarification of the Tribunal's jurisdiction concerning Niko's liability to BAPEX under the JVA;

(ii) Determination whether the Tribunal's findings on Niko's liability for the blowouts are final and binding also on the Government and Petrobangla;

(iii) Any breach of warranties by BAPEX as the party to the JVA and possible sanctions for such breach;

(iv) The obligations and laws applicable to Niko's operations relevant for the two blowouts;

(v) Any conduct by Niko in breach of such obligations and laws which is causal for the blowouts;

(vi) Determination of Niko's liability;

(vii) If liability is found, determination of the amounts of compensation owed by Niko;

(viii) Interest;

(ix) Cost of the arbitrations in relation to the Compensation Declaration proceedings.

219. The Tribunal will start by clarifying jurisdictional and related issues as set out in items (i) and (ii) above. It will then address the Claimant's related claim for breach of warranties (item iii). It will complete this section by determining the issues ready to be decided, specifically addressing items (iv) to (vi) above. Based on the Tribunal's conclusions, items (vii), (viii) and (ix) will be addressed in the next phase of these arbitrations.

6.2 The Tribunal's jurisdiction with respect to Niko's liability to BAPEX under the JVA

220. In the Decision on Jurisdiction the Tribunal held:

> *There can be no doubt that the Tribunal has jurisdiction to determine whether Niko has any liability for the two blowouts under the JVA and to make the requested declaration if it deemed it to be well founded.*[85]

221. Subsequently, in the Counter-Memorial concerning the Compensation Declaration, the Respondents argued that the question of Niko's liability arose in the Money Suit only, outside of the Tribunal's jurisdiction. The Respondents denied that there was a dispute under the JVA. The Respondents were seeking in these arbitrations as relief a declaration "that there is no legal dispute between BAPEX and Niko under the JVA". They argued that "the Money Suit litigation is the only source to establish which entity is invoking Niko's liability".[86] They added:

> *BAPEX continues to express no opinion on […] the alleged liability of Niko in connection with the blowouts.*[87]

222. In the Rejoinder concerning the Compensation Declaration, the Respondents confirmed this position in clear terms, asserting that BAPEX "has never invoked Niko's liability for the two blowouts".[88]

223. After the change of counsel, the Respondents reversed their position and applied on 13 August 2015 for Provisional Measures. They argued that, contrary to Niko's assertions, the second relief well, Chattak 2B, had not successfully arrested the flow of gas following the blowouts.[89] Relying on a recent visit to the Chattak field in 2015 they asserted that "large volumes of gas continue to escape from the Chattak gas deposit".[90] They requested the Tribunal to order certain emergency measures for the protection of the local population and interventions to stop the gas flows.

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[85] Decision on Jurisdiction, paragraph 497.
[86] B-CD.1, paragraphs 89 (a) and 85.
[87] B-CD.1, paragraph 86.
[88] B-CD.2, paragraph 2.
[89] BAPEX's Request for Provisional Measures, 13 August 2015 (B-CD/PM), paragraph 15.
[90] B-CD/PM, paragraph 2.

224. The Respondents then commented on the Tribunal's experts' reports and filed their own experts' reports with their submission of 31 August 2015. Relying on the explanations of the Tribunal's experts and on those of their own experts, the Respondents now presented conclusions on Niko's liability under the JVA. In the August 2015 submission, the Respondents addressed Niko's alleged breaches of its obligations and the damage caused, concluding:

> *Pursuant to the express terms of the JVA, Niko is solely liable for these harms and must compensate all injured parties.*[91]

225. On 17 September 2015, the Respondents reversed their position concerning their claim for seepages under the JVA in these arbitrations. They declared that "claims arising from gas seepage caused by Niko's blowouts at the Chattak field after 9 October 2005" did "not relate to the subject matter of the dispute" and withdrew the request for provisional measures.[92]

226. In the subsequent phases of these proceedings, the Respondents continued to address Niko's alleged breaches and its liability. In their Post-Hearing Brief of 22 January 2016, the Respondents dealt in great detail with what it considered to be breaches of Niko's obligations concerning its "conduct of Petroleum Operations" as set out in Article 26.2.4 of the JVA and the relevant standards.[93] They asserted that Niko breached these standards when planning and drilling the Chattak 2 and 2A wells and that these breaches caused the blowouts[94] and thus caused injury to BAPEX.[95]

227. In their Post-Hearing Brief of 22 January 2016, the Respondents included a section entitled "The Breaches Caused and Exacerbated the Effects of the Blowouts, Causing Injury to BAPEX". In this section they addressed some aspects of the damage caused by the blowouts. They asserted again that "Niko is liable to BAPEX under the JVA for lost profit and lost production as a result of the two blowouts"[96] and concluded that "[m]ost

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[91] BAPEX's Comments on the Reports of the Tribunal Experts, 31 August 2015 (B-CD.3), paragraph 69.
[92] For details see above Section 3.2.5.
[93] In particular in R-PHB, pages 7 – 38.
[94] In particular R-PHB, pages 69 – 73 and 74 – 89.
[95] R-PHB, pages 89 – 92.
[96] R-PHB, page 103, title IV.A , also section III.

of this will be dealt with in the next stage of this proceeding, when BAPEX presents the quantum of harm caused".[97]

228. The Respondents nevertheless argued in the same Post-Hearing Brief that

> *… BAPEX has only responded to Claimant's expert report and the Tribunal Expert Report to rebut the limited and specific evidence Claimant put forth for its assertion that it is entitled to a declaration of non-liability for the damages resulting from the two blowouts. BAPEX has not presented a full case for liability. If it had intended to make and prove claims against Niko, BAPEX would have submitted much more complete expert reports, witness statements, and documentary evidence on all issues, not just in response to what Claimant presented.*[98]

229. In its Memorial on Damages of 25 March 2016 BAPEX made several requests concerning the alleged corruption in the procurement of the JVA. In the alternative that the JVA were not voidable or voided, BAPEX made the following request:

> *… Declare that Niko must compensate BAPEX for the harms arising from Niko's breaches of the JVA, including all losses resulting from the two blowouts that occurred at the Chattak field …*[99]

230. It is thus abundantly clear that both the Claimant and the Respondents are of the view that there is indeed a dispute before this Tribunal about Niko's liability under the JVA for the blowouts and the resulting loss and damage. The Tribunal has noted elsewhere occasional prior statements by the Respondents which imply otherwise. What matters, however, is that the dispute between the parties in these arbitrations concerns Niko's liability under the JVA. Had there been any doubt in this respect, it was removed by the relief requested in BAPEX's Memorial on Damages of March 2016. In that submission, BAPEX made formal claims in the present arbitrations in relation to the JVA and accepted that the Tribunal is to determine Niko's liability for these claims under the JVA. The Tribunal's jurisdiction concerning Niko's liability to BAPEX under the JVA,

[97] R-PHB, paragraph 205.
[98] R-PHB, paragraph 9.
[99] BAPEX's Memorial on Damages, 25 March 2016 (B-MD), paragraph 400(f).

decided already in the Decision on Jurisdiction, is thus not questioned any longer.

6.3 The effect of the Tribunal's findings concerning Niko's liability on the Government and Petrobangla as assignors

231. The Claimant's principal request with respect to the Compensation Declaration is a statement of non-liability:

> *(a) Declaring that Niko breached no obligation or law as concerns the two blowouts in 2005 at the Chattak field and is not liable concerning the blowouts to BAPEX, its predecessors, assignors, successors or assigns;*

232. This request concerns liability to BAPEX, expressly named in the request, and Niko's liability to the Government and Petrobangla, as BAPEX's predecessors and assignors.

233. The Respondents have insisted that the claims against Niko for loss and damage resulting from the blowouts are in fact pursued by the Government and Petrobangla in the courts in Bangladesh in the Money Suit, and are "unrelated to the JVA". They thus contend, in essence, that these claims are outside the jurisdiction of this Tribunal.

234. The Claimant based the request for a decision concerning the Government and Petrobangla on the assignment of rights to BAPEX. The Claimant confirmed that, in its position,

> *… the Government and Petrobangla are predecessors and assignors of BAPEX and therefore the declaration that we are requesting does concern them.*[100]

235. The Tribunal considers first this assignment and its scope. In the subsequent sections, the Tribunal will examine the Claimant's argument based on the approval of the JVA by the Government and Petrobangla and then the rights which, according to the Respondents, the Government and Petrobangla had not assigned to BAPEX and on which they relied in the Money Suit.

[100] HT 2016.02.22, page 549.

6.3.1 The assignment of rights from the Government and Petrobangla to BAPEX (paragraph 12 of the JVA Preamble)

236. Reference to the assignment is made in **Paragraph 12 of the JVA Preamble**, which states the following:

> *BAPEX is vested with all rights free from all encumbrances and liabilities whatsoever to assign, develop, produce, process, refine and distribute 100% (One hundred percent) of all Petroleum resources from or within the territory of the Marginal/Abandoned gas fields of Chattak & Feni …*[101]

237. When referring to the rights "vested" in BAPEX according to paragraph 12 and "acquired" by BAPEX according to paragraph 14 of the JVA Preamble, the Parties have often use the term "**assigned**".[102] The Tribunal will do likewise, assuming that, for the issue to be decided here, there is no essential difference between these three terms.

238. Concerning **the act of assignment** and the **instrument where it is recorded**, the Claimant has stated that "the Respondents have produced no instrument effecting the vesting of rights and assignment of obligations represented in the warranties",[103] as contained in the Preamble of the JVA.

239. The Tribunal sees no difficulty in the fact that no instrument of assignment has been presented in the arbitrations: paragraph 12 of the JVA Preamble reports that BAPEX was vested with the relevant rights and the Government and Petrobangla approved the statement. All three parties to the assignment thus confirmed that the assignment had taken place. For the issues to be considered here, no further evidence of the assignment is required.

240. The Parties differ with respect **the scope of the assignment** and **the rights that were assigned to BAPEX**. There is no difference, however, that, in the context of the present dispute, the question must be determined on the basis of the JVA.

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[101] JVA, Exhibit C-1, Preamble, paragraph 12.
[102] For the Claimant see, *e.g.* C-PHB, paragraph 336; for the Respondents see *e.g.* R-PHB, paragraph 283.
[103] C-PHB, paragraph 291.

241. **The Claimant** relies on paragraphs 12 and 14 of the JVA Preamble and insists on "the comprehensive nature of the rights vested in BAPEX".[104] In this context the Claimant has identified the rights to "develop" and to "produce" Petroleum resources as "key for petroleum operations".[105] For the issue to be considered here, these two rights do indeed seem to be the most relevant. The Tribunal therefore will use, unless otherwise stated, the **right to develop and produce Petroleum resources** as a shorthand expression for all rights listed in paragraph 12 of the JVA Preamble.

242. **The Respondents** accept the principle of the assignment of some rights to BAPEX, but contest its scope. They deny that the assignment of rights was of a "comprehensive nature" as argued by the Claimant. In a first phase of the arbitration, they sought to limit the scope of the assignment and the resulting role of BAPEX to that of a **management company**, **monitoring Niko as the operator**. They argued in the Counter-Memorial that BAPEX was "a management company", to which the Government and Petrobangla assigned "the management of the petroleum operations in the country"; BAPEX's "primary role was to monitor the performance of the joint operations by the operator in order to secure a direct share of the produced petroleum for Bangladesh".[106] The Respondents described the assigned rights as "the rights of the Government and Petrobangla to monitor – as a management company – the performance of the operations carried out by the operator".[107]

243. The Claimant responded by insisting on the "broad and encompassing" scope of the assigned rights. Considering paragraph 12 of the JVA Preamble, the Claimant wrote:

> *The provision's breadth is emphasized by the use of the word "all" two times as well as the term "one hundred percent". "One hundred percent" of "all" leaves no room for doubt that every aspect of Petroleum resources at the fields were vested. The use of the term "vested", particularly in conjunction with the phrase "free from all encumbrances and liabilities whatsoever", emphasizes that BAPEX's*

[104] C-PHB, paragraph 307.
[105] C-PHB, paragraph 313.
[106] B-CD.1, paragraphs 17 and 24 and FN23.
[107] B-CD.1, paragraph 61(2).

rights to the Petroleum resources were present, unconditional and absolute.[108]

244. In its Rejoinder, the Respondents then argued:

BAPEX has never disputed that certain rights and responsibilities of the Government and Petrobangla were assigned to BAPEX in order to achieve its objective, namely to explore, develop and produce gas in the JVA gas fields. It has never been BAPEX's position that the only right assigned to it was to "monitor" the performance of the operator. A plain reading of the JVA and the relevant laws in Bangladesh shows that the Government of Bangladesh and Petrobangla assigned to BAPEX the management of the petroleum operations in the JVA area. This is not in dispute.[109]

245. Considering the question "what rights did the Government and Petrobangla assign to BAPEX", the Respondents stated:

Bangladesh law and the JVA make clear that the Government and Petrobangla assigned to BAPEX the right to conduct exploration and production of natural gas in the JVA area. In addition, BAPEX has been assigned the right to carry out such operations in partnership with private companies. By granting Niko the right to become the sole operator of the JVA operations, BAPEX's residuary role in the JVA project was to monitor the performance of the JVA operations by Niko, the operator.[110]

and

… BAPEX had the responsibility to operate and manage oil operations and had the right to assign such management rights to private companies and form joint ventures with such companies.[111]

246. **The Tribunal** does not believe that Niko's role as Operator under the JVA left BAPEX with a "residuary role" of monitoring the performance of Niko. In any event, later in the arbitrations the Respondents did not pursue the

[108] C-CD.2, paragraph 215.
[109] B-CD.2, paragraph 6, emphasis in the original.
[110] B-CD.2, paragraph 34.
[111] B-CD.2, paragraph 50.

theory of BAPEX's role as monitoring; instead they sought to identify specific rights that had not been assigned, an argument to be examined separately below in Section 6.3.3.

247. Before considering these excluded rights, the Tribunal will now examine the scope of the rights assigned to BAPEX, as they were listed in paragraph 12 of the Preamble. The examination concerns specifically the question whether this assignment of rights extended to the **comprehensive regulation of Niko's activities in the Chattak field**, including the definition of the rules to be observed and liability in the event of their breach.

248. Examining this question, the Tribunal considers first the legal basis on which the assignment took place, as reported in the Preamble to the JVA, which recalls in its paragraph 1 that "[a]ll mineral resources including Petroleum [in Bangladesh] are vested in the Peoples Republic of Bangladesh".

249. The Preamble continues, in paragraph 2, that the Government has "the exclusive right and authority to explore, develop, exploit, produce, process, refine and market Petroleum Resources within the territory [...] of Bangladesh". The Government also has "the exclusive right to enter into Petroleum Agreements with any person for the purpose of Petroleum Operations"; and, as confirmed in paragraph 3 of the Preamble, Petrobangla has the power to exercise these rights and powers of the Government.

250. Based on these rights and on this authority, the Government and Petrobangla vested in BAPEX these rights with respect to specified activities in a specific area. The rights concern "100% (one hundred percent) of all Petroleum resources" and apply in particular to the development and production of these resources in the Chattak field. This, too, is recorded in the Preamble of the JVA, and in paragraph 12, quoted above.

251. Vested with these rights, BAPEX concluded the JVA with Niko. This agreement regulates, as stated in its title, the "Development and Production of Petroleum from the Marginal/Abandoned Fields of Chattak and Feni". In the context of the present dispute, the following areas of this regulation may be mentioned:

- The JVA confers on Niko the role of the Operator and defines in particular in Article 26 of the JVA, the "Rights and Obligations of [Niko as the] Operator";

- Specifically in its Article 26.2.4, the JVA sets the standard for Niko's "conduct [of] all Petroleum Operations".

- It regulates, in particular in Article 27.2 of the JVA, "responsibility in accordance with laws applicable in Bangladesh for any loss or damage to third Parties caused by the wrongful or negligent acts or omissions of the Operator …";

- It provides for indemnification of BAPEX and the Government and for a limitation of liability; it prescribes, in particular in Article 27.1 of the JVA, responsibility for the environment;

- It regulates the production and sale of Petroleum and the allocation of the revenue from such sale; and

- It regulates, in Article 18 of the JVA, the settlement of "any dispute arising in connection with the performance or interpretation of any provision of this JVA …"

252. The regulation established in the JVA extends to all aspects of the development and production of Petroleum resources in the Chattak field, in the same way as the Government and Petrobangla could have disposed in the absence of the assignment of rights to BAPEX.

253. The situation under the JVA can be compared to that under **the PSC for Block 9** which the Claimant discusses in some detail in the context of Article 27.2 of the JVA and its limitation of liability. This clause in the JVA is indeed practically identical with Article 10.1.21 of the 2001 PSC.[112] The PSC was concluded in 2001, some two years before the JVA, by the Government, Petrobangla and BAPEX with three IOCs.

254. The Preamble of that PSC contains the same first three paragraphs as those of the JVA, describing the vesting of Petroleum Resources and the rights of the Government and Petrobangla. The remainder of the Preamble in the PSC is much shorter. In particular it does not contain any provision

[112] See in particular the discussion in C-CD.2, paragraphs 67 – 72, and C-PHB, paragraph 332.

similar to paragraphs 12 and 14 of the JVA's Preamble, relating to the assignment to BAPEX. Such provisions have indeed no place in the 2001 PSC since the Government and Petrobangla are directly committed by the contract as parties to it. In the JVA, however, the direct commitment by the Government and Petrobangla is replaced by the assignment of their relevant rights to BAPEX.

255. In other words, in the JVA BAPEX stepped into the shoes of the Government and Petrobangla as their assignee and regulated the development and production of Petroleum from the Chattak field as they could have done in the absence of the assignment. As a consequence of this assignment, BAPEX as the assignee assumed their role and exercises their rights. The Government and Petrobangla, the assignors, may not exercise the assigned rights; they are bound by the regulation determined by BAPEX, their assignee in the JVA.

6.3.2 The approval of the JVA by the Government and Petrobangla (paragraph 14 of the JVA Preamble)

256. BAPEX warranted in the JVA that the Government and Petrobangla had approved execution of the JVA. **Paragraph 14 of the Preamble** stated expressly:

> *BAPEX warrants that it has acquired from Petrobangla and the Government the requisite approvals to execute this JVA. The responsibilities and obligations of Petrobangla and the Government in all relevant Articles, Annexes and Amendments under this JVA has been assign[ed] to BAPEX.*

257. The two sentences of this paragraph deal with different issues and are of unequal relevance for the issue of assignment.

258. In the **first sentence** of paragraph 14 of the Preamble, BAPEX warrants that it has acquired from Petrobangla and the Government the requisite approvals to execute this JVA. As the Tribunal noted in the Decisions on Jurisdiction and on the Corruption Claim, the evidence before the Tribunal confirms that this warranty is in line with the evidence produced in these arbitrations.[113] As observed there, the text of the JVA had been negotiated

[113] See in particular section 3.1 of the Decision on Jurisdiction and the Decision on the Corruption Claim, in particular sections 4.1 and 9.8.

under direct supervision and direction of the Government and Petrobangla and was approved before the JVA was executed by BAPEX and Niko.

259. The sentence is of particular importance for the ability of the Government and Petrobangla to assert claims for liability: this sentence confirms that the Government and Petrobangla had not just assigned to BAPEX the right to develop and produce gas from the Chattak field; they also had approved the specific terms of this development and production, as they were set out in the JVA. Nor did the Government and Petrobangla merely approve the execution of a JVA that remained to be negotiated; they endorsed a specific text, the execution of "this JVA". The analysis of the evidence in the Tribunal's decisions on Jurisdiction and on the Corruption Claim shows the extent to which the Government and Petrobangla were involved in establishing the terms of the JVA.

260. In view of this approval of the very text of the JVA, the Government and Petrobangla may not argue that the regulations in the JVA exceed the scope of the rights assigned to BAPEX or that they do not agree with any of the terms of the JVA.

261. As to the **second sentence** of paragraph 14 of the Preamble, the Claimant stated that this paragraph "recognizes that the JVA contains provisions that specifically or implicitly refer to the Government or Petrobangla's obligations and responsibilities" and concluded that with respect to those obligations "BAPEX was to stand in the shoes of the Government and Petrobangla".[114]

262. The Respondents argued that paragraph 14 does not expand the rights "enumerated with specificity in paragraph 12" of the Preamble.[115] They identify specifically "relevant Articles" in the JVA which contain the "responsibilities and obligations of Petrobangla and the Government" to which the second sentence refers. These concern in particular import licenses and taxes (Article 11.4) and Niko's money transfers and remittances (Article 19).[116] These are indeed substantive matters which

[114] C-PHB, paragraph 324.
[115] B-CD.9, page 14.
[116] R-PHB, paragraphs 280 – 283. The Respondents also list a number of other Articles in the JVA referring to Petrobangla and the Government which either have "purposes other than the assignment of responsibilities and obligations to BAPEX" or create obligations for Niko, rather than assign responsibilities and obligations to BAPEX, "none of which can be read to enlarge the scope of 'responsibilities and obligations' assigned to BAPEX" (R-PHB, paragraph 285).

might not necessarily be included in the assignment of rights concerning the development of Petroleum resources in the Chattak field. There might be circumstances where they merit separate regulation.

263. In any event, the Tribunal is satisfied that the assignment of rights concerning the development and production of Petroleum resources to BAPEX is recorded in paragraph 12 of the Preamble. It considers that there was no need for a separate confirmation in paragraph 14. The Tribunal therefore understands the second sentence of that paragraph to relate to other issues.

6.3.3 The rights allegedly excluded from the assignment

264. In the two preceding sections the Tribunal has explained that the rights assigned by the Government and Petrobangla to BAPEX, as they were listed in paragraph 12 of the Preamble, concern all aspects of the development and production of Petroleum from the Chattak field. It concluded from the approval of the JVA by the Government and Petrobangla that the substantive matters regulated in the JVA all are covered by the assignment of rights to BAPEX.

265. In their submission of 19 October 2015, the Respondents referred to their earlier submissions quoted above in Section 6.3.1 and maintained that the Government and Petrobangla had "assigned to BAPEX the right to conduct exploration and production of natural gas in the JVA area". They went on to interpret paragraphs 12 and 14 of the JVA Preamble. Referring to the Claimant's assertion that "BAPEX had been assigned all relevant rights and responsibilities of the Government and Petrobangla", the Respondents accepted that, in paragraph 12, "the phrase 'all rights', if left unqualified, might have the meaning attributed by Niko". They added, however, that the passage is "qualified with a limitation to specifically enumerated rights" and went on to explain:

> *The JVA does not refer to "all rights" or "all relevant rights" it refers to "all rights […] to assign, develop, produce, refine and distribute" the petroleum in the fields subject to the JVA. Based on its plain meaning, this provision refers to only specific rights to explore, develop, and produce gas in the JVA gas fields. These rights correspond to BAPEX's raison d'être expressed in its constitutive document. They also correspond to the object of the JVA: to carry out "Development and*

Production of Petroleum from the […] gas fields Chattak and Feni […].” Paragraph 12 does not mention any other rights of the Government or Petrobangla. This means it excludes all other rights. Expressio unius est exclusio alterius.[117]

266. The position was confirmed later in the arbitrations. In their Post-Hearing Brief, for instance, the Respondents confirm their understanding that the rights listed in paragraph 12 of the JVA Preamble “correspond to the object of the JVA” and to “BAPEX’s *raison d’être*”. They argue that “all other rights not listed” in paragraph 12 are excluded from the assignment.[118]

267. The Respondents thus maintain that the development and production of Petroleum from the Chattak field was the object of the JVA. They argue, however, that, **apart from the rights concerning the development and production of Petroleum**, as regulated in the JVA, the Government and Petrobangla had other rights. These other rights were not included in the assignment and, according to the Respondents, justify separate action by the Government and Petrobangla invoking Niko’s liability for the blowouts in the Chattak field.

268. The Respondents identify **four rights** which, according to them, were “**not assigned to BAPEX** in the JVA [and] remained with the Government, Petrobangla and/or the people and Republic of Bangladesh”.[119] These rights allegedly excluded from the assignment were first enumerated in the submission of 19 October 2015. The list was then repeated and developed in the Respondents’ Post-Hearing Brief in the following terms:

> *(i) the Government’s and Petrobangla’s right to choose the forum and consent or not to arbitration for resolution of their disputes, or the subject matter of their disputes, with Niko;*
>
> *(ii) the Government’s and Petrobangla’s rights to seek compensation for torts against them committed by Niko;*

[117] B-CD.9, page 13, references omitted; in the same terms R-PHB, paragraph 277.
[118] R-PHB, pargraph 277.
[119] B-CD.9, page 14.

(iii) the Government's right to enforce its environmental laws and seek compensation for environmental harm; and

(iv) ownership rights over Bangladesh's natural resources in the subsoil vested in the Republic.[120]

269. The Claimant addressed these issues at the February 2016 Hearing. Referring to passages of the Complaint in the Money Suit which described Niko's obligations as operator by reference to the standards defined in Article 27.2 of the JVA, the Claimant argued that the Government is seeking in the Money Suit "payment of money for Niko's alleged breach of the JVA".[121] It then addressed each of the four excluded rights, describing them as an "attempt to redefine the rights relevant to this arbitration [which] amounts to little more than rhetoric".[122]

270. The Tribunal now examines the Respondents' argument as advanced in these arbitrations with respect to each of these allegedly excluded rights. The Tribunal's specific objective is to determine with respect to each of these rights whether it was indeed excluded from the assignment to BAPEX and, if it was, whether this exclusion justifies the conclusion that Niko's liability for loss and damage caused by the blowouts may be determined not (or not exclusively) under the JVA in the present arbitrations but, on the basis of different rights and rules, in the separate action of the Money Suit.

271. The right in the Respondents' list that has an apparently clear link to the Petroleum resources in the Chattak field is that of the Government's asserted **ownership of subsoil resources (item iv of the Respondents' list of excluded rights)**.

272. The legal status of the Petroleum resources in the Chattak field have given rise to some controversy, as follows.

273. The Claimant quoted from the testimony of Mr Imam Hossain, the Secretary of Petrobangla, who had testified at the Jurisdiction Hearing that ownership of the field and of the gas in it had been transferred to

[120] R-PHB, paragraph 267; the list is repeated at paragraphs 278 and 286.
[121] RH 2016.02.21, page 136.
[122] RH 2016.02.21, page 139.

BAPEX.[123] The Claimant took this as evidence that "during the jurisdictional phase the Respondents' position as to BAPEX's rights and responsibilities fully accorded with Niko's understanding that BAPEX had been vested with all relevant rights".[124]

274. Referring to the Constitution of Bangladesh and the Petroleum Act, the Respondents asserted that the Government remained the owner of the Petroleum resources in the Chattak field before they were extracted.[125] They added that "BAPEX is not the owner of the subsoil gas in the Chattak Field, and there is no contrary warranty in the JVA".[126]

275. The Claimant emphasised the difference between the asserted rights of ownership to the gas *in situ* on which the Respondents relied and the right to exploit the resource. It stated that "neither the Money Suit nor this arbitration is concerned with the ownership of subsoil resources". Both are "concerned with economically valuable rights to gas from or within the Chattak field, not title to that gas, BAPEX warranted in the JVA that it was vested with 100 per cent of all economically relevant rights to that gas."[127]

276. The Respondents argue to the contrary that, despite the assignment of the right to develop and produce to BAPEX, the ownership right, which according to them remained with the Government, had a high value to the latter, distinct from that of the right to develop and produce; and that value was affected by the blowouts.[128] The Tribunal is not persuaded that the naked right of ownership of a resource, stripped of the rights to develop and produce the resource, has any commercial value. It is not readily apparent how an owner without the right to develop and produce the resource can turn that ownership right into a commercial value.

277. The question whether the Government's asserted ownership right had a commercial value may however remain unresolved in the dispute about Niko's liability for the blowouts. If there was such a value, any damage caused by Niko would be due to its action as Operator. Niko did not just enter the Chattak field and drilled a well. It was granted the right to do so

[123] C-CD.2, paragraphs 234 – 239 and C-PHB, paragraphs 345 – 350, quoting from Mr Hossain's testimony at the Jurisdiction Hearing in October 2011.
[124] C-PHB, paragraph 350.
[125] HT 2012.02.21, pages 183 – 192, specifically pages 188 and 192.
[126] R-PHB paragraph 303, also B-CD.9, pages 19 - 22.
[127] HT 2016.02.21, pages 135 *et seq.* and specifically pages 139 – 141.
[128] In particular at HT 2016.02.21, page 195.

at conditions set out in the JVA with the express approval of the Government. Any loss or damage Niko may have caused by the blowouts were the result of its action under the JVA.

278. Consequently, if there was any loss or damage from the blowouts that the Government suffered as the owner of the Petroleum before its extraction, the damage originated from Niko's development of the Chattak field under the JVA pursuant to the assignment of rights as recorded in the JVA. Any liability for such loss or damage must be judged by that JVA.

279. Concerning alleged exclusion of the right related to **the enforcement of environmental laws and compensation for environmental harm (item (iii) of the excluded rights list)**, the Tribunal notes that the Respondents' description encompasses two aspects that need to be considered separately: enforcement of environmental laws and compensation for environmental harm.

280. With respect to the first of these aspects, the Claimant stated:

> *… [t]here is no question, either here nor in the Money Suit, of enforcement of environmental laws. No party has identified any environmental law that was allegedly breached by the blowouts and an action to enforce those laws could not be brought in the form of the Money Suit in any event.*[129]

281. The Tribunal notes that neither the present arbitrations nor, as far as the Tribunal has been informed, the Money Suit, are actions for the enforcement of environmental laws in general. What is in issue in both proceedings is the specific issue of liability for the two blowouts. The Government's right to enforce environmental law is not in issue and need not be considered here.

282. Concerning the specific issue of compensation for environmental harm, the Tribunal notes that compliance with environmental laws and regulation forms part of the regulation of Niko's conduct as operator under the JVA. The subject is regulated generally in the performance requirements which provide in Article 26.2.4 of the JVA that the standard of conduct must be "in accordance with the applicable law". This standard

[129] HT 2016.02.21, page 140.

is prescribed specifically by Article 27, entitled "Health, Safety & Environment (HSE)".

283. These matters concern the development and production of Petroleum from the Chattak field. They can thus not have been excluded from the rights assigned to BAPEX. Breach of the resulting obligations and compensation for environmental harm caused by the two blowouts, thus are clearly subject to the regulation in the JVA. Any claims for liability in this respect must be pursued under the JVA and the dispute settlement mechanism provided therein approved by the Government and Petrobangla.

284. Concerning **compensation for torts** committed by Niko against the Government and Petrobangla (**item (ii) of the excluded rights list**), the Respondents argue that the claims in the Money Suit were in tort and that rights to compensation on that basis had not been assigned to BAPEX and thus are not covered by the JVA:

> *It is particularly important for purposes of this arbitration to note that none of the articles that refer to the Government and Petrobangla, and in fact, no article in the JVA, refers to the right of the Government and Petrobangla to seek compensation for torts committed by Niko against the Government or Petrobangla under Bangladeshi law. If there is no reference to such rights anywhere in the text, there cannot be any assignment of these rights to BAPEX.*[130]

and

> *… the Money Suit does not make claims or seek compensation based on violations of the JVA. As explained in the Money Suit complaint,*
>
> > *the damages sought […] are damages arising out of tortious liabilities […]. [T]he plaintiffs are seeking damages caused by negligence, lack of skill and proper supervision, which come within the ambit of tortious liabilities and not breach of contract and therefore, the arbitration clause inserted in the JVA has no manner of application in this case. 'Damages for tortious*

[130] B-CD.9, page 17.

liabilities' are distinct and separate from the liabilities arising out of 'Breach of Contract' […].[131]

285. The Claimant argued that the claims in the Money Suit are "for precisely the same liability as concerns the two blowouts".[132] It stated that "causes of action for movable property are subsidiary rights that follow the property they concern. This is so whether the action for loss of movable property is in contract or in tort."[133]

286. The Tribunal sees the issue that must be considered not as a question of an assignment of claims, in tort or in contract. The issue that must be considered concerns the assignment of rights to develop and produce gas from the Chattak field. The question is whether the rights so assigned leave room for the claims in tort presented in the Money Suit.

287. When considering these claims made in the Money Suit against Niko it is important for the Tribunal to bear in mind that the claims are not made by unrelated third parties. The claims are made by the parties that have assigned to BAPEX the right to develop the Petroleum in the field where the claimed loss or damage occurred and by the parties that approved the terms that regulated this development.

288. In view of this assignment and approval, the claimants in the Money Suit – the Government and Petrobangla – may not disregard the regulation they approved and claim for loss and damage arising from the regulated activity on different grounds, unrelated to the agreed and approved rules including the applicable dispute settlement procedures.

289. The Tribunal concludes that, insofar as the Government and Petrobangla are concerned, claims for loss and damage arising from the blowouts in the Chattak field must be dealt with within the framework of the JVA. Separate claims for such loss and damage by the Government and Petrobangla expressed in tort would be in conflict with the assignment and the terms agreed and approved by the Government and Petrobangla for the development of the Chattak field.

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[131] B-CD.9, pages 22 – 23, quoting from the Money Suit Complaint (Exhibits R-15 and C-6), paragraphs 67 – 69. Footnotes omitted.
[132] Niko's Submission concerning the Full Scope of Liability approach and related procedural issues, 5 October 2015 (C-CD.5), page 2.
[133] HT 2016.02.21, page 140.

290. Finally, concerning the **forum for disputes and consent to arbitration** (**item (i) of the allegedly excluded rights list**), the Respondents argue that the Tribunal has jurisdiction over BAPEX alone, and not over the Government and Petrobangla, and moreover that Niko's liability was invoked by the Government and Petrobangla in the Money Suit but not by BAPEX in these arbitrations. They assert that the Tribunal

> *… only has jurisdiction over BAPEX for claims under the Joint Venture Agreement. There may be some overlap regarding the subject matter of potential claims by BAPEX and claims of the Government and Petrobangla but that does not extend the Tribunal's jurisdiction to the determination of Niko's liability to those third parties.*[134]

291. The Claimant responded:

> *For the first time, Niko faces in two different forums affirmative claims for precisely the same liability as concerns the two blowouts: the claims of BAPEX for lost gas production and environmental damages before these Tribunals; and the claims asserted by Petrobangla and the Government for precisely the same liability and damages in the Money Suit. The present situation is irreconcilable with Article 26 of the ICSID Convention, pursuant to which "[c]onsent of the parties to arbitration under this Convention shall … be deemed consent to such arbitration to the exclusion of any other remedy."*[135]

292. The Claimant also argues that the "abstract right of the Government and Petrobangla to choose a forum and consent to arbitration is not at issue". What is at issue, in the view of the Claimant, is the question whether BAPEX had the right to the gas, as stated in the JVA. If it did, following the assignment, "the Government and Petrobangla could not bring a suit against Niko for loss of that very same gas".[136]

293. The Tribunal agrees that there is no issue about the right of the Government and Petrobangla in general to choose a forum or to consent to arbitration. In the present case, they have assigned to BAPEX the right to develop and produce gas from the Chattak field; and they have approved the manner in which this was done in the JVA with Niko. The JVA includes

[134] HT 2016.02.21, page 166.
[135] C-CD.5, page 2.
[136] HT 2016.02.21, page 139.

Article 18, providing the methods for the settlement of all disputes related to the "performance or interpretation" of the JVA. As the Tribunal has determined in the Exclusivity Decision, the jurisdiction in this respect is exclusive.

294. The Tribunal has explained above that Niko's liability for the two blowouts in the Chattak field must be determined under the JVA and its dispute resolution provision. As a result of their assignment to BAPEX and their approval of the JVA, the Government and Petrobangla may not seek different remedies in different fora concerning Niko's obligations with respect to its conduct in Petroleum Operations and the liability for the breach of these obligations.

6.4 The claim for alleged breach of BAPEX's warranties

295. **The Claimant** relies on paragraphs 12 and 14 of the Preamble of the JVA as warranties by BAPEX that it had been "vested with and assigned all relevant rights, obligations and responsibilities of the Government of Bangladesh and Petrobangla". It argues that "the very existence of the Money Suit confirms [the] discrepancy between the representation and reality". It concludes that "BAPEX is liable to Niko for breach of warranty".[137]

296. The Claimant requests as relief several declarations concerning the alleged breach of warranty and a decision

> *(e) Ordering BAPEX to pay to Niko as compensation for said breach and misrepresentation the amount corresponding to (i) all attorneys' fees, expert fees and other costs incurred by Niko in defending itself and its officers in the Money Suit; and (ii) any pecuniary difference between the findings of these Tribunals as to the extent of Niko's liability for the 2005 blowouts and the findings of any final judgment in the Money Suit.*[138]

297. In the latest version of the relief requested, the Claimant seeks, in addition to the declarations of breach, an order concerning the costs in the Money Suit and a decision

[137] C-PHB, paragraphs 431, 352.
[138] C-CD.2, paragraph 315.

> *Ordering BAPEX to pay on Niko's behalf the full amount of any damages assessed against Niko by a final judgment or decree in the Money Suit.*[139]

298. **The Respondents** have argued, as explained above in the previous section, that the rights pursued by the Government and Petrobangla in the Money Suit are different from those to which the warranties in the JVA applied. They maintain that BAPEX made no warranty with respect to these rights. The Money Suit, therefore, does not constitute a breach of warranty in their eyes.[140]

299. At the February 2016 Hearing, the Respondents continued to insist that there was no warranty in the JVA concerning "the rights of the Government and Petrobangla related to dispute resolution" so that the pursuit of the Money Suit was no breach of warranty. They added:

> *Even if there is subject matter overlap, it does not make it a breach of warranty for the Government and Petrobangla to pursue claims. Even if those claims ultimately are unfounded or are founded, the mere pursuit of claims which they have for rights they have before Tribunals that have jurisdiction over them is not a breach of warranty and it is Niko's position that the mere pursuit of those claims is a breach of warranty. It is not.*[141]

300. As explained in the preceding section, **the Tribunal** concludes that the JVA does indeed contain warranties that may be triggered by the claims made by the Government and Petrobangla in the Money Suit. The Tribunal finds that Niko's liability for the two blowouts in the Chattak field must be determined exclusively in the present proceedings.

301. From the information provided to it, the Tribunal concludes that until now the court in the Money Suit has not issued a decision on Niko's liability for the blowouts. The Tribunal is of the view that it would therefore be premature for it to make a decision on a breach by BAPEX of its warranties.

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[139] C-PHB, paragraph 431(g).
[140] *E.g.* R-PHB, section IV(B).
[141] HT 2016.02.21, page 201.

302. The Tribunal has also noted that, apart from declaratory relief, the order sought by the Claimant depends on a judgement against it in the courts of Bangladesh. At the February 2016 Hearing the Claimant stated its position in the following terms:

> *… we are pleading in the alternative both cases, either there has been a breach of warranty and the Money Suit is clearly inconsistent with the warranties that were given – there is no question about that – or there has not been a breach of warranty in which case this Tribunal is the exclusive forum for addressing these questions. But we do require a decision from the Tribunal on this point because obviously the Government and Petrobangla and BAPEX are still operating under the mistaken conclusion that this Tribunal is not the exclusive forum for resolving these questions.*[142]

and

> *On the topic of the requests for relief, if the Tribunals find that BAPEX was, as Niko submits, assigned all economically relevant rights to the gas at Chattak, it may, as was discussed yesterday, find that the mere pursuit of the Money Suit may not represent a breach of the JVA warranties. However, if the court in the Money Suit were to adopt a ruling different from that of the Tribunals that would amount to a breach of warranty. Niko therefore maintains its request for an order that, in the event of a judgment in the Money Suit inconsistent with the Tribunal's award, BAPEX make Niko whole by paying any portion of that judgment that is inconsistent with the Tribunal's award.*[143]

303. Having found that Niko's liability for the two blowouts in the Chattak field must be decided by this Tribunal under the JVA with binding effect on the Government and Petrobangla as the assignors, the Tribunal reserves its decision with respect to the question of a breach of warranties until further information about the Money Suit is provided.

[142] HT 2016.02.21, pages 143 – 144.
[143] HT 2016.02.22, pages 320 – 321.

6.5 Substantive issues ready to be decided

304. During the procedural consultations preceding the November 2015 Hearing, the proceedings on the Compensation Declaration were separated into two phases as follows:

> *(i) the Claimant's liability and in particular the alleged breaches by Niko, and*
>
> *(ii) the damage said to have been caused by these alleged breaches and its quantification.*[144]

305. The first phase covers items (i) to (iii) of the list at the beginning of this Section 6. It was completed as of the February 2016 Hearing, ready for the decision on liability. The Respondents' first submission concerning the damage and quantum phase was filed thereafter on 25 March 2016.

306. The procedural steps leading to the end of this first phase were described above in Section 3. In view of certain ambiguities in the Respondents' position, the Tribunal adds the following clarifications.

307. From the very start of the proceedings on the Compensation Declaration, already in the Notice of its intention to commence arbitration proceedings and in the following Notice of Arbitration, the Claimant had identified as the subject of its request: "all claims held jointly or severally by any of BAPEX, Petrobangla and Bangladesh to damages or losses alleged to arise from the blow outs of two wells" in the Chattak field. In the course of the arbitrations the issue was then expressed in the form of a request for a declaration that the Claimant was "not liable to BAPEX, its predecessors, assignors, successors or assigns".[145]

308. Niko's liability to BAPEX, the Government and Petrobangla was therefore, from the very beginning of the proceedings on the Compensation Declaration, the principal issue of the case which the Respondents had to address and which the Tribunal had to decide.

309. The Tribunal fixed the procedure for the Compensation Declaration in Procedural Orders No 2 and 3, providing for two rounds of written

[144] Tribunal's letter of 7 October 2015; see also above section 3.2.9.
[145] The successive requests are reproduced above in section 4.1.

submissions on Niko's liability and the quantum of any damage caused by the blowouts, to be submitted together with documentary evidence, witness statements and expert reports. This exchange was to be followed by a hearing and possibly post-hearing submissions.

310. As noted in Procedural Order No 11, by 25 September 2014 the written phase of the proceedings on the Compensation Declaration had been completed.

311. Throughout this period, the Respondents did not address the substance of the liability issue.

312. After the change of counsel in the summer of 2015, the Respondents recognised that "BAPEX failed to present its case during the written pleadings stage of these proceedings"[146] and blamed this failure on their previous counsel. In their submission of 25 September 2015 they stated that their prior counsel had failed to "provide evidence of Claimant's liability and the quantum of damages owed in the event the Tribunal decides these issues"; and that the former counsel "failed to understand the nature of these proceedings and the consequences of his action on the rights of his client".[147] They explained that their prior counsel "failed to make key submissions on the merits, which is especially serious because Claimant's presentation of its claim effectively forces BAPEX to address claims against Claimant that BAPEX did non affirmatively assert in these proceedings"; and prior counsel "failed to quantify or provide any pleadings on the extent of the losses caused by Niko".[148]

313. BAPEX requested "an opportunity to present its case after a failure to do so". The Respondents concluded by affirming that "BAPEX has since demonstrated to the Tribunal that it intends to present its case".[149]

314. The Tribunal accepted further submissions and expert reports from the Respondents; it accepted that the proceedings be extended to the Full Scope of Liability approach and invited the Respondents specifically "to identify additional obligations and breaches by the Claimant". The Tribunal accepted to adjust the procedure, dividing it into two phases,

[146] BAPEX's Request for Leave to Submit One Additional Pleading and Counterclaims, 25 September 2015 (B-CD.4), page 9.
[147] B-CD.4, page 7.
[148] B-CD.4, pages 6 – 8.
[149] B-CD.4, page 11.

providing additional opportunities for the Respondents to address issues of alleged breaches and liability, and deferring the quantification of loss and damage to a later phase.

315. The Tribunal heard the witness named by the Respondents in the November 2015 Hearing. The expert named by the Respondents for the liability issues made a written submission. He made a presentation at the November 2015 Hearing and, at that hearing, took part in the extensive discussion with the experts of the Claimant and of the Tribunal. Thus, the Respondents was afforded ample opportunity to present argument on Niko's liability in writing and orally at the two hearings; it allowed further evidence in particular with respect to the quantum of loss and damage caused by the blowouts.

316. The Respondents nevertheless stated in their Post-Hearing Brief:

> *… BAPEX has only responded to Claimant's expert report and the Tribunal Expert Report to rebut the limited and specific evidence Claimant put forth for its assertion that it is entitled to a declaration of non-liability for the damages resulting from the two blowouts. BAPEX has not presented a full case for liability. If it had intended to make and prove claims against Niko, BAPEX would have submitted much more complete expert reports, witness statements, and documentary evidence on all issues, not just in response to what Claimant presented.*[150]

and

> *BAPEX reserves all of its rights with respect to the determination of the facts. Quoting the Tribunal's summary of the facts should not be interpreted as acceptance of those facts or a waiver of BAPEX's position unless expressly stated herein.*[151]

317. At the February 2016 Hearing, the Respondents continued to assert that "it continues to be BAPEX's position that the record is not what it would be had BAPEX had competent counsel that would have filed evidence".[152]

[150] R-PHB, paragraph 9.
[151] R-PHB, paragraph 90, FN 134.
[152] HT 2016.02.22, page 415.

318. The Claimant pointed out that in the proceedings relating to the Compensation Declaration, there "is no real dispute here about the basic facts concerning the blowouts. The evidentiary conflict there is over the interpretation of those facts and what might have been done differently". In response to the Respondents' assertion regarding the asserted limited presentation of their case, the Claimant stated at the February 2016 Hearing that any failure to present more evidence:

> *… is entirely a result of the twisted strategy that BAPEX has adopted in this arbitration. As Procedural Order 11 [of 19 August 2015] makes clear and recalls at considerable length, the Tribunals gave BAPEX repeated opportunities to present whatever case it wished to and even highlighted for BAPEX the opportunity to present expert reports in support of its position. BAPEX declined for its own reasons to avail itself of those opportunities on repeated occasions.*
>
> *The record before the Tribunal today is a complete one on liability reflecting each parties' case after a full opportunity to present it. There is no basis for BAPEX's position that the result, if the record fails to establish liability on Niko's part, should be a denial of the declaration requested.*[153]

319. Indeed, whatever may have been their first counsel's failure to address the issues raised by the case brought by the Claimant, the Respondents were given repeated opportunities to present their case on Niko's liability; and after the latest change of counsel, the Respondents availed themselves of this opportunity.

320. The Tribunal concludes that the Parties had a full opportunity to argue all possible grounds of Niko's liability for all kinds of possible damage resulting from the two blowouts; and they had an equally full opportunity to address Niko's alleged breaches of its obligations under the JVA and the applicable law.

321. The Tribunal is therefore satisfied that issues (i) to (iii) from the list of issues set out above are now ready for determination in the present

[153] HT 2016.02.21, pages 20 – 21.

decision, just as issues (v), (vi) and (vii) were ready for the decisions made above in this section.

322. Issue (iv) concerning the quantification of any loss and damage for which Niko is found to be liable is reserved for the next phase of the arbitrations, together with the claims for interest and costs of the proceedings.

7. NIKO'S OBLIGATIONS RELEVANT FOR THE LIABILITY ISSUE

323. The Tribunal is requested by the Claimant *inter alia* to issue a declaration that

> *Niko breached no obligation or law as concerns the two blowouts in 2005 at the Chattak field and is not liable concerning the blowouts to BAPEX, its predecessors, assignors, successors or assigns.*

324. The Respondents object to this request and, to the contrary, assert breaches of the JVA by Niko.

325. The Tribunal has invited the Parties to identify the obligations in issue and their sources. In this section of the Decision, the Tribunal will set out in further detail the procedure by which the Parties have identified these obligations and then examine the various sources to which the Parties have referred, in particular: the principal contractual provisions, the standards in the international Petroleum Industry, other possible sources of Niko's obligations and the opinions of the experts.

7.1 The identification of Niko's obligations

326. The Claimant's request was first expressed in the terms quoted above at the beginning of this section in the Claimant's Memorial concerning the Compensation Declaration of 27 September 2013 and repeated in all subsequent requests for relief.

327. In response, BAPEX denied that it was concerned by the issue. It stated that it "has never invoked Niko's liability for the two blowouts" and that the dispute is plainly "a dispute between Niko and third parties".[154] It referred, however, to Article 26.2.4 of the JVA and Niko's obligation as sole operator.[155] BAPEX mentioned the investigation by committees appointed by the Government[156] and the Money Suit by the Government and Petrobangla against Niko, adding that "the only entities invoking Niko's liability for the blowouts are the Government and Petrobangla".[157]

[154] B-CD.2, paragraph 2, referring also to its argument in B-CD.1.
[155] B-CD.2, paragraph 15.
[156] For a list of these committees and their reports, see above Section 6.
[157] B-CD.2, paragraphs 16-18.

328. Following the appointment of their new counsel, announced on 9 July 2015, the Respondents submitted on 31 August 2015 comments on Mr Abel's report, containing a discussion of various breaches of Niko's obligations. The Claimant objected in its submissions of 30 September 2015, noting that these comments included new allegations of breaches of Niko's obligations. This issue was addressed during the Pre-Hearing Conference on 1 October 2015 and by the adoption of the Full Scope of Liability Approach as outlined at that occasion.[158] The Respondents were invited to complete the "identification of obligations and breaches" of Niko.[159] They did so in their submission of 12 October 2015, adding "to the breaches of the JVA identified in the expert reports before the Tribunal", general tort liability and environmental liability, in terms as they had been invoked in the Money Suit, and fraudulent misrepresentation.

329. In Procedural Order No 12 of 21 October 2015 the Tribunal referred to the identification of obligations and breaches in the Respondents' submissions of 12 October 2015, where they stated that Niko was pursued, in the courts of Bangladesh and specifically in the Money Suit, as a matter of its general tort liability and environmental liability. The Tribunal noted that:

> *… the Respondents did not identify with specificity any additional Laws or Standards which Niko's operations had breached, and thereby caused the damage flowing from the blow-outs. The Tribunals must conclude that the Respondents have no further Breaches to add which the Tribunals must consider when examining whether to make the requested declaration.*[160]

330. In view of this consideration the Tribunal held in Procedural Order No 12:

> *The list of Breaches of Applicable Laws and Standards that must be considered by the Tribunals when making their determination concerning the requested declaration is now complete. The Tribunals will examine by reference to the Breaches alleged until now the Claimant's request for a declaration according to which "Niko*

[158] See above Sections 3.2.8 and 5.
[159] Tribunal's first letter of 7 October 2015.
[160] Procedural Order No 12, page 2.

breached no obligation or law as concerns the two blowouts in 2005 at Chattak field".[161]

331. In order to focus the examination of the alleged breaches, the Tribunal sought to clarify the sources of the Applicable Laws and Standards invoked by the Parties. In the Note on the Scope of the Examination and Questions for Consideration, annexed to Procedural Order No 12, the Tribunal referred to Article 26.2.4 of the JVA and explained that, for reasons of simplification, it referred to "all obligations under the applicable law, the JVA and generally accepted standards of the international Petroleum Industry as the "Applicable Law and Standards". The Tribunal invited the Parties to identify the "source of the Applicable Laws and Standards", *i.e.* the relevant texts and

> *[…]*
>
> *(iii) if such texts do not exist, how else can the Applicable Laws and Standards be determined?*
>
> *(iv) to what extent are the Applicable Laws and Standards on which the experts' conclusions rely generally accepted in the industry or based on the specific experience of the expert opining or on that of the personnel conducting the operations?*
>
> *(v) Are there differences in the Applicable Laws and Standards depending on the circumstances under which the operations are performed, e.g. the location of the well, the characterisation of the well as "marginal" or "abandoned", the revenue that can be expected from the well, the size of the operator company?*

332. In its submission of 23 October 2015 on newly alleged breaches, the Claimant stated that the "prudent operator standard agreed in the JVA […] is the only standard relevant to the circumstances of this case, whether under contract or under common law principles of negligence".[162] The Claimant confirmed the position at the November 2015 Hearing and in its Post-Hearing Brief: "The ultimate standard against which Niko's conduct

[161] Procedural Order No 12, page 2, item 1.
[162] Niko's Submission on Newly Alleged Breaches, 23 October 2015 (C-CD.7), paragraph 2.

must be assessed is the applicable contractual standard"; and "Niko considers [Article 26.2.4 of the JVA] as the only relevant source".[163]

333. The Respondents confirmed at the November 2015 Hearing the JVA and specifically Article 26.2.4 as "primary source of the applicable standard".[164] The Respondents also relied on various texts which they considered as "generally accepted standards of the international Petroleum industry", referred to in that article, and, in their Post-Hearing Brief, added other sources which they considered relevant, specifically the Bangladesh Petroleum Act of 1974,[165] as will be discussed below in Sections 7.3 and 7.4.

334. The Claimant takes the position that the applicable standard needs to be determined only insofar as it pertains to issues arising from the blowouts and Niko's responsibility for them. The Tribunal agrees: its task is to determine Niko's breaches in the context of Niko's alleged liability for the two blowouts. The performance of Niko's obligations under the JVA in general, independently of the liability for the blowouts, is not at issue in these arbitrations.

335. As the enquiry into the relevant obligations advanced, the Tribunal frequently used the terms *applicable* or *relevant* "standard" where previously the expression Applicable Laws and Standards was used to describe the legal reference by which Niko's conduct must be judged, including various sources of law, in particular both the JVA and the law. The Parties also adopted this shortcut use.[166]

7.2 Article 26.2.4 of the JVA

336. The **standard of conduct** applicable to Niko's performance of its obligations, as the Operator, as **specified in Article 26.2.4** of the JVA, reads as follows:

> *26.2 OPERATOR shall, in addition to OPERATOR's obligations under other provisions of this JVA, be obliged to:*

[163] C-PHB, paragraphs 52 and 53.
[164] HT 2015.11.02 (Day 1), page 40.
[165] R-PHB, paragraph 26.
[166] See *e.g.* HT 2015.11.02 (Day 1), page 40.

[…]

26.2.4 conduct all Petroleum Operations in a diligent, conscientious and workmanlike manner, in accordance with the applicable law, this JVA and generally accepted standards of the international Petroleum industry designed to achieve efficient and safe development and production of Petroleum and to maximize the ultimate economic recovery of Petroleum from the JVA Area.

337. The Respondents have identified in this provision of the JVA a "four part standard":

Niko had to conduct its operations:

(i) in a diligent, conscientious and workmanlike manner;

(ii) in accordance with the law,

(iii) in accordance with the JVA, and

(iv) in accordance with generally accepted standards of the international petroleum industry designed to achieve efficient and safe development and production of Petroleum and to maximize the ultimate economic recovery.[167]

338. The Claimant approached the interpretation of this JVA provision in a different manner, identifying three elements:

(i) The obligation to conduct operations in a "diligent, conscientious and workmanlike manner" is the "general standard";

(ii) The "applicable law, this JVA and generally accepted standards of the international Petroleum industry", are understood as "potential sources for additional content to the general standard"; and

(iii) The obligation to conduct operations in a manner "designed to achieve efficient and safe development and production and to

[167] R-PHB, paragraph 14.

maximise the ultimate economic recovery of Petroleum from the JVA Area", according to the Claimant "identifies the goals that Niko was obliged to achieve".[168]

339. For ease of reference the Tribunal will refer to Niko's obligation to conduct petroleum operations "in a diligent, conscientious and workmanlike manner" as the **Diligence Standard** and the "generally accepted standards of the international Petroleum industry" as the **Petroleum Industry Standard**.

340. The Claimant considered the Diligence Standard as a "general standard" and sought to give content to the three terms used in Article 26.2.4 by reference to their definitions in the Meriam-Webster Online Dictionary and on the basis of these definitions concluded that

> *… under the general standard of Article 26.2.4, Niko was required to act in a steady, earnest, conscientious, competent and skilful manner, but not necessarily in an outstanding or original one.*[169]

341. The Respondents turned to the Oxford English Dictionary and on that basis concluded:

> *The clear meaning of this triplet of requirements is to act in an "assiduous," "scrupulous," and "careful" manner to ensure that things are "well and thoroughly done." This is above the level of ordinary care of the reasonable operator.*[170]

342. The Respondents insist that the three obligations are "cumulative requirements" and that "compliance with this standard is independent of complying with laws, other JVA provisions, and generally accepted standards of the petroleum industry".[171] For the Respondents it is "important to separate the diligence standard from the generally accepted industry standards". If the Tribunal found that "there are no generally accepted standards with respect to particular conduct or their content is

[168] C-PHB, paragraphs 55 – 58.
[169] C-PHB, paragraph 56, referring to quotations in Niko's opening presentation, Exhibit CH-4, slides 5 – 7.
[170] R-PHB, paragraph 21, relying on quotations from the Oxford English Dictionary, RLA-107, RLA-108 and RLA-109.
[171] R-PHB, paragraphs 21 and 22.

not specific or mandatory or that Niko did not breach such standard" the compliance with the Diligence Standard must be assessed separately. "Niko may have failed to act diligently even in the absence of a breach of generally accepted standards".[172]

343. Concerning the relationship between the Diligence Standard and the Petroleum Industry Standard, the Respondents argue that the latter also may provide content of what is diligent, conscientious and workmanlike:

> *In addition, international standards such as those provided by the American Petroleum Institute ("API") may provide an indication of what is diligent, conscientious, and workmanlike conduct of petroleum operations, even when the standards are not stated in mandatory language. The failure to follow non-mandatory standards may demonstrate a lack of diligence. Thus, the fact that a standard is set forth using "should" rather than "must" does not relieve Niko of its obligation to follow the standard if to follow the standard would be diligent.*[173]

344. The Claimant treated the different elements of Article 26.2.4 of the JVA together and referred to them as the standard of a "**reasonable" or a "prudent" operator**. In his first report, Mr Wright described the "reasonable operator" standard under the JVA:

> *The best practices and best available technology standards that might be applied to a Deepwater and/or HPHT (high pressure high temperature) well drilled by a super-major operator is not applicable in this situation. They have large budgets, a large team of multidiscipline technical professionals and technical process maps that must be followed for every activity, and are not appropriate for comparison with this situation.*
>
> *My opinions in this regard for the Chattak 2 well are therefore based on the question: were the design practices and procedures followed by Niko Resources (Bangladesh) Ltd. and their contractors reasonable given generally accepted international standards for the petroleum*

[172] R-PHB, paragraphs 22, 23 and 24.
[173] R-PHB, paragraph 25.

> *industry and other like operators in a similar context as the Chattak 2 marginal field development.*[174]

345. The Claimant also frequently used the expression "reasonable operator standard".[175] It referred to the explanations in Mr Wright's second report, considering the arguments of an asserted "shallow gas" risk, where he stated that the "reasonable operator standard" did not require Niko to plan for more extensive drilling operations than it had actually carried out:

> *… these kinds of situations are not typical in development land drilling and would not be expected to fall within the experience of a typical operator not previously exposed to this circumstance.*[176]

346. The Claimant also used different expressions to define the contractual standard, such as "prudent and reasonable", "reasonable or prudent", "reasonable and appropriate". At the February 2016 Hearing, the Claimant used the expression "reasonably prudent" and the "reasonable operator standard". In support the Claimant referred to articles and court cases in Canada and the United States relating to contracts using "the good and workmanlike language, practices in accordance with the good industry practice, in Canada and the US exist in the industry standard forms joint operating agreements and they have existed for decades in these agreements".[177] It summarised the Claimant's position as follows:

> *The position of Niko is that the meaning of 26.2.4 is, in essence, applying the same standard as a negligence standard. It is the did you breach the reasonable operator standard.*[178]

347. The Respondents have firmly objected. They argue that Mr Wright's reliance on a "reasonable operator" standard and his understanding of that standard are an attempt to "empty" the contractual standards. They state:

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[174] Wright 1, page 5.
[175] *E.g.* at C-PHB, paragraphs 25, 26, 30, 167 *etc.*
[176] Supplemental Expert Report of John Wright, 22 October 2015 (Wright 2), page 14, quoted in C-PHB at paragraph 119.
[177] HT 2016.02.21, page 58.
[178] HT 2016.02.21, page 56, lines 10-14.

> *While there is no doubt that Niko had the obligation to act as a reasonable and prudent operator would in the circumstances, the standards set forth in Article 26.2.4 are more specific and more stringent than a general standard of reasonableness. Reasonableness, defined as "being amenable to reason, or of acting or thinking in a sensible or fair manner" is the minimum standard of conduct of any actor under most legal systems. Reasonableness standards in law create an objective standard by which conduct is measured. Mr. Wright's "reasonableness standard" does not even reach this basic level of care because it allows an operator to "determine the best course of action for their situation." Mr. Wright thus posits a purely subjective, legally meaningless standard, by which whatever an operator chooses to do in the circumstances meets the standard.*[179]

348. The Respondents insist that the Diligence Standard is an independent obligation. This standard

> *… does not depend on finding a violation of a specific regulation like a speed limit. The contract did not say that Niko had to set a casing at a particular depth or that it had to use a diverter or that it had to do anything specific. Instead, the contract requires Niko to act diligently and conscientiously and this requires Niko to do what is needed in the circumstances to have safe and efficient operations, whether they are mandated by law or regulation or not.*[180]

349. When considering specific actions by Niko the Respondents, too, use different terminology and assert that, in a specific situation, a certain action was "the diligent and prudent thing to do".[181]

350. The Parties also differ with respect to the interpretation of **the final passage of Article 26.2.4** of the JVA, *i.e.* the words "designed to achieve efficient and safe development and production of Petroleum and to maximise the ultimate economic recovery of Petroleum from the JVA Area".

351. For the Claimant this passage "identified the goal that Niko was obliged to achieve in conducting Petroleum Operations at Chattak". It emphasises

[179] R-PHB, paragraph 16, footnotes omitted.
[180] HT 2016.02.21, page 277, line 24 to page 278, line 9.
[181] HT 2016.02.22, page 508.

the goal of maximising economic recovery and what it calls the "contractual requirement to limit costs, where possible". The Claimant accepts that Niko was not "permitted to take unreasonable risks with regards to the safety of operations" but adds this:

> *However, where one or more reasonable alternatives existed for the conduct of a particular aspect of Petroleum Operations, such as in the design and execution of a development well at Chattak, Niko was expected, indeed obliged, to select the less costly option.*[182]

352. The Claimant combines these two aspects thus:

> *Whether Niko acted in a diligent, conscientious and workman-like manner must be viewed through the lens of the twin goals of achieving safe and efficient development and production and maximising the ultimate economic recovery of petroleum.*[183]

353. The Respondents read the last part of Article 26.2.4 of the JVA as one element of the clause and emphasise the passage "designed to achieve …", which they say modifies only "the general accepted standards .." and not also other preceding parts of the clause, the applicable law, the JVA and the Diligence Standard. They also insist that the relevant standards are designed to achieve safe development and maximal recovery.[184]

354. **The Tribunal** notes that Article 26.2.4 of the JVA does not prescribe specific action relevant for the well design and the blowouts, but sets out the standards of conduct.

355. When discussing these standards, the Parties attempted to subdivide the content of Article 26.2.4 of the JVA and to identify several distinct obligations or standards. This may be of some assistance; but the overall objective of the clause is to set a standard for all Petroleum Obligations. The resulting obligations thus must be seen as a whole and in their overall context.

356. The Tribunal also observes that Article 26.2.4 of the JVA applies to "**all** Petroleum Operations" under the JVA. The conduct of the Operator

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[182] C-PHB, paragraph 58.
[183] HT 2015.11.02 (Day 1), page 115, lines 20-25.
[184] R-PHB, paragraphs 19 and 18.

prescribed in this provision thus covers a broad scope of activities, subject to a variety of regulations and other texts of various types. The issues which the Tribunal must address, however, concern a more focused aspect, relating specifically to the two blowouts, *i.e.* to the design of the Chattak 2 Well, the performance of the wiper trip, and the manner in which Niko handled the blowout, as well as to the relief operations. The Tribunal will have to turn to other rules and practices for assistance in applying the general terms to the specific issues it must decide.

357. When considering the obligations prescribed by Article 26.2.4 of the JVA, and specifically by the Diligence Standard, the Tribunal has not found much assistance in dictionary definitions. It notes that this standard applies to Niko's performance of "Petroleum Operations". The Tribunal considers therefore that the "generally accepted standards of the international Petroleum industry" must be taken as a principal reference for providing content for the Diligence Standard.

358. As the Respondents have rightly pointed out, the relevant industry standards are those designed to achieve "efficient and safe development and production of Petroleum". The twin goals expressed in Article 26.2.4 of the JVA are thus efficiency and safety. Efficiency is understood by the Tribunal to extend for reasons of simplification to the words "to maximise the ultimate economic recovery of Petroleum from the JVA Area", separately identified at the end of Article 26.2.4 of the JVA.

359. The Tribunal has also considered the controversy between the Parties concerning the terms used to describe the standard to be met by Niko. As the fluctuating use of the terms by the Parties shows, the terms reasonable and prudent, in the abstract, are broad and difficult to fill with sufficiently precise content. The Tribunal therefore uses in this Decision the terms "reasonable" and "prudent" interchangeably. It will use the term "**prudent operator standard**" to express the standard required by Article 26.2.4 of the JVA, as "shorthand for the contractual liabilities",[185] including the Diligence Standard, the Petroleum Industry Standard and all other standard requirements that have been considered as prescribed by that article.

360. This being said, the general terms discussed by the Parties, must be filled with content adequate for resolving the present dispute. The Tribunal

[185] RT 2016.02.21, page197.

therefore must determine more precisely the standard that the Operator had to apply specifically with respect to the activities that had an impact on the blowouts, their origin and the way in which they were dealt with.

361. In this respect the Tribunal is aware that the work to be performed by the Operator concerned an abandoned well on land; considerations of efficiency may more reasonably come to the fore when designing and performing drilling operations there. As Mr Wright stated, "Deepwater and/or HPHT (high pressure high temperature) [methods applied] by a super-major operator" may not be relevant in all respects for the present situation.[186] Indeed, the Respondents have clarified: "No-one is trying to hold Niko to some higher standard to which ExxonMobil might hold itself."[187]

362. These considerations apply in particular with respect to the efficiency of the operations where the range of the Operator's discretion may be greater. This discretion, however, finds its limits in the requirements of safety. These safety requirements form what may be called the "bottom line" for the Operator's discretion. The Claimant itself recognises this by stating, as quoted above, that it was not permitted "to take unreasonable risks with regard to the safety of operations".[188] There is no binary choice between efficiency and safety; these two requirements apply to different aspects and, as the Respondents emphasise,[189] they must both be observed.

363. This conclusion applies also if one considers the final passage of Article 26.2.4 of the JVA, concerning the goal of maximising economic recovery, as an obligation distinct from that of efficiency, as the Claimant seems to do. Even if it is considered as a distinct goal, it nevertheless does not override the safety obligation. Maximal economic recovery may not be achieved at the expense of safety.

364. In the context of the present dispute there is no contention that Niko violated its obligations of efficiency or, if it were treated as a separate objective, of maximising economic recovery. The question is whether Niko's actions and omissions in relation to the blowouts violated relevant safety standards.

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[186] Wright 1, page 5.
[187] HT 2015.11.02 (Day 1), page 67, lines 17-18.
[188] C-PHB, paragraph 58.
[189] R-PHB, paragraph 18.

365. In light of these considerations, the Tribunal will therefore have to focus its examination on the question whether a failure of Niko to observe safety measures, specifically prescribed by any of the relevant standards or as they had to be observed by a reasonable and prudent operator in the given circumstances, caused or contributed to the blowouts.

7.3 Petroleum Industry Standards

366. Relying on explanations by Dr Adams, the Respondents state that "many generally accepted standards of the international Petroleum Industry are identified in API publications, academic writings and well control training materials".[190] During the course of these arbitrations, the relevance of the API publications was recognised and their content was intensively discussed. Reference to other sources for determining International Petroleum Industry Standards also was considered.

367. Several of the texts considered by the Parties were issued in successive versions. The Parties agree that a version issued after the two blowouts that occurred in January and June 2005 may not be relied upon as an expression of Petroleum Industry Standards relevant for the determination in the present case. The Tribunal, nevertheless, asked the Parties whether during the period after 2005 substantial changes occurred with respect to such standards relevant for the design and operation of production and relief wells. No such changes were identified.

7.3.1 The American Petroleum Industry (API) Publications and their Relevance

368. The principal texts on which **the Respondents** rely are publications of the American Petroleum Institute (**API**). At the November 2015 Hearing the Respondents presented the role of the API in the international Petroleum Industry as follows:

> *There is no international petroleum legislator but there are recognised associations that issue documents setting forth industry standards based on years of accumulated study and practice. The primary*

[190] R-PHB, paragraph 29.

organisation in the world for the petroleum industry is the American Petroleum Institute or the API.

Now, the API of course does not have legislative authority. It issues what it calls recommended practices but, in fact, these recommended practices are standards. The API standards set forth as recommended practices are followed worldwide by operators of all sizes. They have been adopted in many of the most important oil-producing regions such as Norway and the United Kingdom, as Dr Adams will discuss in more detail.[191]

369. Relying on statements of the API about its publications, the Respondents assert:

> *… regardless whether or not they are mandatory or prescriptive, the API's Recommended Practices are standards and are "generally accepted standards of the international petroleum industry".*[192]

370. At the end of their explanations about the API "Procedures for Standards Development", the Respondents conclude that

> *… the JVA mandates the operator [i.e. Niko] to conduct operations in accordance with the [API] standards, whether or not the standards themselves are written in prescriptive language.*[193]

371. The Respondents base this conclusion on a statement on the API website:

> *Since 1924, the American Petroleum Institute has been a cornerstone in establishing and maintaining standards for the worldwide oil and natural gas industry.*[194]

and on a statement in the API "Procedures for Standards Development" according to which in

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[191] HT 2015.11.02 (Day 1), page 43, lines 4-20.
[192] R-PHB, paragraph 34.
[193] R-PHB, paragraph 35.
[194] R-PHB, paragraph 35, referring in FN45 to American Petroleum Institute, "Standards: FAQs and Inquiries, What is the value of standards?" available at http://www.api.org/Publications-Standards-and-Statistics/Standards/FAQs-and-Inquiries (last accessed 17 January 2016).

some cases, third parties or authorities having jurisdiction may chose to incorporate API standards by reference, and may mandate compliance with all requirements and recommendations.[195]

372. The Respondents go on to assert:

The Parties to the JVA are third parties who have incorporated the API standards by reference and mandated compliance by the Operator, Niko, with all standards, which by definition includes requirements and recommendations.[196]

373. Responding to this assertion, the Claimant firmly contested that what the Respondents called "the API standards" was incorporated by reference in the JVA. It denied that this theory had any foundation in the evidence.[197] At the February 2016 Hearing, the Respondents stated their position in somewhat different terms:

[Article 24.2.6 JVA] binds the operator to follow generally accepted standards of the international petroleum industry whether they are binding or not and this is exactly what the API recommended practices establish.[198]

374. The Respondents also asserted that "the API standards" were "followed" in Bangladesh.[199] They relied on the testimony of Mr Baqi, acting General Manager of the Geological Division of BAPEX from 1 January 2005 until May 2007. In his witness statement Mr Baqi writes:

The relevant standards of the international petroleum industry routinely followed by operators in Bangladesh include the standards of the American Petroleum Institute ("API"). Niko had to follow these recognized industry standards for drilling shallow gas to safely handle shallow gas in the Chattak field.[200]

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[195] R-PHB, paragraph 35, referring to API Procedures for Standards Development, Exhibit R-38, at paragraph 3.9. page 2.
[196] R-PHB, paragraph 35.
[197] HT 2016.02.21, pages 72 – 73.
[198] HT 2016.02.21, page 282, lines 5-9.
[199] R-PHB, paragraph 31.
[200] WS Baqi, paragraph 6.

375. At the November 2015 Hearing, Mr Baqi was questioned about this testimony. He replied that he was a geologist who had not seen the API guidelines and relied on what he was told by those performing drilling operations. Mr Baqi testified in Bengali and the translation of his testimony gave rise to some discussion. The Tribunal summarised his explanations to verify whether its understanding reflected what he intended to say:

> *So you have no concrete evidence what standards are followed by drilling – by local companies or particularly BAPEX when drilling?*
>
> *MR BAQI: The information that I have is that BAPEX follows the ONGC of India, Dehrdun India.*[201]

376. **The Claimant** commented at the February 2016 Hearing:

> *I submit that where the Managing Director of BAPEX had no personal knowledge of API and had never seen them, it strains credulity to suggest that any predecessor involved in the negotiation of the JVA had an intention expressly shared by Niko to be incorporating by reference the API standards by the language used in the JVA.*[202]

377. Concerning the relevance of the API documents for determining the content of *international* standards, the Claimant also referred to the API Procedures for Standards Development and asserted that

> *… the API as an institution is a US industry association, and it does not have, or even purport to have, a mandate from competent authorities to set internationally applicable standards.*[203]

378. The relevance of the API recommended practices has, however, not been denied by the Claimant. Mr Adolph accepted that

> *… API is something that operators consult to give them some guidance on how to conduct various operations.*

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[201] HT 2015.11.06 (Day 5), page 1158, lines 9-15; on the ONGC see below section 7.3.3.
[202] HT 2016.02.21, page 73, lines 11-17.
[203] C-PHB, paragraph 69, referring to Exhibit R-38, paragraph 2.

MS PASIPANODYA: In Bangladesh?

MR ADOLPH: Worldwide I would say.[204]

379. At the November 2015 Hearing the Claimant's counsel stated that the scope of application of the API practice in various countries could better be explained by the experts, but then clarified:

> *There are other organisations but we do not dispute that the international petroleum industry would look to API as representing an authoritative organisation, so the question really is what are the practices that are before you.*[205]

and

> *There is no doubt and we do not dispute and I believe your questions to the experts will highlight this, that API and API recommended practices are documents that the industry generally looks to for guidance.*
>
> *The distinctive point that appears to be the difference between Niko and BAPEX and their respective experts is whether or not they establish a codification of practice that is mandatory.*[206]

380. Similarly, at the February 2016 Hearing the Claimant stated:

> *MR TARNOWSKY: We accept that the API recommended practices are a publication, an industry publication that has some application as guidance for operations in the petroleum industry.*[207]

and

> *… the API recommended practices are informative and they are materials that ought to be looked and considered in trying to understand or articulate whether they are applicable to the operations*

[204] HT 2015.11.05 (Day 4), page 952, lines 1-5.
[205] HT 2015.11.02 (Day 1), page 124, lines 14-19.
[206] HT 2015.11.02 (Day 1), page 134, lines 11-20.
[207] HT 2016.02.21, page 74, lines 16-19.

here is a matter of some dispute. So they do provide some potential guidance …[208]

381. **The Tribunal** considers that, as the Respondents have recognised, the API recommended practices have no legislative force, not in the United States and not in Bangladesh.

382. The Respondents' theory of the API "standards" being somehow incorporated by reference has no evidentiary basis. The API is not mentioned in the relevant provisions and there is no evidence that any API texts were in the Parties' mind when they agreed on Article 26.2.4 of the JVA; Mr Baqi's testimony examined above, indeed points into a different direction. Nor can it be assumed that the term "generally accepted standards of the international Petroleum industry" meant specifically the API texts and the API recommended practices on which the Respondents rely.

383. This being said, it is clear from the Parties' argument that they accept the API recommended practices as a valuable source for determining "generally accepted standards of the international Petroleum industry", as they are applicable to Niko's conduct according to Article 26.2.4 of the JVA.

384. The Tribunal, therefore must turn to the relevant API texts and examine how these texts can contribute to the understanding of the substance of the International Petroleum Industry Standards. When considering Niko's conduct concerning the blowouts, the Respondents refer specifically to two texts in the API series of Recommended Practices (**RP**), one concerning Well Control Operations (API RP 59),[209] the other for Diverter Systems Equipment and Operations (API RP 64).[210]

[208] HT 2016.02.21, page 77, line 24 to page 78, line 5.
[209] API RP 59, Recommended Practices for Well Control Operations, first edition, 20 August 1987, Exhibit R-43.
[210] API RP 64, Recommended Practice for Diverter Systems Equipment and Operations, second edition, November 2001, Exhibit R-42.

7.3.2 The relevant API publications relied upon by the Respondents: RP 59 and RP 64

385. From the information provided in these two RPs it appears that the principal document is API RP 59. The other publication relied on by the Respondents, API RP 64, concerning diverter systems, is presented as a "companion to RP 59". Both publications also refer to another "companion" on which the Respondents do not rely: API RP 53 entitled "Recommended Practices for Blowout Preventor Equipment Systems for Drilling Wells".[211]

386. The foreword of the first of these recommended practices, RP 59, in the version of 1987, explains that the recommendations

> *… represent a composite of acceptable practices employed by various operating and drilling companies …*
>
> *Recommendations presented in this publication are based on industry experience and expertise involving worldwide operations.*[212]

387. The same foreword underlines that the "publication is not represented to be comprehensive as to all theories and practices utilized in industry well control operations"; and the section describing the Scope of the publication states:

> *Recommended practices set forth in this publication are considered adequate to meet specified well conditions. It is recognized that there are alternate procedures which can be utilized in well control that may be equally as effective in meeting the well requirements and promoting safety and efficiency.*[213]

388. Similar comments are contained in RP 64 in the version published in 2001, which develops some of the points addressed in the earlier version of RP 59. The foreword to RP 64 also explains:

> *The goal of this voluntary recommended practice is to assist the oil and gas industry in promoting personnel and public safety, integrity of the drilling equipment, and preservation of the environment for land*

[211] API RP 59, Exhibit R-43, paragraph 2.1, and API RP 64, Exhibit R-42, paragraph 1.2.
[212] API RP 59, Exhibit R-43, paragraphs 1.1 and 1.3.
[213] API RP 59, Exhibit R-43, paragraphs 1.2 and 2.6.

and marine drilling operations. This recommended practice is published to facilitate the broad availability of proven, sound engineering and operating practices. This publication does not present all of the operating practices that can be employed to successfully install and operate diverter systems in drilling operations. Practices set forth herein are considered acceptable for accomplishing the job as described; equivalent alternative installations and practices may be utilized to accomplish the same objectives.[214]

389. The voluntary application of the text in the nature of a "guide" is underlined also in RP 59:

> *1.3 It is intended that these voluntary recommended practices provide guidelines that will promote and maintain personnel safety, public safety, preservation of the environment, and preservation of drilling and well equipment. […]*
>
> *1.4 These recommended practices may be used by anyone desiring to do so. […]*

and

> *2.1 The purpose of these recommended practices is to provide information that can serve as a voluntary industry guide for safe well control operations.*[215]

390. Despite their voluntary nature as guidelines, the RPs use language that appears prescriptive. The foreword to API RP 64 explains:

> *This publication includes use of the verbs shall and should; whichever is deemed most applicable for the specific situation. For the purposes of this publication, the following definitions are applicable:*
>
> *Shall: Indicates that the recommended practice(s) has universal applicability to that specific activity.*

[214] API RP 64, Exhibit R-42, Foreword, page iii.
[215] API RP 59, Exhibit R-43, paragraphs 1.3, 1.4 and 2.1.

Should: Denotes a recommended practice(s) a) Where a safe comparable alternative practice(s) is available; b) that may be impractical under certain circumstances; or c) that may be unnecessary under certain circumstances or applications.

Changes in the uses of these verbs are not to be effected without risk of changing the intent of recommendations set forth herein.[216]

391. The RP also recognise the diversity of situations and of opinions on the most appropriate manner of dealing with specific situations. For instance, with respect to an issue central to the present case RP 59 states:

Casing setting depths vary according to well conditions.[217]

392. Concerning another much-debated issue, RP 64 states:

Opinions differ throughout the drilling industry concerning well control involving shallow gas.[218]

393. The Tribunal also notes that the recommendations underline the importance of analysing the circumstances of a specific situation and the use of sound judgment. The foreword of the API RP 59 states expressly:

This publication cannot be substituted for qualified engineering analysis and applicable sound judgment to fit a specific situation. An operator may be faced with a less demanding or more demanding operating situation for which alternative well control practices may be appropriate and which may provide equivalent safety and environmental protection.[219]

394. A similar statement is made in the foreword to RP 64:

This recommended practice is not intended to obviate the need for qualified engineering and operations analyses and sound judgments

[216] API RP 64, Exhibit R-42, Foreword, page iii.
[217] API RP 59, Exhibit R-43, Section 5, paragraph E, page 30.
[218] API RP 64, Exhibit R-42, paragraph 1.2.
[219] API RP 59, Exhibit R-43, paragraph 1.5.

as to when and where this recommended practice should be utilized to fit a specific drilling application.[220]

395. While insisting that the API "standards [are …] known to the international community out there that tell you how to do something right", the Respondents also accept the importance of sound engineering judgment and an element of discretion in the application of API recommendations:

> *The API does recognise that sound engineering judgment must be used to determine when the standard should be applied. These are not a 55-mile an hour speed limit, you have to do this. These are the standards that should be used because they are time tested, used and vetted but that does not relieve you of the obligation to use engineering to see if the standards will work in your circumstances.*
>
> *There is clearly an element of discretion in applying these standards. We do not deny that. The standards – the API does not make them absolute. It says this is what you should do in the circumstances as they have been done in the past and it says you have to apply engineering judgment in order to apply them, but it does not mean that you just get to do whatever you want because the API says that by applying engineering judgment you might come to another judgment.*[221]

396. **The Tribunal** concludes that API RP 59 and 64 are relevant texts that can provide useful information when determining Petroleum Industry Standards applicable according to Article 26.2.4 of the JVA. These publications are recommendations based on broad industry experience; but they do not prescribe specific actions concerning well design or blowout control. In their application the specific circumstances of each well must be considered, using sound engineering judgment.

7.3.3 Other sources for Petroleum Industry Standards

397. Apart from the API RPs, the principal document on which the Respondents rely for determining Petroleum Industry Standards is the Well Control

[220] API RP 64, Exhibit R-42, Page iii.
[221] HT 2016.02.21, page 284, lines 1-19.

Training Manual of the Well Control School at the Institute of Drilling and Technology, Oil and Natural Gas Corporation Limited, Dehradun, India,[222] sometimes referred to as the **ONGC Manual**.

398. In his witness statement Mr Baqi stated that "in Bangladesh, the operators follow" this manual,[223] without providing any particulars and without explaining which operators, national or international, he had in mind and on what basis these operators "follow" the manual. At the November 2015 Hearing Mr Baqi clarified: "the information that I have is that BAPEX follows the ONGC of India, Dehradun, India".[224] He explained why this manual was followed by BAPEX:

> *The drilling workers of BAPEX are people of Bangladesh so they need to follow certain laws and they have followed the – they follow the Dehradun.*[225]

399. The Respondents refer to the ONGC Manual in particular as a support for their reliance on API RP 59. The Introduction of the Manual begins thus:

> *The successful detection and handling of threatened blowouts ('kicks') is a matter of utmost importance to any company in the business of oil and gas exploration and production. Standard guidelines for well control procedures are elaborated in API RP59. It is extremely important that all personnel involved in the working of a drilling rig have a thorough understanding of these procedures.*[226]

400. The Tribunal sees in this reference to API RP 59 a confirmation of the relevance and broad recognition of the API publication beyond the borders of the US and in South Asia. The ONGC Manual also may be considered as a possible indication of practices in the international petroleum industry. The Tribunal, therefore, has considered the references to this manual occasionally made by the Respondents.

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[222] R-PHB, paragraph 31, referring to Exhibit R-33.
[223] WS Baqi, paragraph 6.
[224] HT 2015.11.06 (Day 5), page 1158, lines 13-15.
[225] HT 2015.11.06 (Day 5), page 1160, lines 14-17. At the hearing some variations were proposed to the quoted translation; these did not change the meaning substantially: the reason for following the ONGC Manual is that as Bengali people they need to follow certain regulations.
[226] Exhibit R-33, paragraph 1.0.

401. In this context, the Respondents, relying on explanations by Dr Adams, referred to other "**well school manuals** on well control and other industry publications [that] also set forth industry standards". The Respondents assert that these other sources confirm that the standards BAPEX has identified are the generally accepted standards of the international petroleum industry designed for safe, efficient and economic production".[227] In the Respondents' argument about Niko's conduct in relation to the blowouts such other manuals did, however, play no role.

402. The Respondents have also referred to the practice of operators and the manuals prepared by them: "We understand that **operators** worldwide publish their own **well control manuals**." They further assert that these manuals "require conduct consistent with the API standards".[228] No such manuals were however produced.

403. At the November 2015 Hearing references were made to **Niko's own manuals**. Mr Adolph stated that Niko had a "drilling control manual" and that manual was "constantly update[d]".[229] Further to a request from the Tribunal, the Claimant's counsel enquired about this manual and informed the Tribunal that "a February 2005 edition of Niko's drilling and work over SWP [Safe Work Procedure] manuals" was located and that that version contained a chapter on well control. That document was produced as Exhibit C-110.

404. Counsel continued by stating that the Claimant was continuing to look for a version in force in December 2004 when drilling began.[230] He added, however, that the SWP manual produced was a "safety manual" and that it was "company practice […] not to have old manuals lying around …".[231] No further Niko manuals were produced and the Respondents argued:

> *Since then, however, counsel for Niko has insisted that Mr. Adolph was referring to the "Safe Work Procedure" Manual and that the current version is "wholly irrelevant." If Niko in fact did not have a well control manual, but only an HSE manual, then this is clear*

[227] R-PHB, paragraph 37.
[228] R-PHB, paragraph 38.
[229] HT 2015.11.06 (Day 5), page 1045.
[230] HT 2015.11.06 (Day 5), page 1163.
[231] HT 2015.11.06 (Day 5), page 1164.

evidence of their lack of diligence and conscientiousness in their operations.[232]

405. Finally, the Respondents referred to **legislation** in the **Texas**, US, requiring the installation of diverters. Dr Adams had not mentioned that legislative requirement in his report, but referred to it at the November 2015 Hearing. Dr Adams stated that no other regulations came to mind that he had not previously mentioned.[233] The Respondents then produced as Exhibit R-39 the **Texas Administrative Code** of 1 January 2014, together with a document of the Standards Council of Canada, of November 2013.[234]

406. The Claimant considered the documents "completely irrelevant to the issues before the Tribunal", given their date of issuance.[235] It also argued that the diverter requirement in that regulation concerns a situation different from that in the present arbitrations.[236]

407. **The Tribunal** concludes that none of these texts are mandatory for Niko's drilling in Bangladesh in 2005 and for reasons stated by the Claimant, their relevance for the Tribunal's decision is doubtful. They may, however, be considered to the extent to which they provide information on Petroleum Industry Standards relevant with respect to Niko's obligations concerning the blowouts.

7.4 Other sources of Niko's obligations

408. Article 26.2.4 of the JVA includes among the sources of obligations for Niko's conduct as operator the "applicable law [and] this JVA". The Respondents rely on obligations from these two sources.

7.4.1 The Laws of Bangladesh

409. Under the heading "Applicable Law", Article 13 of the JVA provides: "The validity, interpretation and implementation of this JVA shall be governed by the laws of Bangladesh." The Respondents state that

[232] R-PHB, paragraph 38.
[233] HT 2015.11.04 (Day 3), pages 577 – 580.
[234] HT 2015.11.06 (Day 5), pages 1132 – 1133.
[235] HT 2015.11.06 (Day 5), page 1132.
[236] C-PHB, paragraphs 159 – 162.

> *… the laws of Bangladesh were applicable ipso facto to Niko's conduct as an operator in the territory of Bangladesh. Niko was and continues to be, subject to criminal proceedings and civil liability under the laws of Bangladesh, and BAPEX has not asserted any violation of such laws outside the scope of Article 26.2.4 of the JVA.*

410. The Respondents add, however:

> *The language of Article 26.2.4 makes violations of law also a breach of the JVA that could give rise to liability to BAPEX, if the breach of the law caused injury to BAPEX.*[237]

411. In their submission of 12 October 2015, the Respondents identified **environmental law** as a source to be considered. They referred to the Bangladesh Environment Conservation Act, 1995 (ECA) and the Environment Conservation Rules, 1997 (ECR). They quoted Section 9 of the Act:

> *Where due to an accident or other unforeseen incident, the discharge of any environmental pollutant occurs or is likely to occur in excess of the limit prescribed by the rules, the person responsible and the person in charge of the place of occurrence shall take measures to control or mitigate the environmental pollution.*[238]

412. As the Claimant pointed out, this provision "in no way addresses the legal issue before the Tribunal – the standard of care that a person should have taken to prevent the discharge. Section 9 has no application here."[239]

413. A similar conclusion applies with respect to the Respondents' reference to **Fraudulent Misrepresentation**.[240] The Respondents' explanations in this respect do not identify standards by reference to which Niko's conduct in relation to the blowouts must be determined.

414. The Respondents also referred to **general tort liability**. They quoted from a recent decision of the Appellate Division of the Supreme Court of Bangladesh for the definition of the concept of tort in the law of

[237] R-PHB, paragraph 26.
[238] Quoted at B-CD.8, pages 4 - 5.
[239] C-CD.7, paragraph 14.
[240] B-CD.8, page 6.

Bangladesh.[241] The Claimant identified negligence as the only relevant tort and argued that the relevant duty of care must be defined. It added:

> *(i) the JVA standard encompasses both Bangladesh and international law standards applicable to the petroleum industry and (ii) the negligence standard under Bangladesh tort law encompasses the JVA standard.*
>
> *BAPEX has provided no authority to suggest that the negligence standard under Bangladesh law, for purpose of a case involving petroleum operations, is different from the JVA standard. Therefore the evidence and expert reports that Niko has submitted addressing liability under the JVA are equally applicable to liability under the tort of negligence under Bangladesh law.*

415. The Tribunal agrees. It has not been demonstrated that the relevant standard under Bangladesh tort law is more exacting than that prescribed by the JVA.

416. As explained above, the Respondents thus failed, despite the Tribunal's formal invitation in October 2015, to indicate any laws of Bangladesh that Niko's operations had breached and thereby caused the damage flowing from the blowouts. When the Tribunal, in Procedural Order No 12, observed that the List of Breaches that it is to consider was complete, no Law of Bangladesh had been identified.

417. At the November 2015 Hearing, when addressing the sources of obligations set out in Article 26.2.4 of the JVA, the Respondents confirmed: "No specific question of the violation of applicable law has been presented to the Tribunal for consideration".[242] The Tribunal concluded that "for the purposes of this case" the reference to the applicable law "falls away"; the Respondents did not object.[243]

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[241] *British American Tobacco Bangladesh Company Ltd. v. Begum Shamsun Nahar*, Supreme Court of Bangladesh (Appellate Division), Judgment (13 October 2010), 66 DLR (2014) 80, paragraph 9, referred to at B-CD.8, page 4.
[242] HT 2015.11.02 (Day 1), page 42.
[243] HT 2015.11.02 (Day 1), page 109; reference was made to point 2 of the Respondents' four-part standard, as recorded above in Section 7.2.

418. Indeed, relying on findings of the Government Commission enquiring into the causes of the first blowout, the Claimant stated that there was no regulatory regime in Bangladesh prescribing mandatory standards:

> *Several oil and gas producing jurisdictions in fact have in place regulatory regimes that prescribe specific mandatory standards with respect to the drilling of oil and gas wells. It is common ground that Bangladesh did not have such a regulatory regime in place at the times material to this arbitration. Indeed, it still has no such regulatory framework, or even an applicable set of "guidelines" pertinent to drilling.*[244]

419. The First Enquiry Report by the Committee set up by the Government to determine the causes of the blowout on which the Claimant relies states:

> *Guidelines associated with such drilling should be adopted and enforced in Bangladesh for in future the country will produce many of its shallow gas. The necessity for an upstream regulator, therefore, may receive urgent attention.*[245]

420. The Claimant concluded in its Post-Hearing Brief that the Respondents seemed to have abandoned additional grounds or recognised that such positions have no foundation.[246]

421. It was only with their Post-Hearing Brief of 22 January 2016 that the Respondents introduced a reference to specific Bangladeshi legislation creating a legal obligation in relation to the blowouts:

> *According to the **Bangladesh Petroleum Act of 1974**, any person engaged in petroleum operations must "control the flow, and prevent the waste or escape" of petroleum and "prevent damage to petroleum bearing strata in any area." These obligations are also contained in the JVA and Niko's absolute obligations in respect of them are reinforced by this independent legal obligation.*[247]

[244] C-PHB, paragraph 65.
[245] Enquiry Report, Exhibit R-3, paragraph 6.22.
[246] C-PHB, paragraph 61.
[247] R-PHB, paragraph 26.

422. The Respondents quote sections 6 (1) and referred to 6 (2) (a) and (c) of the passages of the Bangladesh Petroleum Act on which they rely; they insist that "these are mandatory obligations without any reference to economic recovery":

> *6. (1) It shall be the duty of any person engaged in any petroleum operation-*
>
> *(a) to ensure that such petroleum operation is carried on in a proper and workmanlike manner and in accordance with good oil-field practice;*
>
> *(b) to carry on petroleum operation in any area in a manner that does not interfere with navigation, fishing, and conservation of resources of the sea and sea-bed;*
>
> *(c) to consider factors connected with the ecology and environment.*[248]
>
> *(2) In particular, and without prejudice to the generality of the foregoing provision, a person engaged in any petroleum operation shall, in carrying out such operation in any area,*
>
> *(a) control the flow, and prevent the waste or escape, in that area of petroleum or water;*
>
> *[…]*
>
> *(c) prevent damage to petroleum bearing strata in any area, whether adjacent to that area or not;*
>
> *[…]*[249]

423. At the February 2016 Hearing the Claimant objected to the newly introduced reference. It pointed out that no reference to any breach of Bangladeshi law had been made by the Respondents throughout the

[248] The Bangladesh Petroleum Act of 1974, CLA-5, quoted by the Respondents in R-PHB, page 9, FN 22.
[249] The Bangladesh Petroleum Act of 1974, CLA-5; the references are identified but not quoted at R-PHB, page 12, FN34.

proceedings: after "multiple rounds of written submissions […] after all of the evidence was submitted at the hearing, and after six days of hearing, BAPEX now seeks to raise a new theory of breach". The Claimant submitted that "this cannot be countenanced by the Tribunal and that this alleged submission of BAPEX must be ignored".

424. On the substance of the Respondents' reference, the Claimant emphasised the similarity of Section 6 (1) of the Petroleum Act with the "reasonable operator standard" of the JVA. It described the passages quoted from section 6 (2) as "merely a specific enumeration of particular duties that are intending to fall within the scope of the general standard articulated in section 6 (1) and […] do not, as submitted by BAPEX, constitute some form of absolute obligation".[250] It also points out that, according to section 10 of the Petroleum Act, no action lies against a person having acted in good faith and that, despite the express provision of sanctions under section 9 of the Act, no proceedings against Niko or its personnel have ever been commenced under the Petroleum Act.

425. **The Tribunal** notes the Respondents' failure to invoke any breaches of the Petroleum Act at any time before the Post-Hearing Brief of 22 January 2016 and the absence of any action in Bangladesh under that Act in relation to the blowouts. This failure and absence raise doubt about the applicability of the Act to the circumstances of this case.

426. In any event, the Tribunal also notes that the terms of Section 6.1 of the Petroleum Act do indeed resemble in some respects the wording of Article 26.2.4 of the JVA. The Respondents have not pointed to any aspect of these terms which differ from the obligations under that Article or impose more stringent requirements; and the Tribunal has not been able to identify such amplifying requirements. It seems rather the case that the obligations flowing from Article 26.2.4 of the JVA subsume those of Section 6.1 of the Petroleum Act and are in some respects more far reaching.

427. The Tribunal concludes that Article 26.2.4 of the JVA encapsulates Niko's obligations as the Operator that must be considered in the present case. As the Respondents stated at the November 2015 Hearing in terms quoted above: "No specific question of the violation of applicable law" needs be

[250] HT 2016.02.21, pages 83 – 84.

considered by the Tribunal when determining Niko's liability for the blowouts.

7.4.2 Other provisions of the JVA

428. The third part of the standard of Article 26.2.4 of the JVA identified by the Respondents requires the Operator to conduct Petroleum Operations in accordance with "this JVA". The Respondents have focussed on Article 27.1 of the JVA, and rely specifically on subclauses (d) and (f) of that provision.[251]

429. The relevant passages read as follows:

> *While conducting Petroleum Operations, OPERATOR shall take necessary measures in accordance with generally accepted standards of the international petroleum industry, for conservation, safety of life, property, crops, fishing and fisheries, navigation, protection of environment, prevention of pollution and safety and health of personnel, including but not limited to:*
>
> *[…]*
>
> *d) preventing damage to any Petroleum and water bearing formations, and other natural resources;*
>
> *[…]*
>
> *f) taking all necessary precautions to prevent pollution of or damage to the environment;*

430. The Respondents argue that "it does not matter if the standard is vague or non-mandatory, if there is something in accordance with this standard (*i.e.* not contrary to the standard) that Niko could do to protect the environment, prevent pollution, protect property, or ensure people's safety, Niko was obligated to do it."[252] The Respondents conclude that Article 27.1 of the JVA creates an "absolute obligation to avoid harming the population,

[251] R-PHB, paragraphs 78 – 80 and FN126.
[252] R-PHB, paragraph 78; similar at HT 2016.02.21, pages 294 – 296.

the environment, and the petroleum formation". It characterises this obligation as expressing a "strict liability standard".[253]

431. The Claimant sees no basis for inferring an "absolute obligation" and a "strict liability standard" from Article 27.1 of the JVA. It considers this provision "a more narrow application than the broadly applicable provision of Article 26.4 of the JVA which expressly addresses Niko's standard of care in conducting petroleum operations". As Article 27.1 also makes reference to the "same qualifier that Niko is to take necessary measures in accordance with the generally accepted standards of the international petroleum industry", Niko argues that this article does not "impose any different standard on Niko than its general standard of care under 26.2.4".[254]

432. The Tribunal sees in Article 27.1 of the JVA a broad, general obligation of protection in terms similar to the reliance on the generally accepted standards of the international petroleum industry. There is no basis for assuming strict liability.

433. Moreover, Article 27.1 of the JVA prescribes the obligation in general terms but does not specify how the defined objective of protection is to be achieved.

434. The measures taken to meet this objective must be "in accordance with generally accepted standards in the international Petroleum industry", as prescribed also in Article 26.2.4 of the JVA. The Tribunal concludes that the measures that the Operator must take for instance "to prevent pollution of or damage to the environment" under paragraph (f) of Article 27.1 do not require the application of a more demanding standard than those which the Operator must observe under Article 26.2.4 of the JVA.

7.5 The Experts

435. Both the Claimant and the Respondents emphasise the important contributions of the experts to the identification and understanding of the Petroleum Industry Standards. The Claimant explained:

[253] R-PHB, paragraph 80.
[254] HT 2016.02.21, pages 30 – 33.

> *The experts' opinions. That is what you need to look to and that is what you need to rely upon and make your decision upon. That certainly, as I said earlier, the API recommended practices are informative and they are materials that ought to be looked [at] and considered in trying to understand or articulate whether they are applicable to the operations here is a matter of some dispute. So they do provide some potential guidance but at the end of the day the only evidence that you have before you as to generally accepted standards of the international petroleum industry are the opinions of the experts who are the participants in the international petroleum industry.*[255]

436. The Respondents discussed the API documents and other sources of industry standards and then continued:

> *In addition to the written texts BAPEX identified, the three well control experts, in their written reports and at the hearing, confirmed the existence of the generally accepted standards identified by BAPEX regarding well planning, adequate training, shallow gas handling, setting the casing deep enough to withstand anticipated pressures, and the use of a diverter when faced with a shallow gas risk.*[256]

437. Three experts on well design and drilling, including relief wells, appeared before the Tribunal.

438. The Claimant appointed **Mr John Wright** as expert and provided, together with its Reply of 29 May 2014 submitted Mr Wright's "independent opinion [also dated 29 May 2014] with respect to the well design and drilling of the Chattak 2 Well which suffered a loss of control incident (blowout) on January 7, 2005 and the subsequent design and execution of the relief well operations for Chattak 2A which also suffered a loss of control incident (blowout) during the course of the relief well operations on June 24, 2005."

439. Mr Wright's opinion describes his training and experience as a professional engineer registered in the Texas, US with different companies in the oil and gas industry since 1978. In 1989, he started his own company called John Wright Company and, after that company was acquired by Boots &

[255] HT 2016.02.21, page 77, line 21 to page 78, line 10.
[256] R-PHB, paragraph 39.

Coots, established Bearco International LLC, focusing primarily on relief well design and execution. He stated that he worked on 83 relief well projects and designed and supervised 41 relief well or intersection projects around the world. The personnel of his company, Mr Wright and two others, "have more relief well experience than all other competitor companies combined".[257]

440. Mr Wright also mentions that he designed the relief well and managed the relief well special services for the Occidental blowout at Moulavi Bazar in 1997,[258] concluding that he has "first-hand experience in the types of problems encountered in the Chattak 2 blowout".[259]

441. Noting that the Respondents did not contest in any substantive manner the Claimant's argument and evidence concerning the issue of Niko's liability for the two blowouts, the Tribunal issued Procedural Order No 7,[260] explaining:

> *Given the technical nature and the complexity of many of the issues arising in this context, the Tribunals do not wish to proceed in the absence of a critical review of the technical issues arising from the Claimant's case. In the circumstances the Tribunals require the opinion of an independent expert or, given the diversity of the relevant substance matters, several experts.*

442. Following the process described in Procedural Orders No 7 and 8 and after consultation with the Parties, the Tribunal appointed, by letter of 31 March 2015, **Mr Leo William Abel** as Gas Well and Relief Well Design and Execution Expert.

443. According to the report provided by him which was submitted to the Parties, Mr Abel is a Specialist Consultant – Drilling and Well Control; holding a BScE and an MBA, he is registered as Professional Engineer in the Texas, US. He started his career in 1977 as Drilling Superintendent / Drilling Engineer at Arabian American Oil Company. He continued working in this sector and, in 2015, became Managing Director of Abel Engineering LLP, describing its activity as follows:

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[257] Wright 1, Appendix A, paragraph 1.3.
[258] See below Section 8.2.1.
[259] Wright 1, Section 2.3.
[260] See Section 3.2.2.

Specialty engineering consulting business for pressure control projects including relief wells, capping operations, snubbing operations, well kill, firefighting and well control operations.

Specific responsibilities:

• Drilling engineering and completion operations (incl. HTHP well design) worldwide.

• Principal engineer for well control tasks: relief well drilling, dynamic two-phase flow modelling, blowout contingency planning, project management of well control incidents.

444. Mr Abel provided a report, dated 8 June 2015 (**Abel 1**) which was submitted to the Parties for comments.

445. After the Respondents had announced the appointment of new counsel in July 2015, the Respondents presented Comments on the Tribunals' Experts Report, dated 31 August 2015, which were accompanied by Observations by an expert engaged by the Respondents, **Dr Neal Adams**, a Registered Professional (Petroleum) Engineer of 33 years' standing. (**Adams 1**).

446. With these Observations, Dr Adams presented detailed biographical information, to wit that he had

… worked in 33 countries over a 43 year career. He is an experienced drilling (land, offshore and deepwater), production and completion engineer specializing in, among other areas well and blowout control, drilling planning and operations, site supervision, rig and site safety, drilling rigs, drilling optimization and drilling problems, production impairment/restoration and fracturing.

His field work includes well site supervision and implementation of new drilling and well control techniques including the vertical intervention procedure from floating rigs, offset kills in shallow water, installation and operation of a subsea snubbing unit, relief well drilling from floaters, well intervention over live sour gas blowouts and shallow gas handling.

Contributions in the field of drilling engineering address kick and blowout control, well planning, optimization of casing setting depth selection to prevent underground blowouts, stuck pipe and casing failures during fracturing operations.[261]

447. The Tribunal accordingly had the benefit of the knowledge and experience of three experts having many years' experience in the international petroleum industry, and specifically with drilling and controlling petroleum wells as well as dealing with blowouts. In addition to the reports mentioned above, each of the experts provided extensive oral explanations at the November 2015 Hearing.

448. From the disclosures made by the experts, the Tribunal noted that the experts knew each other well and on occasion had worked together. The Tribunal drew the Parties' attention to this circumstance at the beginning of the November 2015 Hearing; no objection was raised.[262]

449. As will be seen from other explanations in this Decision, all three experts contributed greatly to the Tribunal's understanding of technical issues raised by the dispute and of the standards that have to be considered when deciding it. In addition to inviting relevant technical explanations, the Tribunal expressly invited the experts to inform the Tribunal "of any other texts which we would have to look to when we seek to identify the standards".[263]

450. When considering the explanations given by the experts in their reports and at the November 2015 Hearing, the Claimant expressed a view about **the manner in which the Tribunal should deal with the conflicting views expressed by the experts**. It noted:

It is apparent from the reports filed by Mr. Wright and Dr. Adams, as well as from the extensive discussions at the hearing, that Mr. Wright and Dr. Adams have very different views on several matters. Where the evidence of Mr. Wright conflicts with the evidence of Dr. Adams, the Tribunals will have to decide which position is to be preferred in

[261] Neal Adams' Observations on the Tribunal's Experts Reports, 31 August 2015 (Adams), page 2 of the attached CV.
[262] HT 2015.11.02, page 29, line 22 to page 30, line 4 and above section 3.2.12.
[263] HT 2015.11.02 (Day 1), page 125.

light of their assessment of the experts' respective skill, experience, credibility and demeanor at the hearing, the documentary and witness evidence of record, and the use and impact of any hindsight in the formulation of their respective opinions.[264]

451. The Claimant continued by submitting that "Mr Wright has far more applicable, relevant and extensive practical experience, spanning a broad range of jurisdictions and covering a comprehensive spectrum of drilling facets". It also submitted that Mr Wright's evidence was "robust, presented in a fair and balanced manner, and consistent". The Claimant concluded that "far greater weight should be given to the opinions of Mr Wright and, where Mr Wright and Dr Adams differ in their opinions and conclusions, the Tribunal should be guided by the opinions of Mr Wright instead of Dr Adams."[265]

452. The Tribunal did indeed find the explanations of Mr Wright on many aspects very helpful; in the present Decision it refers to his opinions frequently. That does not mean that the Tribunal gave preference to his opinion generally, or as a matter of principle. The Tribunal considered the explanations given by the experts on industry standards, on the factual circumstances of the case and on other matters on which they opined; it weighed these opinions for their inherently persuasive value, without giving preference to any opinion on the ground that it was expressed by one expert rather than by another.

453. The Tribunal made this position quite clear to the Parties, addressing counsel at the February 2016 Hearing:

We are not bound [by] what one or the other expert says or to pick one or the other expert. We are getting opinion from different experts. We have our own mind. We apply our own mind to that and make our decision.

[264] C-PHB, paragraph 44.
[265] C-PHB, paragraphs 45 – 47.

You as counsel and your other experts have the opportunity to criticise that and we take the criticism also into consideration. I think that should be clear.

We are not just saying because Mr Wright or Mr Abel or Mr Adams are experts we take what they are saying. We apply our own mind to it.[266]

454. A related issue arose with respect to the **opinions expressed by Mr Abel**, the Tribunal appointed expert, and the manner in which the Tribunal should consider them. In particular, the Claimant objected that Mr Abel expressed opinions beyond the scope of his Terms of Reference.

455. These Terms of Reference were issued in the spring of 2015, before the Respondents had decided to argue the case of the Compensation Declaration on the merits and before they had appointed experts in support of their defence. This left the Tribunal only with Mr Wright's opinion. In these circumstances the Tribunal defined Mr Abel's assignment in the following terms:

- *examining the analysis and opinions concerning the design of gas wells, in particular their casing, and the related drilling operations in the context of marginal/abandoned gas field development, as well as the design and execution of relief wells for the purpose of well blowout control, as set out in the Expert Report of John Wright (May 29, 2014) and in the relevant Committee Reports identified in Annex B; and*

- *expressing his views on the methodology adopted and the opinions stated by John Wright, and the methodology and opinions stated within the relevant Committee Reports identified in Annex B, and the technical positions expressed by the Claimant (to the extent such technical positions are different from those of the Claimant's expert).*

456. The Terms of Reference, which were adopted following consultation with the Parties, made it clear that Mr Abel also was "expected to point out any deficiencies in methodology and calculations contained in such reports as well as any resulting necessary corrections thereto. The Tribunal Expert

[266] HT 2016.02.22, page 333.

shall not present a new evaluation, different in methodology from that set forth by John Wright or adopted within the relevant Committee Reports". The Terms of Reference reserved the possibility that the expert "is of the view that a different approach is required for properly assessing the factual situation in the present case", reserving for the Tribunal to decide on how to proceed in that eventuality.

457. Mr Abel completed his report on 8 June 2015. In that report, Mr Abel discussed the technical issues that arose from the factual situation, as it appeared from the available evidence, and the opinion expressed by Mr Wright. As part of his report, Mr Abel identified what he considered the relevant questions and the answer that Mr Wright had given in his report. Mr Abel examined this answer, explained where he agreed and where he disagreed, stating in case of disagreement what he considered as the correct answer.

458. Mr Abel's report was delivered to the Parties and they were given an opportunity to comment in two exchanges of submissions of 31 August and 30 September 2015. In its Comments of 31 August 2015, the Claimant objected to Mr Abel's report, asserting that he "grossly failed to respect the Terms of Reference", it discussed points where it disagreed with Mr Abel's report. It requested that the Tribunal "accord no weight to the expert report of William Abel given its material and prejudicial failure to respect the Terms of Reference agreed by the Parties and ordered by the Tribunals". It also requested:

> *If the Tribunals determine that, notwithstanding Niko's submissions, Mr. Abel's Report is, in whole or in part, to be given weight, Niko respectfully submits that it must be given a full opportunity at the hearing to lead evidence from Mr. Wright to address Mr. Abel's novel contentions.*[267]

459. The Claimant was given an opportunity of commenting both the report of Mr Abel and that of Dr Adams which the Respondents had produced on 31 August 2015 (**Adams 1**). It did so in a submission of 23 October 2015 and by a second report from Mr Wright, also dated 23 October 2015, (**Wright 2**). In this second opinion Mr Wright wrote:

[267] C-CD.3, paragraph 54.

> *While, in general, Mr. Abel's report is presented in a fair and balanced way, in some instances he went beyond the assessment of my report and delved into how the blowouts could have been avoided and what procedures could have been used for a successful outcome. Although this is commonly what we, as specialists, do when assessing a blowout, I purposely avoided this approach as it leads to hindsight conclusions and was not, as I understood my mandate, what was being asked. With hindsight, it is almost always obvious what might have been done differently to prevent a blowout and this case is no different. As noted in my report, I understood my task to be to assess what was done by Niko and its consultant GSM against the "reasonable operator" standard. To the extent Mr. Abel addresses that question, I do not agree with all of his opinions and my comments follow.*[268]

460. At the November 2015 Hearing, the Tribunal referred to the development that occurred in the presentation of the expert reports: originally the Tribunal appointed its own expert, because the Respondents had not presented their own expert. Since that had changed, the Tribunal considered Mr Abel's role primarily in assisting the Tribunal in finding its way "through the complicated and complex explanations made by the two experts".[269] The Tribunal was not of the opinion that Mr Abel had overstepped his mandate; but it added that, in the interest of transparency, it had asked Mr Abel to provide his explanations in front of the Parties and their experts, affording to them the opportunity to "complete, correct or adjust these explanations".[270]

461. This is indeed what happened at the November 2015 Hearing. The Parties and their experts had ample opportunity of discussing Mr Abel's views at that hearing; and they did so extensively. The Parties then had further opportunities to address Mr Abel's explanations. They did so in the Post-Hearing Briefs and at the February 2016 Hearing.

462. In its Post-Hearing Brief, the Claimant stated:

> *While Mr Abel also played an important educative role at the hearing, Niko has taken note of the Tribunals' clear statement at the outset of*

[268] Wright 2, page 3.
[269] HT 2015.11.02 (Day 1), page 15.
[270] HT 2015.11.02 (Day 1), page 24.

> *the hearing that Mr Abel's role was to assist the Tribunals in understanding the technical issues relevant to the case, rather than to provide an independent opinion for the Tribunals to rely on. However, where Mr Abel contributed to the discussion of the key issues at the hearing, Niko has referred to certain observations of Mr Abel, both as contained within his report and also as expressed at the hearing.*[271]

463. The Respondents relied in their Post-Hearing Brief on a number of occasions on matters of opinion expressed by Mr Abel's in his report and at the November 2015 Hearing. They quoted in particular statements about what he described as "the inadequate overbalance" of the hydrostatic pressure in the wellbore and the kick detection and slow reaction of the drilling crew.[272]

464. At the February 2016 Hearing the Claimant raised the question whether the Tribunal intended to rely upon opinions expressed in the report prepared by Mr Abel. The Claimant stated that it had not relied upon or generally addressed the opinions expressed by Mr Abel, while the Respondents' Post-Hearing Brief repeatedly relied "on Mr Abel's opinions as opinions". In support it referred specifically to the two instances just mentioned and described them as "a couple of rather striking examples" for such reliance. The Claimant concluded:

> *So Niko maintains its objections to Mr Abel's opinions as expressed in his report. We have of course no objection to the Tribunal's reliance on Mr Abel to guide it in interpreting the evidence submitted by the parties but we do not believe that it is appropriate for the Tribunal to rely upon Mr Abel's opinions as independent opinions reflecting his independent analysis, which was beyond his Terms of Reference.*[273]

465. The Respondents disagreed, stating

> *… it is BAPEX's position that Mr Abel's opinion is in fact an independent opinion solicited by the Tribunal in order to allow it to have additional information above and beyond the opinion submitted*

[271] C-PHB, paragraph 43.
[272] R-PHB, paragraphs 144 and 147.
[273] HT 2016.02.21, page 14, lines 4-12.

by Claimant at a time when Respondent had not yet submitted an opinion.

It is our position that his opinion did not go beyond the Terms of Reference, that it is an independent opinion from a highly qualified expert that was hired by the Tribunal to provide an opinion and should be fully considered by the Tribunal on an equal footing to the opinions of the experts of Claimant and Respondent.[274]

466. The Tribunal addressed this point by referring to Mr Abel's Terms of Reference and stated:

From our perspective, the observations made by Mr Abel fall within the Terms of Reference and, therefore, are subject to comments by both parties.

If you had a misunderstanding in this respect, you the Claimant, we invite you to comment on these points tomorrow so that you will not be left without an opportunity of commenting on these aspects. Is that agreeable?

MR LEGUM: It is. My recollection is that we presented comments already in writing in our September 30 comments on the reports of the Tribunal experts but we will take another look at and try to make the Tribunal's work easier by focusing on what is important.[275]

467. Later at that hearing the Claimant emphasised the importance of the explanations from the experts:

… the Tribunals must, we submit, pay careful attention to the opinions of the experts.[276]

The Tribunal then raised specifically the question of Mr Abel:

PROFESSOR MCLACHLAN: … you advanced before us yesterday that the best evidence that we have available before us as to generally accepted industry standards is the evidence of the experts from whom

[274] HT 2016.02.21, page 14, line 21 to page 15, line 9.
[275] HT 2016.02.21, pages 219 – 220.
[276] HT 2016.02.21, page 44.

we heard because, as I understood it, all three of them were experts in the sense that they had specialist expertise in well relief of one kind or another.

I put it to you that that in and of itself cannot be a ground for giving less weight to Mr Abel's evidence than to the other experts in the light of your submission that the best evidence we have got is the evidence of the experts.

MR TARNOWSKY: I agree with you, Professor McLachlan, on that point, that the best evidence for the Tribunal to turn to is the evidence of the experts.[277]

468. **In conclusion** on this issue, the Tribunal does not believe that Mr Abel exceeded the scope of his assignment. In any event, even if Mr Abel had expressed opinions beyond the scope of his assignment, the Parties and their experts had full knowledge of these opinions and had every opportunity of responding; and, once again, the Tribunal, having heard the Parties' argument and their experts' opinions, makes the present Decision by making its own assessment of the relevant issues.

469. The Claimant raised **two other objections**:[278] one concerned Mr Abel's availing himself of the assistance of another person in making certain calculations, as he explained at the November 2015 Hearing;[279] the other objection concerned the standard applied by Mr Abel's approach when he explained: "we only used the information that was given to us and we gleaned from that as we would as if we were drilling this well on behalf of a client".[280]

470. Concerning the first of these objections, **the assistance provided to Mr Abel** with respect to certain calculations, the Tribunal explained that what was relevant from its perspective was

… what information and opinion is given to us. Mr Abel said the opinion he gave to us under your control and you can rebut or contest

[277] HT 2016.02.22, pages 331 – 332.
[278] HT 2016.02.22, pages 327 – 330.
[279] HT 2015.11.05 (Day 4), page 808.
[280] HT 2015.11.05 (Day 4), page 809.

or use your experts to rebut this opinion, so where he got it from is of secondary, if of any, importance.[281]

471. The Claimant's objection arose in the context of the calculation of the pore pressure gradient, for which Mr Abel used the value of 0.433 psi/ft.[282] This value is contested between the Parties and the Tribunal is fully aware of the controversy about this value. What matters for its assessment of the issue is the justification for the choice of this or another value and the arguments for and against this choice, and not the question who calculated the value.

472. The second objection, *i.e.* **the standard applied by Mr Abel**, is indeed a critical one. It concerns the question of whether the standard by which Niko's performance must be judged is that of Mr Abel, as a specialist, or that of an ordinary operator. According to the Claimant, the standard of performance applied in Mr Abel's opinion was that of highly qualified experts and "not how an operator subject to the provisions of the JVA would undertake the well".[283]

473. The Tribunal is fully conscious of this issue and has flagged it already in Procedural Order No 12, as quoted above in Section 7.1. The issue was addressed in the February 2016 Hearing in the following terms:

> *PROFESSOR PAULSSON: So the difference you are making is between average specialist in drilling operations versus relief activity specialist?*
>
> *MR TARNOWSKY: Yes. The point is that Niko's submission is that the standard of care under the JVA is that of the average international oil and gas operator, not someone who practises in the field as a relief well specialist and has a particular focus and area that gives him or that individual a much greater specific insight into well control because that is all they do.*

[281] HT 2016.02.22, page 327, lines 20-24.
[282] Expert Report of L. William Abel, 8 June 2015 (Abel), page 17, Figure 4.1, discussed at HT 2015.11.05 (Day 4), pages 805 *et seq.*
[283] HT 2016.02.22, pages 326-327.

PROFESSOR PAULSSON: So the difference between a general practitioner and a pathologist?

MR TARNOWSKY: Precisely, or any other medical specialist.[284]

474. When determining the required conduct resulting from the prudent operator standard of Article 26 of the JVA, the Tribunal will take into account all relevant circumstances, and be mindful of the qualification that must be expected of an operator under terms of the JVA.

7.6 Conclusion on Niko's Obligations

475. Having considered the various texts referred to by the Parties, the Tribunal concludes that no directly applicable contractual or other legal obligation has been identified which required, at the time of the blowouts, a specific act or omission the breach of which by Niko was causal for the blowouts.

476. The conduct which Niko had to adopt in its Petroleum Operations is defined in Article 26.2.4 of the JVA, which refers in more general terms to the standards and the level of care that Niko had to observe, in particular the "generally accepted standards of the international Petroleum Industry". In this Decision, the Tribunal refers to the standard applicable under Article 26.2.4 of the JVA as the prudent operator standard.

477. When considering the sources relevant for this standard, one notes that they generally recognise the diversity of situations that arise in the performance of operations such as the Chattak wells. Mr Wright, for instance, insisted on the specific nature of drilling and well control, and highlighted the extent to which these operations depend on the circumstances of each well:

The drilling of oil and gas wells, unless there are specific laws in the country of operations that must be followed, is left to the operator to determine the best course of action for their situation. That is, there are 50 shades of grey in attempting to determine a reasonable course of action.[285]

[284] HT 2016.02.22, page 330, line 25 to page 331, line 15.
[285] Wright 2, page 3.

478. Much depends on the specificity of the well and the geology. Mr Abel used an instructive image :

> *… the people who taught me to drill said* ***the hole speaks to you, listen to what it is saying*** *…*[286]

479. That makes it particularly difficult to determine the specific conduct required of an operator like Niko in the specific situation in relation to the blowouts. The Tribunal is conscious of the fact that a broad range of discretion is perforce left to operators in the petroleum industry when planning and performing drilling operations. While in many respects the operator has the choice of the most suitable way of proceeding, it must exercise this choice in a responsible manner, ensuring both safety and efficiency. The standard to be followed thus is one of professional competence and responsibility.

480. In this context, the advice of the three experts was particularly important and useful for the Tribunal, both with respect to the identification of the standards relevant for specific aspects of the case and in applying such standards to the specific conduct at issue. All three experts were highly qualified and had extensive experience in relevant petroleum operations. When examining the events in detail below in Sections 8 and 9, the Tribunal found their explanations very useful and at many occasions found their advice persuasive. Where it had to choose between conflicting views, the Tribunal considered the arguments in support of these views to determine the most persuasive one in the circumstances and giving regard to the contractual terms.

[286] HT 2015.11.02 (Day 1), page 204, lines 17-19.

8. THE FIRST BLOWOUT (CHATTAK 2 WELL)

8.1 Some key concepts concerning the drilling operations and the blowouts

481. Before discussing the first blowout and the circumstances in which it occurred, the Tribunal sets out its understanding of some concepts and terms that are relevant for the drilling operations and the blowouts.

482. Areas known as **sands** are sand or sandstone layers permeated with natural gas. They are also referred to as "**gas reservoirs**".[287] Gas moves through the sand or pores of a reservoir rock layer towards the surface until it encounters a **trap**, a high point in the reservoir where gas and fluids are stopped by a layer of impermeable rock (**shale**).[288]

483. In the present case the highest layer trapping the gas in Chattak West is the **regional seal** or **marine shale**, a substantial impermeable layer of clay or rock,[289] approximately 75m thick (from about 485m to 560m, according to other sources 500m to 570m, below surface).[290] The regional seal forms the barrier between the porous sandstone gas reserves below and the sandstone layers above this shale.[291]

484. The definition of **shallow gas** is a matter of controversy among the Parties and the experts. The Tribunal understands the term as applying to gas deposits in shallow sands, but Mr Wright cautions that "there is not an industry standard that defines the depth that crosses from shallow wells to deep wells".[292] Dr Adams proposes that "shallow gas has nothing to do with depth" and defines it as "any gas zone where the formations above it are too weak to shut the well in with a full BOP [Blowout Preventer] and control that".[293] The Claimant refers to a definition from the OGP Risk Assessment Data Directory which defines shallow gas release as "an incident where shallow gas is released from the well after a gas zone had

[287] C-CD.2, paragraph 73.
[288] C-CD.2, paragraph 75.
[289] C-CD.2, paragraph 75 states "impermeable rock", elsewhere the layer is said to be of clay.
[290] These values are given in Wright 1, page 37, by reference to the "diagnostic of the Chattak 2 well" from the Chattak 2A Relief Plan and Drilling Procedure, Exhibit C-86; in C-CD.2, paragraph 75, the size of the shale is indicated as 70m, between 500m and 570m.
[291] Explanations by the Claimant in C-CD.2, paragraph 75.
[292] See *e.g.* Wright 2, page 5.
[293] HT 2015.11.4, page 594.

been penetrated before the BOP has been installed (any zone penetrated after the BOP is installed is not a shallow gas incidents)".[294] For Mr Abel "shallow gas, the definition of shallow gas is like, John [Wright]'s, it is an unintended small reservoir and you [are] just trying to get past it to the objective which is always deeper".[295] The API RP 64 discusses extensively shallow gas, but does not define it. It mentions, however, that "shallow gas zones" can be 1'500 or 3'000 feet deep[296] and explains: "Shallow gas sands are usually abnormally pressured and capable of flowing gas at high flow rates and in large volumes."[297] The issue of shallow gas is addressed below in Section 8.4.2.

485. **Spud** date: start of drilling.

486. A **wiper trip** is the lifting (or "**tripping**") of the drill pipe up the well bore.[298]

487. The **Fracture gradient** represents "the pressure at which the formation will start to fracture";[299] or "**formation fracture gradient**". It is "the hydrostatic value expressed in psi/ft that is required to initiate a fracture in a subsurface formation (geological strata)".[300]

488. **Formation Pressure** (or **Pore Pressure**): "Pressure exerted by fluids [or gas] within the pores of the formation.[301]

489. A **kick** is the influx of gas into the wellbore.[302]

490. **Kick tolerance** (**KT**) is a concept used in well design, specifically with respect to decisions concerning the depth of the casing (see below Section 8.4.3.3). Dr Adams explains:

> *The concept of kick tolerance (KT) has been widely discussed in the available information. The concept uses mud density and fracture gradients to calculate the maximum number of barrels of influx that*

[294] Blowout Frequencies, International Association of Oil and Gas Producers, OGP Report No. 434-2, Exhibit C-106, Section 1.2, Definitions.
[295] HT 2015.11.6, page 1217.
[296] API RP 64, Exhibit R-42, page 45.
[297] API RP 64, Exhibit R-42, paragraph 4.3.1.
[298] C-PHB, paragraph 165.
[299] Wright 1, page 15.
[300] API-RP 64, Exhibit R-42, paragraph 3.1.47.
[301] API-RP 59, page 79; see also below Section 8.4.3.11.
[302] C-PHB, paragraph 165.

can be allowed into the wellbore without fracturing the exposed rock formation from excessive surface pressures.[303]

Mr Wright explained:

The setting depth for a casing string is primarily driven by the formation's fracture gradient (the pressure at which the formation will start to fracture) and the anticipated pore pressure that will be encountered in the target producing reservoirs. When the pore pressure of the formation at the bottom of the open hole being drilled reaches a value where the formation at the casing shoe may fracture if a certain volume of fluid (oil/gas/water) enters the wellbore (normally called kick tolerance), for example from a permeable sand, the next casing string is typically set before drilling deeper.[304]

491. The term **full column of gas** is used as a reference for the design of casing depth. Mr Abel provides the following description:

Taking the alternate approach for casing setting depth where the maximum possible kick size can be tolerated, the casing would be set where the frac[ture] gradient crosses the gas pressure gradient line. In the industry this is called "Designing for a Full Column of Gas to Surface". Below is the case where the casing has been run to a depth where no matter what size kick that is taken the formation will not fracture and no crater can be formed.[305]

He added: "Full column of gas means that the well is evacuated with only gas in the well."[306] Mr Abel illustrated his explanations by the following design:[307]

[303] Adams 1, page 26.
[304] Wright 1, page 15.
[305] Abel, page 27.
[306] Abel, page 37.
[307] Abel, Figure 7.1 at page 27.

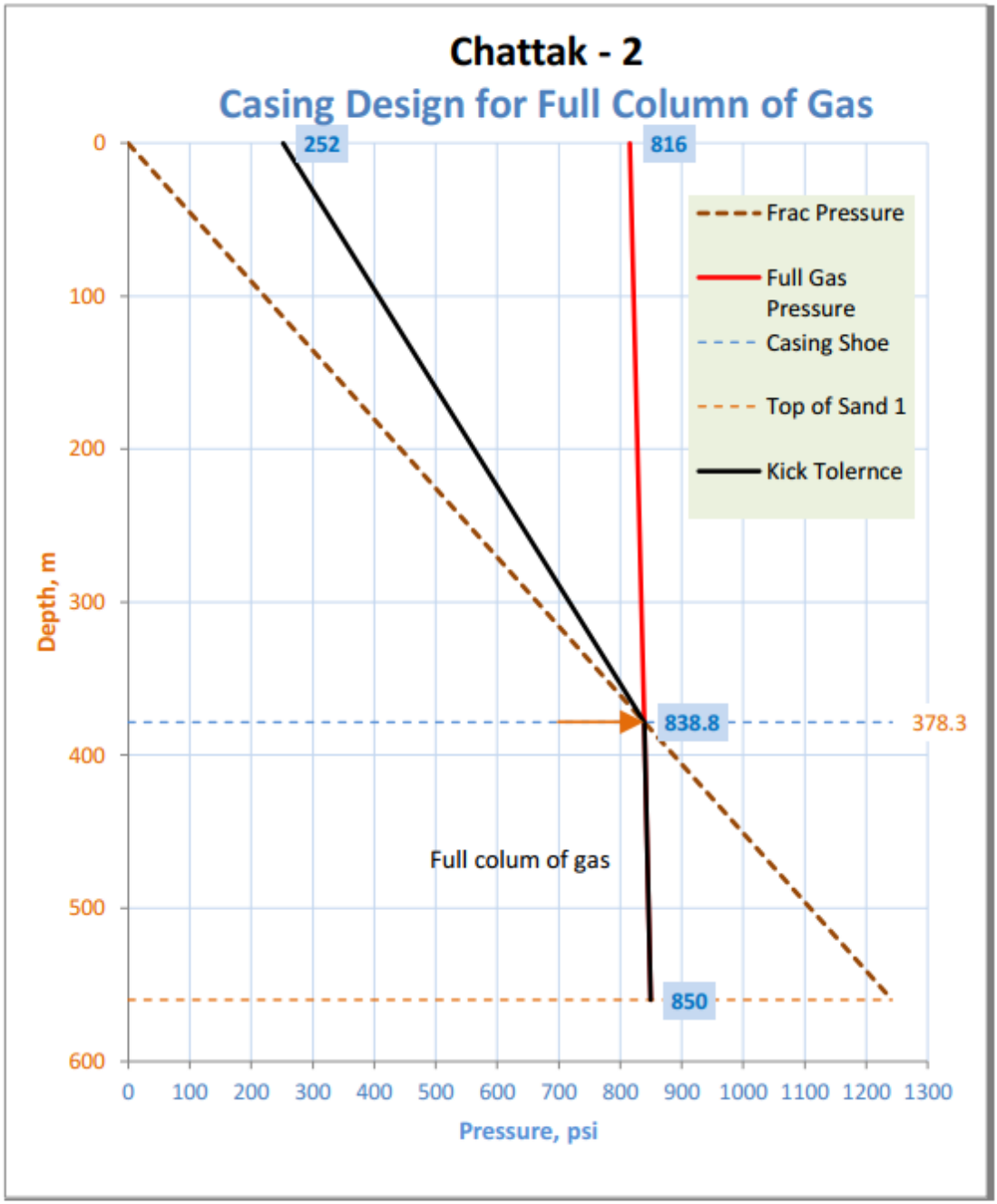
Chattak - 2
Casing Design for Full Column of Gas
252
816
Frac Pressure
Full Gas Pressure
Casing Shoe
Top of Sand 1
Kick Tolernce
838.8
378.3
Full colum of gas
850
Depth, m
Pressure, psi
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300

Figure 7.1

492. **Swabbing**, as explained by Mr Wright consists in a "reduction in wellbore pressure caused by a piston-like effect of moving the workstring upwards".[308]

493. A **blowout** is, in the words of Mr Wright, a "loss of control incident".[309] In API RP 64 it is defined as "the uncontrolled flow of well fluid and/or formation fluid from the wellbore …".[310]

494. A **Diverter** is a "device attached to the wellhead or marine riser to close the vertical access and direct any flow into a line away from the rig".[311]

495. The Chattak 2 Well had a **Blowout Preventer** (**BOP**). The Claimant described the instrument as follows:

> *A BOP is a large valve that sits on top of the well, underneath the rig floor. It can be closed if the drilling crew loses control of the well in order to prevent a blowout.*[312]

This description was illustrated by the figure below:[313]

[308] Wright 1, section 3.2.1, page 21.
[309] Wright 1, page 5.
[310] API-RP 64, (Exhibit R-42), paragraph 3.1.13.
[311] API-RP 59 (Exhibit R-43), page 79 and API-RP 64 (Exhibit R-42), page 3, see also below Section 8.4.3.7.
[312] C-CD.2, paragraph 93, Figure 15-21.
[313] C-CD.2, following paragraph 93.

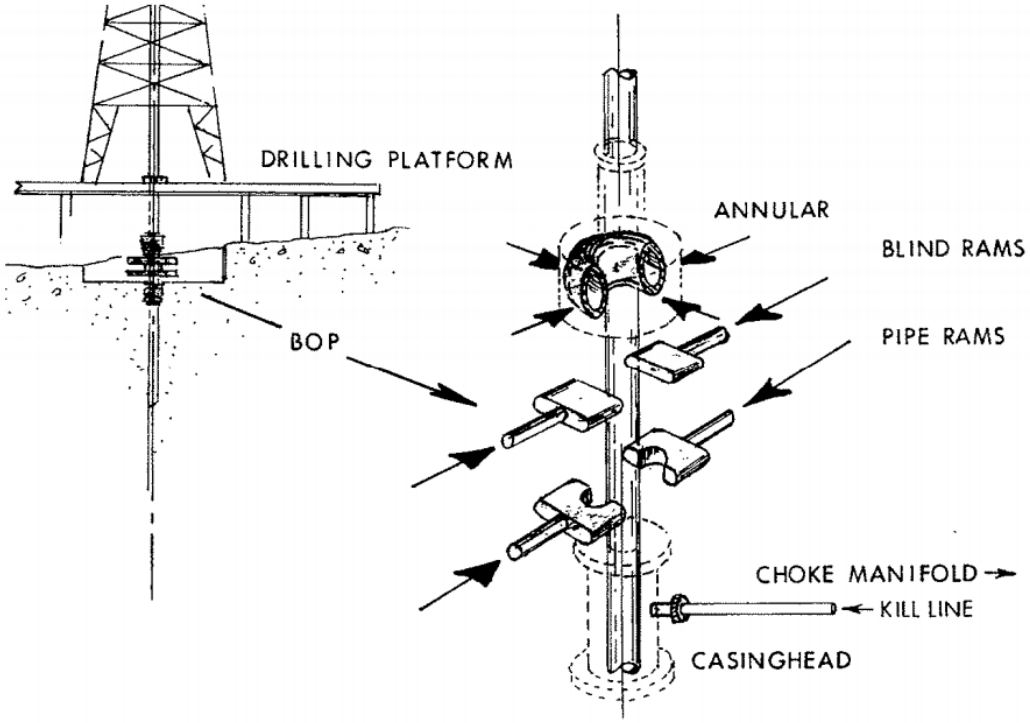

Fig. 15–21. BOP stack showing rams and preventers. (Modified from Baker, 1979.)

496. A **Degasser** or **Mud Gas Separator** is an apparatus consisting of a big tank that collects the mud containing gas. The "gas goes to the top and gets vented off and the mud goes back into the pits and can be pumped back down in the hole again".[314]

8.2 Facts relevant to the first blowout

497. Following the conclusion of the JVA, Niko first explored the Feni field and drilled three wells there. Once this work had advanced to the point of production, Niko moved the drilling platform to the Chattak field in late 2004 and started drilling there.

8.2.1 A blowout precedent: Moulavi Bazar exploration well No1

498. The circumstances of a blowout which occurred in 1997 in the Moulavi Bazar field, operated by the Occidental Petroleum Corporation, are featured in the submissions of the Parties.

[314] Mr Wright at HT 2015.11.04 (Day 3), page 538.

499. Mr Wright explained that when Occidental drilled an exploration well in that field, it set casing at 155m. According to Mr Wright, the operator's "casing program design [...] was less robust than that followed by Niko on Chattak".[315]

500. Below the casing, Occidental continued drilling a 17 ½" diameter open hole through sandstone to a depth of 840m.[316] The First Enquiry Report on the Chattak 2 blowout also contained information about the Moulavi Bazar blowout. It described the formation and stated that "three shale beds separated by two sandstone beds, represent the interval between 527m and 805m."

501. According to Mr Wright, "[a] blowout occurred when swabbing while pulling out".[317] The First Enquiry Report explained:

> *Due to swabbing during pulling out, gas from formation entered into the wellbore. This made the well under balanced which resulted in blowout.*[318]

502. The First Enquiry Report recounts that a similar report had, as one would expect, also been prepared with regard to the Moulavi Bazar blowout. That report has not been produced in the present arbitrations. The Claimant denies that it was made available to it or that it was even informed about its existence.[319] BAPEX asserts that

> *... Niko was aware of a recent shallow gas blowout in Bangladesh: the Moulavi Bazar blowout.*[320]

503. The statement is based on Mr Hornday's testimony at the November 2015 Hearing where he stated that, while he was working for another company,[321] he had heard of the Moulavi Bazar blowout. The Claimant

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[315] Wright 1, page 17, and illustration of the Moulavi Bazar blowout, showing the casing design by Figure 3-4 at page 18.
[316] First Enquiry Report, Exhibit R-3, section 5.0; the indication about the diameter is taken from Wright 1,page 17.
[317] Wright 1, page 17.
[318] First Enquiry Report, Exhibit R-3, Section 5.0, page 73.
[319] HT 2016.02.22, page 359.
[320] R-PHB, paragraph 105.
[321] According to his witness statement, Mr Hornaday joined Niko Canada in 2001, WS Hornaday 1, paragraph3.

considers the conclusion drawn by BAPEX from this statement as a "mis-characterisation of Mr Hornaday's evidence."[322]

504. The Claimant observes that there was no mention of the Moulavi Bazar blowout in the Marginal Field Evaluation that had been prepared jointly by Niko and BAPEX with shared information.[323] The Claimant states the circumstances of the Moulavi Bazar blowout were known to it only much later by reason of the work carried out by Mr Wright, the Claimant's expert in these arbitrations, who had previously been engaged in Occidental's relief well operation. Mr Wright wrote:

> *I designed the relief well and managed the relief well special services for the Occidental blowout at Moulavi Bazar in 1997, so I have first-hand experience in the types of problems encountered in the Chattak 2 blowout.*[324]

505. Mr Wright added that information about blowouts is generally not easily available:

> *The fact is that not much useful information regarding operators' experiences with blowouts is easily available. There was never a paper published by Occidental on the Moulavi Bazar relief well. Operators typically do not want to publish their dirty laundry to the world and much useful information is not made available to the industry at large.*[325]

506. In these circumstances, it cannot be assumed that Niko knew any details about the Moulavi Bazar blowout when it started drilling the Chattak 2 Well. One would expect, however, prior blowouts in Bangladesh to have been a matter of interest to a diligent operator. Indeed the Tribunal doubts that the very occurrence of this blowout had escaped Niko's attention. After all, as the Respondents' counsel pointed out during the February 2016 Hearing, in 1997, this blowout occurred in the same time period that Niko was preparing and presenting its first proposal to the Government seeking to secure a contract in the gas industry in Bangladesh. When

[322] HT 2016.02.22, page 358 (Tarnowsky).
[323] HT 2016.02.22, page 359 (Tarnowsky).
[324] Wright 1, page 10.
[325] Wright 2, page 11.

questioning Mr Hornaday, Mr Smith assumed that "the Moulavi Bazar blowout would have been a major event in Bangladesh and generally a very significant event in the oil and gas industry in Bangladesh"; and Mr Hornaday agreed.[326]

507. There is no indication that Niko requested any information about the Moulavi Bazar blowout. Equally, there is no indication that BAPEX volunteered such information to Niko; nor that it made the enquiry report about the Moulavi Bazar blowout, which is in fact mentioned in the 2005 First Enquiry Report, available to Niko. The Parties disagree about whether Niko should have asked for, or BAPEX should have volunteered to provide, further details. The question will be considered further below in the context of the Tribunal's examination of any contributory responsibility on the part of BAPEX.

508. The situation is different with respect to knowledge of the Moulavi Bazar blowout by Mr Grace when he conducted the relief operations. In his report of 4 July 2005, he makes reference to "the Oxy blowout in 1997" and asserts that "all of the previous data was reviewed including" that from the Oxy blowout, and moreover describes some conclusions drawn from it.[327] Mr Wright surmised that the source of this information was "the Vector Magnetic engineer who worked on the Moulavi Bazar project".[328]

509. The Tribunal enquired about the manner in which liability for the Moulavi Bazar blowout was dealt with. The Respondents informed the Tribunal at the February 2016 Hearing that there had been no legal proceedings in Bangladesh concerning Occidental Petroleum's liability for the blowout because

> *… there was a settlement between the Government and Occidental in that case whereby the Occidental agreed to pay 5 per cent of future production in compensation for the injury caused by the blowouts and we can get evidence of this but the payments to date have amounted*

[326] HT 2015.11.06, page1096.
[327] Robert Grace Report, Events at Niko Resources – Chattak 2A Relief Well, 4 July 2005, Exhibit C-45, page 6.
[328] Wright 2, page 11.

to approximately a billion dollars, but there is no legal proceeding in the process.[329]

510. The fact is that after the 1997 blowout, the field at Moulavi Bazar was not abandoned but continued producing.[330] Mr Wright refers to Petrobangla's 2012 Annual Report[331] and concludes that since the 1997 blowout and subsequent kill, the field produced over 200 bcf of gas, "indicating that the field has continued to be drilled and produced extensively".[332]

8.2.2 The Chattak field and the Chattak 1 Well

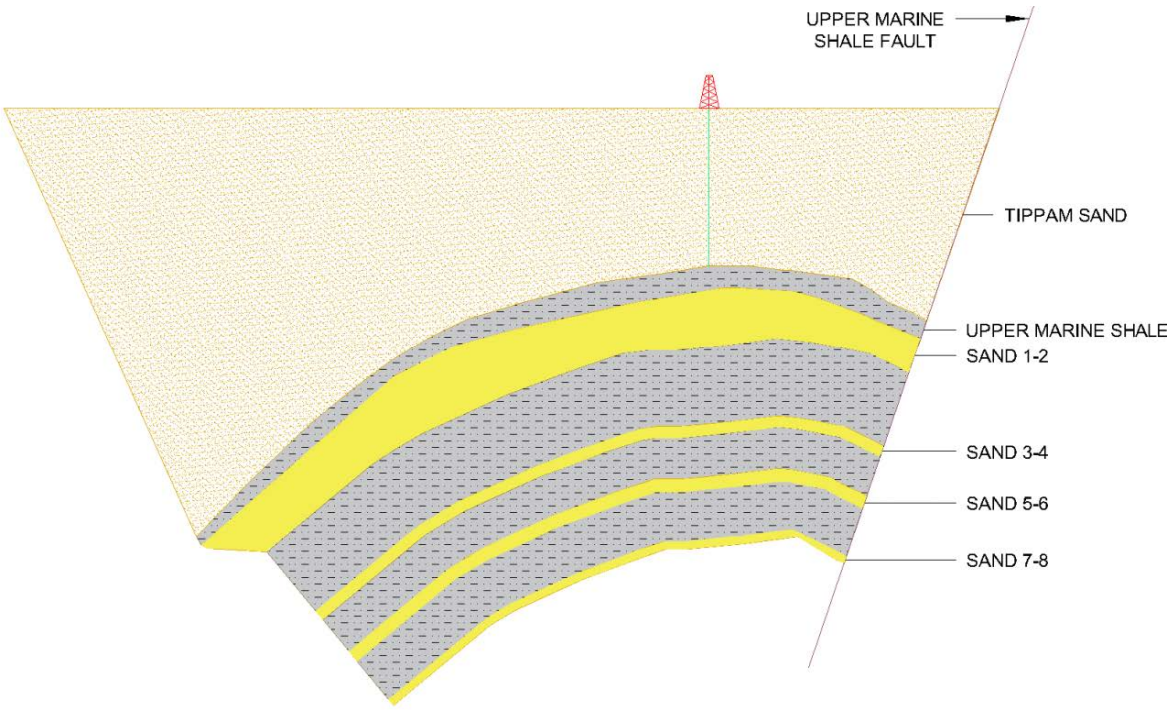
511. The Chattak field, is divided into a Western and an Eastern part, separated by a fault. The Chattak 1 Well was situated in Chattak West. The Marginal Field Evaluation stated that the "Chattak East exploration structure will be drilled and tied in to the Chattak West plant facilities following successful development of the Chattak West Field".[333]

512. The Marginal Field Evaluation had identified in Chattak West "three proven reservoirs and one untested zone with potential recoverable reserves" and listed them as follows:

- Sandstones 1&2 have 115 Bcf untested
- Sandstones 3&4 have 71 Bcf remaining
- Sandstones 5&6 have 58 Bcf remaining
- Sandstones 7&8 have 14 Bcf remaining.[334]

513. The layers have been represented by the following drawing, presented by Dr Adams at the November 2015 Hearing; it should be noted, however, that this drawing is schematic and does not show the thin shale between Sands 1 and 2; it should not be taken as an exact representation of these sands:[335]

[329] HT 2016.02.21, page 271, lines 14-21.
[330] HT 2016.02.21, page 100 (Tarnowsky) with reference to Wright 2, page 28.
[331] Excerpt of Petrobanlga Annual Report, 2012, Exhibit C-107.
[332] Wright 2, page 28.
[333] Marginal Field Evaluation (MFE), Annex B to the JVA, Exhibit R-1, page B-7; for further details see in particular Decision on the Corruption Claim, pages 304 *et seq.*
[334] MFE, Annex B to the JVA, Exhibit R-1, page B-8.
[335] Dr Adam's presentation, Exhibit RH-3, slide 10.



514. Sand 1 is the shallowest reservoir in the West Chattak field, below the marine shale between 500m and 570m below surface. It is contained by the regional seal described above.[336] Sand 2 starts around 650m below surface and is separated from Sand 1 by a relatively thin shale layer.[337] The shallowest reservoir in Chattak West is Sand 1, below the regional seal[338] and separated from Sand 2 (at around 650m below surface) by a relatively thin shale layer.[339]

515. The Marginal Field Evaluation provided these and other geological data about the Chattak field. Nevertheless, the study concluded:

> *It has been observed that there are significant gaps in the existing data and additional data for Chattak and Feni are essential to do effective reservoir characterisation of these fields. These data can be obtained after drilling the first well in each of these two fields.*[340]

516. Chattak West had been drilled in 1959 to the depth of 2123m and tested in four principal zones with recoveries in Sands 3&4 and 5&6; possibly

[336] See Section 8.1.
[337] C-CD.2, paragraph 75.
[338] See above Section 8.1.
[339] C-CD.2, paragraph 75.
[340] MFE, Annex B to the JVA, Exhibit R-1, page B-14.

also in Sands 7&8.[341] The Chattak 1 Well had a depth of the first casing of 450m.[342] The well was operated over a 25 year period and produced 26.43 bcf, supplying the Chattak cement factory and Sylhet Pulp and Paper Mill.[343] Increased water production forced Petrobangla to shut the well down in 1985.[344] In the JVA negotiations Chattak West was accepted without dispute as "marginal and abandoned".[345]

517. According to Mr Hornaday, the well "was not abandoned at that stage"; it "was plugged back but I think there was still a wellhead on it". Reviving the well "was an option" for Niko. When he visited the site before the JVA was concluded, Mr Hornaday noted "a fair amount of bubbling around the cellar of Chattak 1". He assumed that the bubbling could have come from the well; but the phenomenon was observed also at "some places elsewhere on the western side of the location". In other words, Mr Hornaday concluded that there were "various causes" for the bubbling.[346]

518. The new well which Niko proposed to drill in the Chattak field (Chattak 2) was also located in the Western part of the field, approximately 380m northeast of Chattak 1.[347]

8.2.3 Preparations for the drilling of the Chattak 2 Well and the Well Proposal

519. In order to drill the wells in both Feni and Chattak, Niko engaged a number of subcontractors. Mr Adolph named the following:[348]

- The China Petroleum Drilling Technology and Development Corporation (CPTDC) "to provide a drilling crew and rig, together with associated technical equipment"; according to Mr Adolph the crew "had to possess appropriate well control and drilling training certificates";

[341] MFE, Annex B to the JVA, Exhibit R-1, refers to "recoveries in sands 3&4m 5&6 and 7&8"; in support it refers to Figure 9 which shows the Chattak 1 Well Completion drilled only to Sands 5&6; Chattak 2 Well Proposal stated that the Chattak 1 Well produced from Sands 3&4 and Sands 5&6; Sands 7&8 are mentioned as the principal target, together with Sands 1&2, Exhibit C-15, pages 1 and 4.
[342] Shown in Figure 9 of the MFE, Annex 2 to the JVA, Exhibit R-1.
[343] Chattak 2 Well Proposal, Exhibit C-15, page 3; the proposal indicates 2134m as the depth of the Chattak 1 well.
[344] MFE, Annex B to the JVA, Exhibit R-1, page B-6.
[345] See Decision on the Corruption Claim, Section 9.5.
[346] HT 2015.11.06, pages 1109 – 1112.
[347] Chattak 2 Well Proposal, Exhibit C-15,page 2.
[348] WS Adolph, paragraph 22 *et seq.*

- Mr Zhang Zhigang, an independent contractor, as the drilling supervisor. According to Mr Adolph, Mr Zhang was "an experienced drilling supervisor who could speak both English and Chinese fluently, which was important as there were both Chinese and English [speaking] crew members on the rig";

- Other service providers to support the drilling project. Mr Adolph named MI-Drilling Fluids "[…] to provide the drilling mud and related services" and BJ Services "[…] to provide cementing and related services". Mr Adolph described both companies as "highly reputable oil-field service providers".

520. As mentioned above, on 24 November 2004 Niko advised BAPEX that the Joint Venture was "moving the drilling rig to Chattak" and that it would be "in a position to start drilling these wells early in January 2005".[349]

521. Niko prepared the Well Proposal for the Chattak 2 Well and submitted it to BAPEX with its letter of 14 December 2004, "for your information and taking the necessary action".[350] Niko asserted that BAPEX acknowledged receipt of the proposal but raised no query and did not respond.[351]

522. This Well Proposal provides for drilling some 380m northeast of the Chattak 1 Well and identified Sands 1&2 as the "primary target of the well".[352] The Well Proposal recalled that the Chattak 1 Well achieved production from Sands 3&4 and Sands 5&6, and explained that the Chattak 2 Well was

> *… designed to evaluate and produce reservoir sands 1&2 in interval 570-650m and sands 7&8 in the interval 1634-1670m. Chattak 2 is also designed to further evaluate and possibly produce gas from previously produced reservoir sands 3&4, 5&6 (or the lateral equivalent), at 1080m-1115m and 1247m-1284m in a crestal position.*[353]

[349] In its letter of 25 January 2005, Exhibit C-24, Niko asserts that BAPEX acknowledged receipt of this letter.
[350] Chattak 2 Well Proposal, Exhibit C-15.
[351] Niko's letter of 25 January 2005, Exhibit C-24, summarising information given to BAPEX.
[352] Chattak 2 Well Proposal, Exhibit C-15, pages 3 and 2.
[353] Chattak 2 Well Proposal, Exhibit C-15, pages 2 and 4.

523. A number of figures and appendices were attached to the Well Proposal. These included volumetric reserve estimates for Sands 1&2 and 7&8, "Feni/Chattak Casing Design" for the 7" Production Casing and the 13.8" Surface Casing, the Cementing Programme for these two types of casing, the Drilling Programme, a Drilling Fluid Proposal and some cost information.

524. The witnesses testifying on behalf of Niko explained that the design for the Chattak 2 Well had been produced by Mr Peter Mercier. In his witness statement Mr Adoph explained:

> *I understand that Peter Mercier, Niko Canada's senior drilling manager, had produced the well design for Chattak 2. Mr. Mercier prepared the Chattak 2 well proposal in consultation with Keith Rawlinson, who was at the time Niko's senior geo-physicist (and subsequently became Niko's Vice President of Exploration), and Ray Dupuis, who was the consulting reservoir engineer assigned to the project. Messrs. Rawlinson and Dupuis were not involved with the preparation of the drilling program as such, but with the selection of the proposed drilling location and potential volumes of gas that may be discovered. Messrs. Mercier and Rawlinson are no longer with Niko Canada or its affiliated companies.*[354]

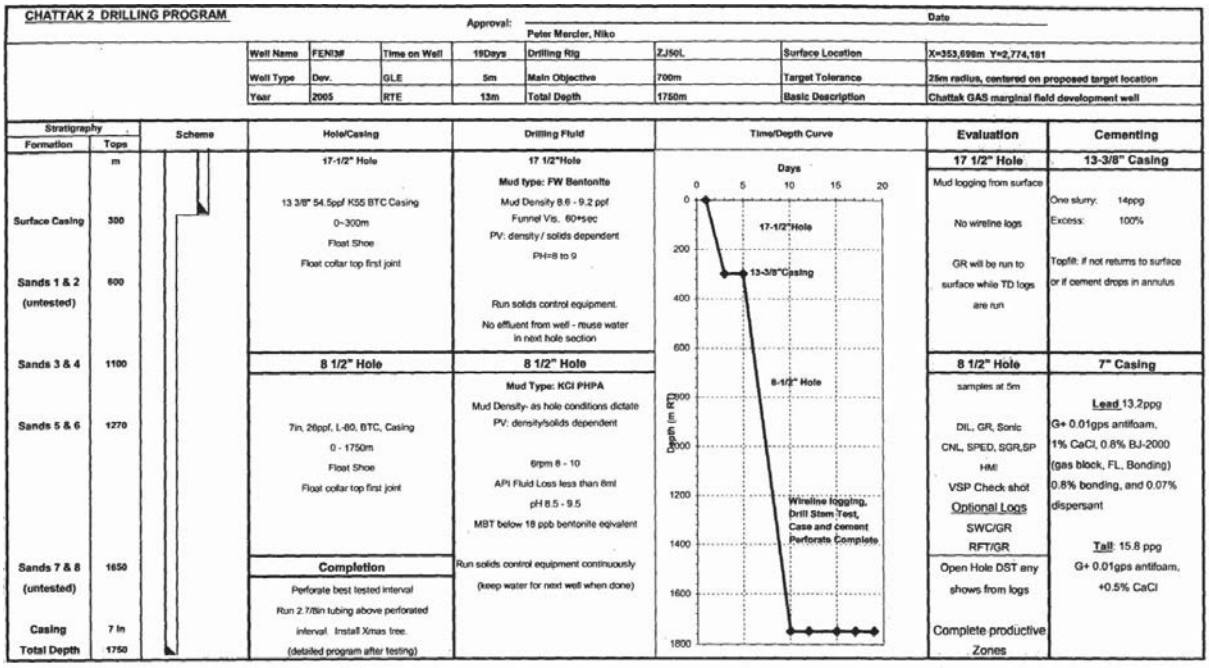
525. Mr Hornaday stated in his witness statement that he "did not have significant involvement in the design of the Chattak wells or the plans to develop the Chattak field".[355] At the November 2015 Hearing he added:

> *… we assigned that task [the design of Chattak 2] to principally Mr Mercier who was, as you know, very experienced drilling engineer.*[356]

526. As mentioned above, the Chattak 2 Well Design contained the "Feni/Chattak" Casing Design which provided details for two levels of casing, a full page for each. One is entitled "Surface Casing Design" and envisaged casing of a 13 3/8" diameter to a depth of 990 feet, corresponding to some 302m; the other, entitled "Production Casing", at a diameter of 7" to a depth of 5741 feet (corresponding to some 1750m). Some of the details about these two sets of casing are also represented in

[354] WS Adolph, paragraph 28.
[355] WS Hornaday 1, paragraph 13.
[356] HT 2015.11.06, page 1115, lines 19-21.

the Drilling Programme, which shows the depth in meters, one to a level of 300m the other to 1750m. This can be seen in the document below, showing the Drilling Programme, as it was contained in the Well Design sent to BAPEX on 14 December 2004.



CHATTAK 2 DRILLING PROGRAM

Approval: Peter Mercier, Niko — Date

Well Name	FEN3#	Time on Well	19Days	Drilling Rig	ZJ50L	Surface Location	X=353,698m Y=2,774,181
Well Type	Dev.	GLE	5m	Main Objective	700m	Target Tolerance	25m radius, centered on proposed target location
Year	2005	RTE	13m	Total Depth	1750m	Basic Description	Chattak GAS marginal field development well

Stratigraphy Formation	Tops m	Scheme	Hole/Casing	Drilling Fluid	Time/Depth Curve	Evaluation	Cementing
			17-1/2" Hole	17 1/2"Hole Mud type: FW Bentonite Mud Density 8.6 - 9.2 ppf Funnel Vis. 60+sec PV: density / solids dependent PH=8 to 9 Run solids control equipment. No effluent from well - reuse water in next hole section	Days 0 5 10 15 20 0 200 400 600 800 1000 1200 1400 1600 1800 Depth (m RT) 17-1/2"Hole 13-3/8"Casing 8-1/2" Hole Wireline logging, Drill Stem Test, Case and cement Perforate Complete	17 1/2" Hole Mud logging from surface No wireline logs GR will be run to surface while TD logs are run	13-3/8" Casing One slurry. 14ppg Excess: 100% Topfill: if not returns to surface or if cement drops in annulus
Surface Casing	300		13 3/8" 54.5ppf K55 BTC Casing 0~300m Float Shoe Float collar top first joint				
Sands 1 & 2 (untested)	600						
Sands 3 & 4	1100		8 1/2" Hole	8 1/2" Hole Mud Type: KCl PHPA Mud Density- as hole conditions dictate PV: density/solids dependent 6rpm 8 - 10 API Fluid Loss less than 8ml pH 8.5 - 9.5 MBT below 18 ppb bentonite eqivalent		8 1/2" Hole samples at 5m DIL, GR, Sonic CNL, SPED, SGR,SP HMI VSP Check shot Optional Logs SWC/GR RFT/GR Open Hole DST any shows from logs Complete productive Zones	7" Casing Lead 13.2ppg G+ 0.01gps antifoam, 1% CaCl, 0.8% BJ-2000 (gas block, FL, Bonding) 0.8% bonding, and 0.07% dispersant Tail: 15.8 ppg G+ 0.01gps antifoam, +0.5% CaCl
Sands 5 & 6	1270		7in, 26ppf, L-80, BTC, Casing 0 - 1750m Float Shoe Float collar top first joint				
Sands 7 & 8 (untested)	1650		Completion Perforate best tested interval Run 2 7/8in tubing above perforated interval. Install Xmas tree. (detailed program after testing)	Run solids control equipment continuously (keep water for next well when done)			
Casing	7 in						
Total Depth	1750						

527. According to Mr Wright, this design implied a kick tolerance of 10bbls at the depth of 1743m, the approximate planned depth from surface of the Chattak 2 Well.[357] He calculated that the data in the Surface Casing design "produces a different kick tolerance when drilling through Sands 1&2 (sand top of 560m TVD) where the influx occurred that led to the blowout on Chattak 2".[358]

528. Mr Adolph wrote in his Witness Statement that BAPEX did not respond to the letter with the Well Proposal and, to the best of his knowledge, did not otherwise "raise any concerns or identify any deficiencies in the Well Proposal, or provide any further information relevant to drilling in the

[357] Wright 1, page 15 and table 3.2; this table is taken from the Surface Casing Design produced as Exhibit C-82 and not included in the corresponding table in Exhibit C-15.
[358] Wright 1, page 15.

Chattak West field".[359] Mr Hornaday, too, was not aware of any reaction from BAPEX.[360]

529. Mr Baqi, who started on 1 January 2005 to serve as acting General Manager of the Geological Division of BAPEX, declared that, prior to the first Chattak 2 blowout, he

> *… personally had not seen any well proposal for the Chattak #2 well, or any indication that Niko had given BAPEX advance notice of the planned date for the start of drilling. I asked Niko to provide me with the well design following the blowout to assess what had gone wrong with it. On 17 January 2005, I received a copy of the Chattak #2 well proposal. Niko's cover letter to the proposal made reference to Niko's letter dated 14 December 2004, with which Niko claims it originally submitted its Chattak #2 proposal.*[361]

530. In these arbitrations, BAPEX occasionally puts into doubt that the 14 December 2004 letter with the Chattak 2 Well Proposal was in fact submitted to BAPEX. It refers, for instance, to "the well proposal allegedly submitted in December 2004".[362]

531. No other evidence, however, puts into question the fact of the communication of the Well Proposal along with the 14 December 2004 letter. The 17 January 2005 letter, which Mr Baqi did receive and to which he refers in the above quoted passage of his witness statement, makes express reference to the 14 December 2004 letter. When, in response to a request by BAPEX, Niko's letter of 25 January 2005 summarized the information provided, it stated expressly that BAPEX "acknowledged receipt of the well proposal (acknowledgment copy enclosed)". Niko also stated that its Senior Manager – Commercial, Mr Syed Kabir, met on 30 December 2004 with Mr S.A. Haqqani, JMC member, who "was handling all technical matters on behalf of BAPEX for the joint venture" and advised him that Niko would "spud on December 31, 2004"; Niko added that "Mr

[359] WS Adolph, paragraph 29.
[360] HT 2015.11.06, page 1122.
[361] WS Baqi, paragraph 7.
[362] R-PHB, paragraph 226.

Haqqani and BAPEX officials were invited to attend the spud-in during the meeting by Niko".[363]

532. There is no indication that, upon the receipt of the 17 and 25 January 2005 letters, BAPEX protested and questioned having received the 14 December letter and the Well Proposal. The First Enquiry Report of 7 February 2005, prepared by the Enquiry Committee that had interviewed the Managing Director of BAPEX on 18 January 2005 and "exchanged views" *inter alia* with Mr Abdul Baqi, Deputy General Manager BAPEX on 5 February 2005, reported that

> *Niko forwarded Chatak #2 Well Proposal, Casing Design, Drilling and Evaluation Program, Cementing Program, Mud Program on 14 December 2004.*[364]

533. In these circumstances, the Tribunal has no reason to doubt that Niko's letter of 14 December 2004 with the Well Proposal was actually received at the time by BAPEX.

534. The Claimant asserts that the absence of comments was consistent with "BAPEX's usual course of action" and that with respect to the Feni field, "BAPEX never commented on any of the Feni well proposals, nor did it object to the drilling that took place subsequently".[365] Similar assertions had been made already in the letter of 25 January 2005, where Niko wrote that it did not receive any query or response on the Well Proposal; that letter also stated that Niko's Mr Kabir informed Mr Haqqani, "who was handling all technical matters on behalf of BAPEX for the joint venture" on a "regular basis[,] of the progress of all major operations".[366]

535. Concerning the spudding date, the Tribunal observes that the Well Proposal and the 14 December 2004 letter do not mention that the start of drilling at Chattak 2 was scheduled for 31 December 2004. As noted above, the Claimant refers to the letter of 25 January 2005,[367] in which Niko observes that in a letter of 24 November 2004 it had advised BAPEX that it was "moving the drilling rig to Chattak" and that it was "in a

[363] Niko's letter of 25 January 2005, Exhibit C-24, summarising information given to BAPEX; the letter of 14 December 2004, Exhibit C-15, transmitting the Well Proposal, is signed by Mr Syed.
[364] First Enquiry Report, Exhibit R-3, paragraphs 3.3, 3.7 and 4.3.
[365] C-CD.2, paragraph 99.
[366] Niko's Letter to BAPEX, 25 January 2005, Exhibit C-24.
[367] Niko's Letter to BAPEX, 25 January 2005, Exhibit C-24.

position to start drilling these wells early in January 2005". It also refers to a meeting in which Niko's Senior Manager Commercial, informed Mr Haqqani, the JMC member, on 30 December 2004 that spudding would take place on 31 December 2004 and that BAPEX "officials were invited to attend the spud-in".

536. Moreover, the Claimant produced copies of the Daily Drilling Reports and their communication to BAPEX by fax, starting with Report No 1, dated 1 January 2005 and transmitted by fax the following day.[368]

537. While one might have expected a more formal notification of the scheduled date for the spudding of the Chattak 2 Well, **the Tribunal** finds it difficult to believe that BAPEX was not aware of Niko's intention to start drilling and could not have received any further details, if it wished to receive them.

8.2.4 The drilling operation and the casing

538. Drilling started at 19:45h on 31 December 2004 (the spud date). The drilling operations are recorded on a day by day basis in "Daily Drilling Reports" which as mentioned were copied the same or the following day to BAPEX. The Claimant has produced these records for the 10 days from the spud date to 9 January 2005 as well as the cover letter to BAPEX for the first seven reports.[369]

539. These reports are from Mr Zhang, the drilling supervisor, to Mr Mercier. They record the operations and their timing, contain a 24-hour forecast and provide other information, such as the use of drilling fluids, materials and fuel used.

540. Some information about the drilling is also contained in a report apparently prepared immediately after the first blowout and entitled

> **Sequence of Events**: Well Control Chattak-2
> Client: Niko Resources
> Crew Onboard: Rajat C. Pattapong, Ferdous, Masudur
> Date: 7/1/2005 to 8/1/2005

[368] Chattak 2, Niko Daily Drilling Reports, Nos. 1 to 10, 1-10 January 2005 (Daily Drilling Reports), Exhibit C-20.
[369] Daily Drilling Reports, Exhibit C-20.

Well: Chattak-2.[370]

541. The document appears to be a report by the "Crew onboard"; Mr Wright describes it as "the rig crew on the scene".[371] It thus is the only eye witness description of the events produced in these arbitrations.

542. The Claimant also prepared a document entitled "**Chattak 2 Well Control Incident and Blowout – Draft Report**" and dated 11 January 2005.[372] Mr Wright reproduced this draft report, explaining that it was prepared by "Niko personnel".[373] At the November 2015 Hearing the Claimant's counsel added that, according to his understanding it was prepared by Mr Peter Mercier.[374] The version produced seems to have been the "final draft".[375] The Tribunal understands that it was this draft which Niko transmitted to the First Committee and to which that committee referred as one of the sources of its First Enquiry Report.[376] From the explanations provided by the Parties, the Tribunal concludes that the information available to the Experts in these arbitrations, with the exception of personal interviews mentioned in the First Enquiry Report, is the same as that which the Enquiry Committee had in 2005.[377]

543. The Daily Drilling Reports show on Day 1 from 19:45h to 22:00h: "Spud Chattak 2 Well. Drill ahead to 20m." By the end of the day a depth of 28m was reached. The first report also shows a 20" casing conductor at 20m shoe depth.

544. On Day 2, the depth of 306m had been reached. On the following days a wiper trip was performed and 13 3/8" casing was installed, the casing shoe was set at 305m.

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[370] Sequence of Events Report: Well Control Chattak-2, 7-8 January 2005 (Sequence of Events Report), Exhibit C-19.
[371] Expression used in Wright 1, page 24.
[372] Chattak 2 Well Control Incident and Blowout – Draft Report, Exhibit C-21.
[373] Wright 1, page 25. Frist Enquiry Report of 7 February 2005, Exhibit R-3, paragraph 3.5, also refers only to the draft report dated 11 January 2005.
[374] HT 2015.11.03 (Day 2), page 315.
[375] HT 2015.11.03 (Day 2), page 315.
[376] First Enquiry Report, Exhibit R-3, paragraph 3.5, and HT 2015.11.03, page 322.
[377] The Tribunal announced this conclusion, stating that it would take it as correct unless the Respondents were to provide contrary information within the time it had requested for verification (HT 2015.11.03 (Day 2), pages 326 and 327); no contrary information was provided.

545. On Day 5 (4 January 2005) the Daily Drilling Report shows work on the installation of the BOP. This installation seems to have been completed on that day; the report for Day 7 shows for the first time an entry under the heading "Last BOP Test" with the date 5 January 2005.

546. Drilling resumed on day 7 (6 January 2005). It was interrupted after 5 meters at the depth of 310m, when a Leak-off Test (**LOT**) was performed. The Daily Drilling report records mud weight (**EMW**) of 18 pounds per gallon (ppg),[378] indicating a high strength of the surrounding formation. The Sequence of Events report by the drill crew reports additional information about this EMW: "Drilling of 8.5" hole was resumed after LOT (EMW 18.0 ppg). Formation was mostly medium to coarse grained SST from 306m onwards."[379] Mr Wright considered the value of 18 ppg as "too high really for such a shallow formation".[380] The test and its result will be discussed further below in Section 8.4.3.7. Drilling then resumed and progressed on Day 7 to 485m.

8.2.5 The evidence with respect to the events of 7 January 2005

547. At the November 2015 Hearing the Tribunal identified the sources of information available to the experts and specifically "the factual basis for analysing by expert opinion what actually happened on 7 January 2005".[381] It was thus confirmed that the available direct evidence for the wiper trip and the first blowout are (i) the Daily Drilling Reports (Exhibit C-20), (ii) the Midnight and Afternoon Reports containing drilling and other data (Exhibit C-27),[382] (iii) the Sequence of Events report of the "crew onboard" (Exhibit C-19) and (iv) the Draft Report on the blowout, as described above in Section 8.2.4 (Exhibit C-21).

548. The Claimant also relied on the witness statement of Mr Adolph, Niko's country manager from December 2004 to August 2006. Mr Adoph moved to Bangladesh only in January 2005, after the blowout had occurred, but he asserted that he had "extensive conversations with [his] colleagues at Niko and a review of contemporaneous documentation relating to these

[378] Daily Drilling Report for 6 January 2005, Exhibit C-20, page 24.
[379] Sequence of Events Report, Exhibit C-19, page 1.
[380] HT 2015.11.03 (Day 2), page 420, line 22.
[381] HT 2015.11.03 (Day 2), page 305, 327, relating to the discussion recorded on pages 305 – 329.
[382] HT 2015.11.03 (Day 2), page 312.

events".[383] On that basis, Mr Adolph provided a detailed account of the blowout.[384]

549. The Claimant also produced a report which Niko's well control consultant prepared shortly after the blowout, dated 24 January 2005 (Exhibit C-23),[385] containing "hearsay account" of what the consultant learned after its personnel arrived at the site on 9 January 2005.[386] For the sake of completeness, the Claimant also mentioned the CPTDC drilling reports from December 2004 (Exhibit C-16) and a document entitled Geoservices Masterlog and referred to as the "mud log"; but they contain data recorded only until 6 January 2015 (Exhibit C-17).[387]

550. Other relevant documentation recording the events is not available. In its summary after the November 2014 Hearing, the Tribunal pointed to the difficulty it had observed concerning the contemporaneous evidence and noted

> *…that important parts of the records for the critical period have disappeared. In particular, the mud log for 7 January 2005 and specifically the trip tank record for that day, which might have provided useful information about the pressure in the borehole, according to Niko's explanation, remained on the rig when the blowout occurred and only a small piece of paper was saved.*[388]

551. As Mr Wright pointed out in his first report:

> *A trip sheet was reportedly maintained and was monitored by both the rig crew and the mud loggers. However, the trip sheet was destroyed in the blowout.*[389]

552. Similarly, the First Enquiry Report notes the absence of critical records:

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[383] WS Adolph 1, paragraph 9.
[384] See WS Adoph 1, paragraphs 35 – 47.
[385] C-CD.2, paragraph 104, referring to Safety Boss, Summary Report Covering the Period from Jan 09 to Jan 12, 2005, Exhibit C-23.
[386] Safety Boss, Summary Report Covering the Period from Jan 09 to Jan 12, 2005, Exhibit C-23, page 1 and HT 2015.11.03 (Day 2), pages 327 and 328.
[387] HT 2015.11.03 (Day 2), page 328 and 329.
[388] Letter of 6 January 2015, page 2.
[389] Wright 1, page 7.

Driller's Console record or the record from mud logging unit are not available. The first one went down with the rig and the mud logging unit is completely covered by sand blown during blowout. As the unit was quite close to the fire, possibility of recovery of data from the unit is unlikely.[390]

553. The Tribunal has considered the evidence identified by the First Enquiry Committee in its report. The Committee identified this evidence in paragraphs 3.4 and 3.5, *i.e.* the Daily Drilling Reports and Niko's Draft Report, as well as the Chattak 2 Well Proposal (Exhibit C-15), including a document from the 3D seismic report.[391]

554. Finally, the Tribunal has had regard to the Drilling and Evaluation Programme which Niko proposed on 16 October 2005 for a Chattak 3 well. The proposal contains the following explanations for the blowout on which the Respondent relies specifically:[392]

> *A blowout occurred on the Chattak 2 well while wiper tripping from a depth of 807m. A prolific gas sand at 560m, shallow casing setting depth, and swabbing while tripping were contributing factors to causing a serious blowout in which the drilling rig was lost.*[393]

8.2.6 The events of 7 January 2005 prior to the Wiper Trip

555. On 7 January 2005 (Day 8 since the spud) drilling further progressed. The Daily Drilling Report mentions two activities: "Circulate bottom up" for 15 minutes starting at 7:15h, and "Take single shot survey, 625m, 0.5 degree", for 50 minutes, starting at 7:30h.[394] The Sequence of Events report by the drill crew provides the following additional information:

> *Sand-I &2 top were expected at 550 m.* […] *While drilling between 560 - 590 m, we observed gas peak three times & gas increased to maximum 17.73% from background gas of 0.8-1 %. The max ROP was*

[390] First Enquiry Report, Exhibit R-3, paragraph 6.9.
[391] The information listed in paragraph 3.4 of the report is taken from the Well Proposal, including page 9, entitled "Time slice of 3D seismic data"; other seismic data was shown on Exhibit C-85; See HT 2015.11.03 (Day 2), pages 324 and 325.
[392] R-PHB, paragraph 152.
[393] Marginal Field Development - Chattak, Drilling & Evaluation Program for Chattak 3 (Updated) (16 October 2005), Exhibit R-35, page 12, paragraph 3.1.1, in the document produced by the Respondent this passage is emphasised.
[394] Daily Drilling Report, Exhibits C-20, page 26.

30 m/hr and average ROP was 16 m/hr while drilling from 560m to 590M. Formation was Claystone 70-80% & SST 20-30%. We informed RF & they did flow checks three times. Flow check was OK (static).

556. The Daily Drilling Report records that by 18:00h the depth of 807m was reached. Then a wiper trip was initiated. The Sequence of Events report states:

> *Drilled ahead to 807 m, gas dropped to 1% while drilling below 750 m (approx). The average ROP was 22 m/hr. MW was 9.1 ppg.*[395]

557. The draft report of 11 January 2005 contains the following information about the drilling to 807m:

> *Drilling continued with directional surveys and flow checks. An increase in mud log gas readings was noticed at 485m and continuing down to 728m. Peak gas was 17.73% and was noticed at 586m. Flow checks were conducted throughout this section but particularly at: 559m, 567m, 592m. Drilling continued to 633m. The string was circulated and reciprocated prior to taking a survey. Drilling continued to 807m at which point a wiper trip was required.*[396]

558. Some additional information is provided by the First Enquiry Report, presumably based on the interviews which Committee members conducted with a number of persons, including Mr Zhang, Niko's Drilling Supervisor, and members of the drill crew. The Report mentions the pressure of the mud column at 500m, concluding that "[a]ll the known gas horizons of this field are normally pressured". It refers to "mud log data" and concludes that "mud weight was at an acceptable level". It notes single shot surveys at two other levels (401m and 430m).[397]

559. No serious incidents were reported during the first six days since spud during which time drilling reached 807m. After the November 2015 Hearing, the Tribunal recorded its understanding from the evidence produced of the situation as of that moment and wrote:

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[395] Sequence of Events Report: Well Control Chattak-2, Exhibit C-19.
[396] Chattak 2 Well Control Incident and Blowout – Draft Report, Exhibit C-21.
[397] First Enquiry Report, Exhibit R-3, page 6, paragraph 6.4.

There is no indication that, prior to [the wiper] trip, a kick or any other problematic event occurred. In particular there is no indication that the drilling through the upper stratum to the marine shale and below through Sand 1 and Sand 2 encountered any noteworthy problems.[398]

560. No objections were raised by the Parties to this conclusion in their subsequent submissions or in the course of the February 2016 Hearing. An express confirmation of an important aspect of this understanding can be found in the First Enquiry Report:

The well Chattak #2 did not encounter unexpected gas pressure while drilling down to 807m.[399]

561. This observation allows the conclusion that, while drilling through Sands 1 and 2, Niko seems to have kept an overbalance in the well and thus to have avoided a kick. The Claimant states that Niko "successfully drilled through Sands 1 and 2".[400] These observations do not, however, allow significant conclusions to be drawn about how safe the overbalance was, and what risks would be faced during a wiper trip in these Sands.

8.2.7 Wiper Trip on 7 January 2005 and the first blowout

562. The Daily Drilling Report for 7 January 2015 contains the following laconic entry for the period from 19:00 to 19:50h:

Wiper trip 12 stands to 466m. Well blowout at 19.50 hrs.

563. The report about the activity immediately before this event is equally succinct:

8:00 – 18:00	*Drill ahead to 807m*
18:00 – 18:30	*Circulate hole clean*
18:30 – 19:00	*Take single shot survey, 795m 1.06 degree* [401]

[398] Letter of 6 January 2016, page 2.
[399] First Enquiry Report, Exhibit R-3, paragraph 7.1(b).
[400] C-PHB, paragraph 165.
[401] Daily Drilling Report, Exhibits C-20, page 26.

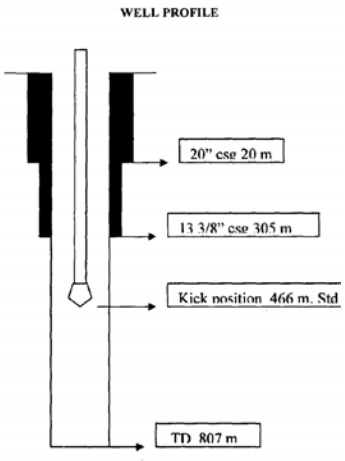
564. The drilling contains the following "24 Hour Summary":

> *Drilled ahead to 807 m. Circulated hole clean. Took survey. Wiper trip 12 stands to 466 m. Well Blowout, Closed pipe rams within 1 min. Tried to circulate gas cut mud out., noticed gas leaking underneath ground. Diverted flow to flare line.*[402]

565. Similarly, the Sequence of Events report by the "Crew onboard" provides some more details:

> *Drilled ahead to 807m. Gas dropped to 1% while drilling below 750 m (approx.). The average ROP was 22 mlhr. MW was 9.1 ppg. At 807 m, wiper trip was planned. Well was circulated for 30 min, a MSS survey was taken. No gain was observed while survey. Started to pull out from 807 m. No slug was pumped prior to wiper trip. Started POOH at 19:00 hrs 7/1/2005. At 1950 hrs, 12 stands had been pulled out & we were losing mud (total loss for 12 stand was 2.48 bbl). Trip sheet was maintained during this entire trip.*[403]

566. The rig crew illustrated its description in the Sequence of Events report by the following drawing, demonstrating the location where it situated the occurrence of the kick:[404]



[402] Daily Drilling Report, Exhibits C-20, page 26.
[403] Sequence of Events Report, Exhibit C-19.
[404] Sequence of Events Report Exhibit C-19, third page.

8.2.8 The first blowout on 7 January 2005 – the factual evidence

567. While there is very little information about the wiper trip, the events from 19:50h onward are better documented. At this time the contemporaneous records specifically mention the blowout: The mention "Well blowout at 19:50 hrs" appears in the Daily Drilling Report.

568. By that time the drilling bit had been raised to 466m and, as indicated by the Niko Draft Report, "an influx entered the well. The well was shut in."[405] Large amounts of drilling mud were pushed up into the trip tank which overflowed. Mr Adolph quantified the kick at 42bbl and described it as "very severe".[406] The Sequence of Events report by the drill crew indicates that "a sudden gain in trip tank (gain 32.4 bbl)" was observed; that it tried to "call rig floor, no response" and rushed to the rig floor "to inform the gain"; and noted that the well was "flowing & mud rising up to 20 m from the rig floor". The "spillage on ground floor" is quantified in the Daily Drilling Report at "about 10bbls" which, added to the gain in the trip tank, produces the approximately 42bbl mentioned by Mr Adolph. The rig crew then closed the BOP.[407] The gas flow was diverted through the flare lines.[408] The crew also tried to re-establish control by circulating mud, but stopped the attempt shortly thereafter, when they heard a "noisy sound inside degasser".[409]

569. A useful summary of the events that followed is provided by the first blowout control specialist who arrived on site on 9 January 2005 and recorded what he heard and read:

> *On 07 Jan 2005 @ 20:40 during the kick control procedures the flow diminished through the manifold and began to come to surface around the rig @ approximately 21:00. Gas and debris rapidly increased in volume and velocity. Flow around the wellbore was estimated to be up to 100m high, carrying with it tremendous amounts of debris including sand, rocks, bricks and smaller parts of drilling equipment. The rig fell to the SSE and shortly after that the flow ignited, initial flame height also estimated a 100m. Within a few hours from ignition*

[405] Draft Report, Exhibit C-21.
[406] Calculated as the addition of 32 bbl pit gain plus 10 bbl of mud that was observed to have spilled onto the ground at the surface of the rig, See WS Adolph 1, paragraph 39.
[407] Sequence of Events Report, Exhibit C-19 and Daily Drilling Report, Exhibit C-20, page 26.
[408] WS Adolph 1, paragraph 45.
[409] Daily Drilling Report Exhibit C-20, page 26.

the entire substructure and mast disappeared into the crater. Gas flow reported through fissures up to 100m away with the main part of the flow being concentrated within the crater.

570. The Daily Drilling Report No 8 for the events on 7 January 2005, prepared on the following day and dated 05-01-08,[410] is presented as follows:[411]

NIKO RESOURCES (BANGLADESH) LTD : DAILY DRILLING REPORT				Report No. 8	Page 1 of 2
Report to:	MERCIER	Report from:	ZHANG	Date of Report:	05 - 01 - 08
Well:	CHATTAK 2	Geologist		Spud Date/Time:	31/12/04 @ 1945 Hrs.
Rig:	ZJ50L	Drlg Engineer:		Days Since Spud:	8
		Rig Manager	Hou Xinrong	0:00 hrs Depth:	485 mRT MD
Last Casing:	13 3/8" K55 54.5# BTC	Formation:		2400hrs Depth:	807mRT MD
Shoe Depth:	305 m	Lithology:	Sandstone, claystone	24hr Progress:	322 m
LOT/FIT:	18.0ppg EMW	BGG:	0.8-1.1%	Daily Well Cost:	[redacted]
Last BOP Test:	5-Jan-05	MGU at Depth:	17.73% at 586 m	Cum'l Well Cost:	
Next Test Due:		TG/CG at Depth:		0600hrs Depth:	807 mRT MD

24 Hour Summary: Drilled ahead to 633 m.Circ bottoms up. Took survey. Drilled ahead to 807 m. Circulated hole clean. Took survey. Wiper trip 12 stands to 466 m. Well Blowout, Closed pipe rams within 1 min. Tried to circulate gas cut mud out., noticed gas leaking underneath ground. Diverted flow to flare line.

0600hrs Update: Well blowout out of control.

24 Hour Forecast:

Summary of Operations for 05 - 01 - 07

From:	To:	Hrs	Description of Operations
0000	0715	7.25	Drill ahead to 633 m.
0715	0730	0.25	Circulate bottoms up.
0730	0800	0.50	Take single shot survey, 625 m, 0.5 degree.
0800	1800	10.00	Drill ahead to 807 m.
1800	1830	0.50	Circulate hole clean.
1830	1900	0.50	Take single shot survey, 795 m, 1.06 degree.
1900	1950	0.83	Wiper trip 12 stands to 466 m. Well blowout at 19:50 hrs.
1950	2025	0.58	Close pipe rams within 1 min. Mud gain 32 bbls in tank, spillage on ground about 10 bbls. Shut in casing pressure
			4.5 Mpa. Try to circulate gas cut mud out through degasser at 30 spm, but heard noisy sound inside degasser
			after pumped 2 min, like a piece of junk inside. Stop pumping and shut in well.
2025	2040	0.25	Shut in well. Shut in casing pressure 4.5 Mpa.
2040	2100	0.33	Try to circulate gas out again at 30 spm while adjusting hydraulic choke, pumpped 70 bbls in hole, was informed
			noticed gas leaking on ground from substructure toward southwest.
2100	2400	3.00	Fully open choke, diverter to flare line. Light flare line gas blow. Blow underneath ground getting stronger and
			stronger. Gas flow through flare line decreased.

[410] For explanations concerning the dating of these reports see HT 2015.11.03 (Day 2) pages 308 – 310.
[411] Daily Drilling Report, Exhibit C-20, page 26.

571. The events on the two following days, 8 and 9 January 2005, are recorded in the following Daily Drilling Reports:

Summary of Operations for 05 - 01 - 08

From:	To:	Hrs	Description of Operations
0000	0215	2.25	Flow from flare line stopped. Blow from cellar area and ground underneath end of catwalk increasing.
0215	0430	2.25	Blow getting strong and strong from cellar area-intermittent. Derrick fall down at 04:30.
0430	0655	2.42	Gas blow strong and continuously. Rate about 100 mmcf/day. Gas blow fired itself at 06:55 hrs.
0655	2400	17.08	Gas blow and fired.

and

Summary of Operations for 05 - 01 - 09

From:	To:	Hrs	Description of Operations
0000	0930	9.50	Blowout decreased gradually. Flame died at 09:30 am.
0930	1030	1.00	Blow bubble around borehole and the area in front of borehole. No flame.
1030	2400	13.50	Blow bubble around borehole and the area in front of borehole with 2 m flame.

572. Further details are provided by the drill crew in their Sequence of Events report. At 19:50 hrs, the report continues:[412]

> *After unscrewed 12th stand observed sudden gain in trip tank (gain 32.4 bbl). It happened within a minute or two, in the same time the return sensor also showed a sudden increase in flow from 17% to 60%. Pattapong tried to call rig floor, no response. Ferdous opened the door to rush to rig floor to inform the gain; he found well flowing & mud rising up to 20 m from the rig floor. BOP was closed by rig crew.*
>
> *Mr. Zhang came to our unit & took a print out of the trip sheet. He wanted to know about the amount of gain in trip tank, annulus volume at 466 m, strokes required to circulate annulus. Tried to circulated thru choke: first 16 bbl, 10 min off, then 70 bbl. MW was 9.1+ ppg. Mr. Zhang told Geoservices to monitor any gain in pits. Before circulating Mr. Zhang told Peter (MI Mud Man) to increase MW by adding barite. 5 bags of barite were mixed to 9.2+. It was noticed that ground started cracking near bell nipple. Mr. Zhang told everybody to go to a safer place; so we left the location.*
>
> *Rig power was shut down. Gas was burnt thru flare line for 90 min. The fire came down slowly after 90 min. We were at safe distance*

[412] Sequence of Events Report, Exhibit C-19.

from rig. We heard loud sound coming from inside the well. Part of rig area started cracking & gas came up.

Entire crew were taken to a safe place with security by car.

At about 0400 hrs, we heard a loud sound & gas started coming up vigorously. We came to know that at 0430 hrs, rig submerged into ground. Gas was coming up continuously with louder & louder sound. At 0655 hrs, gas cought [sic] fire & continue[d] burning. Then, we tried to leave that place by boat, but failed due to angry mob. Finally, Rajat & Pattapong reached Chattak jetty at 1645 hrs. Geoservices unit#89 & tool container went into underground.

573. Finally, the Tribunal reproduces the relevant parts from the Draft Report which Mr Mercier produced on 11 January 2005. This report was delivered to the First Enquiry Committee and referred to in its Enquiry Report of 7 February 2005:

With 12 stands out of the hole and the bit at a depth of 466m an influx entered the well. The well was shut in.

- *Mud gain - 32 bbls.*
- *Spillage on ground about 10bbls (estimating the kick size to be 40 bbls).*
- *Shut in casing pressure 4.5Mpa (652psi).*

Attempted to circulate gas cut mud out through degasser - noise in degasser necessitated stopping the pump and shutting in well. Same pressures.

Tried to circulate out gas at 30spm with choke adjustments. Noticed gas leaking up through the ground. Fully opened the choke to flare. Gas began to reduce out flare line indicting the well may have been packing off.

Flow around rig area increase dramatically creating a large crater around rig. All personnel were evacuated from site.

At 04:30 8 January 2005, derrick fell and disappeared into the crater.

At 06:55 flare ignited and well flowed out of control.

There were no injuries or fatalities. The flow was sweet dry gas with no liquids of any description.

On 9 January 2005 at 09:30am, flow diminished and extinguished.

Area inspection indicated small flares through fissures in and around the drill site.

Gas flare continues to decrease daily. The field is being monitored with daily site visits.

Full investigation is underway by all parties concerned.[413]

8.3 Possible causes for the blowout and for the failure to control it

8.3.1 The undisputed elements: the kick and its immediate consequences

574. As the Claimant pointed out in its Post-Hearing Brief, it is common ground between the Parties and the experts that "the blowout of Chattak 2 actually occurred during the wiper trip, when the drill pipe was lifted or 'tripped' up the wellbore"; during this operation a kick occurred.[414] The Parties also agree that the kick was produced by gas from Sands 1 and 2.

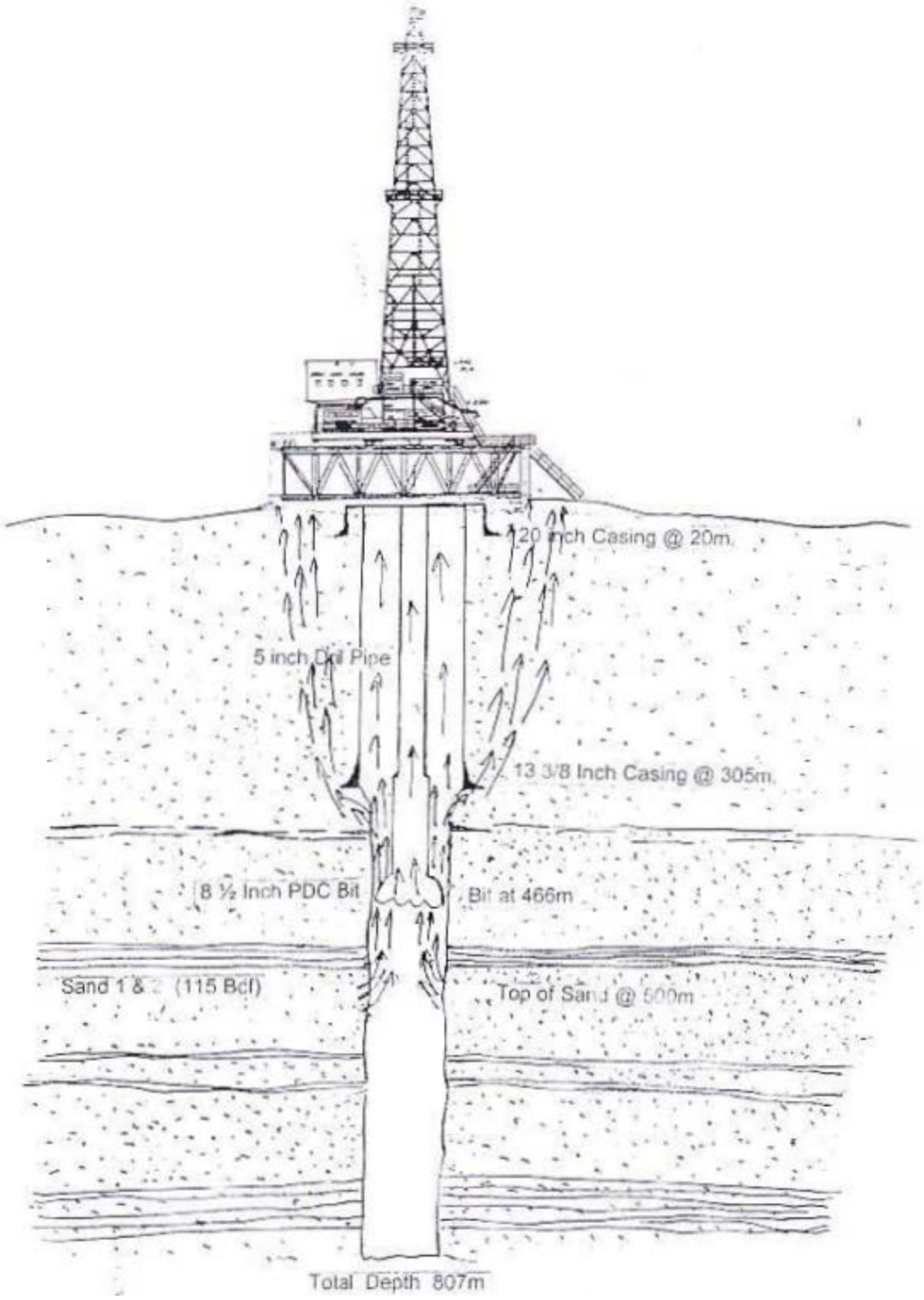
575. Gas from these sands moved up through the well bore and turned into a violent unrestricted flow. The shut-in of the well caused an obstruction at the casing shoe. The gas forced its way around this obstruction by broaching the well bore below the foot of the casing,[415] entering the formation and flowing up outside the casing. According to the First Enquiry Report, the "sandstone worked as a conduit for leakage to the surface".[416] The flow of the gas caused a crater and undermined the soil

[413] Draft Report, Exhibit C-21.
[414] C-PHB paragraph 165; See R-PHB, paragraph 101.
[415] First Enquiry Report, Exhibit R-3, paragraph 6.11; also paragraph 7.1(d).
[416] First Enquiry Report, Exhibit R-3, paragraph 5, page 73.

supporting the rig, leading to the collapse of the rig into the crater, in the manner described above.

576. This movement of the gas has been represented by drawings in the reports of Mr Wright and of Mr Abel and in a drawing of the First Enquiry Report. Because of slight differences in the details represented in these drawings, the Tribunal reproduces below all three of these drawings starting with that of the First Enquiry Report: [417]

[417] First Enquiry Report, Exhibit R-3, page 89.


20 inch Casing @ 20m
5 inch Drill Pipe
13 3/8 Inch Casing @ 305m
8 ½ Inch PDC Bit
Bit at 466m
Sand 1 & 2 (115 Bcf)
Top of Sand @ 500m
Total Depth 807m

577. Mr Wright provided the following drawing in his first report:[418]

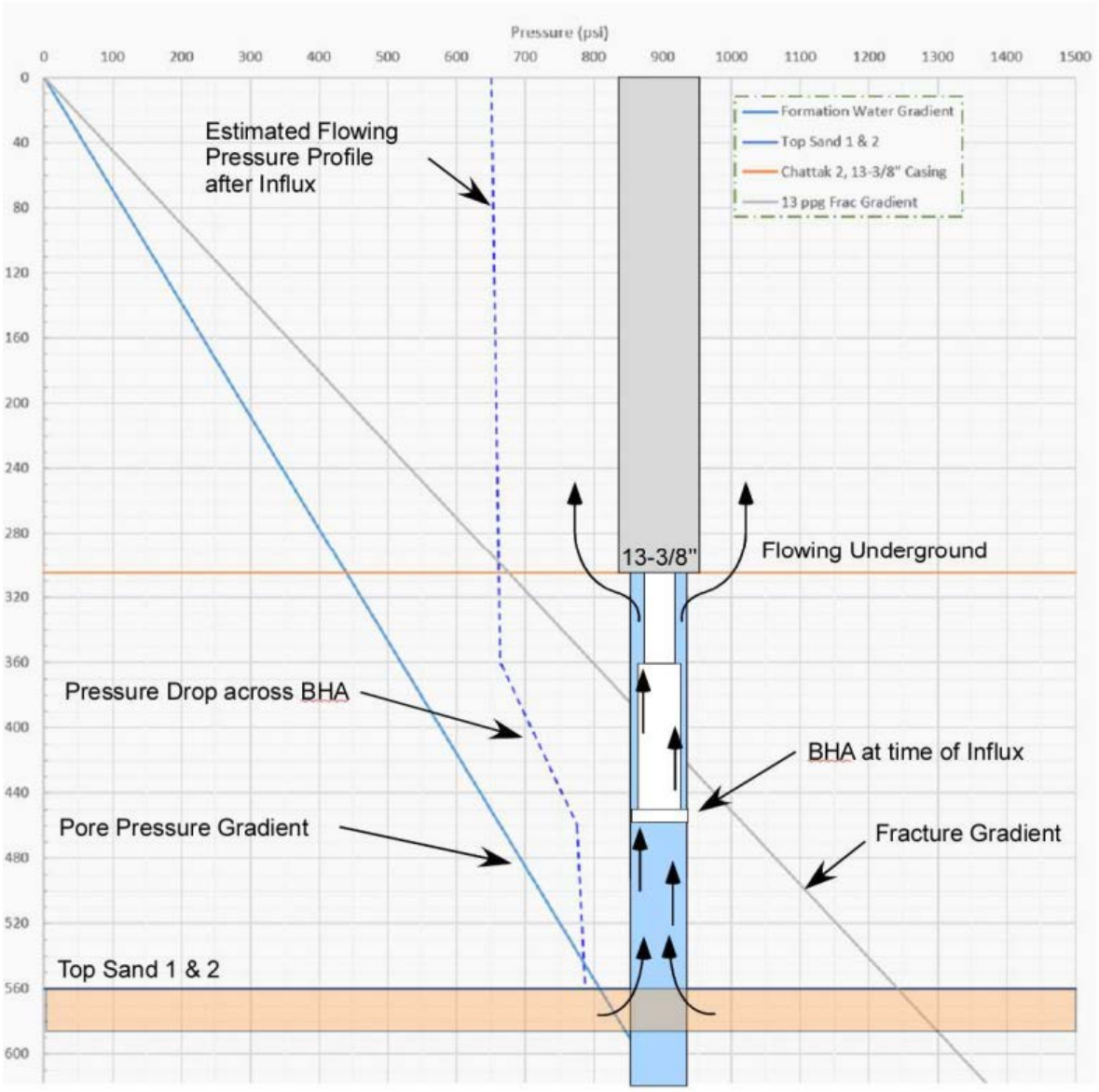


Figure 3-8: Estimated Underground Flowing Pressures in the Chattak 2 Wellbore After the Kick

[418] Wright 1, page 28, Figure 3-8; also produced in his presentation at the November 2015 Hearing, slide 19.

578. Mr Abel represented the event in the following drawing:[419]

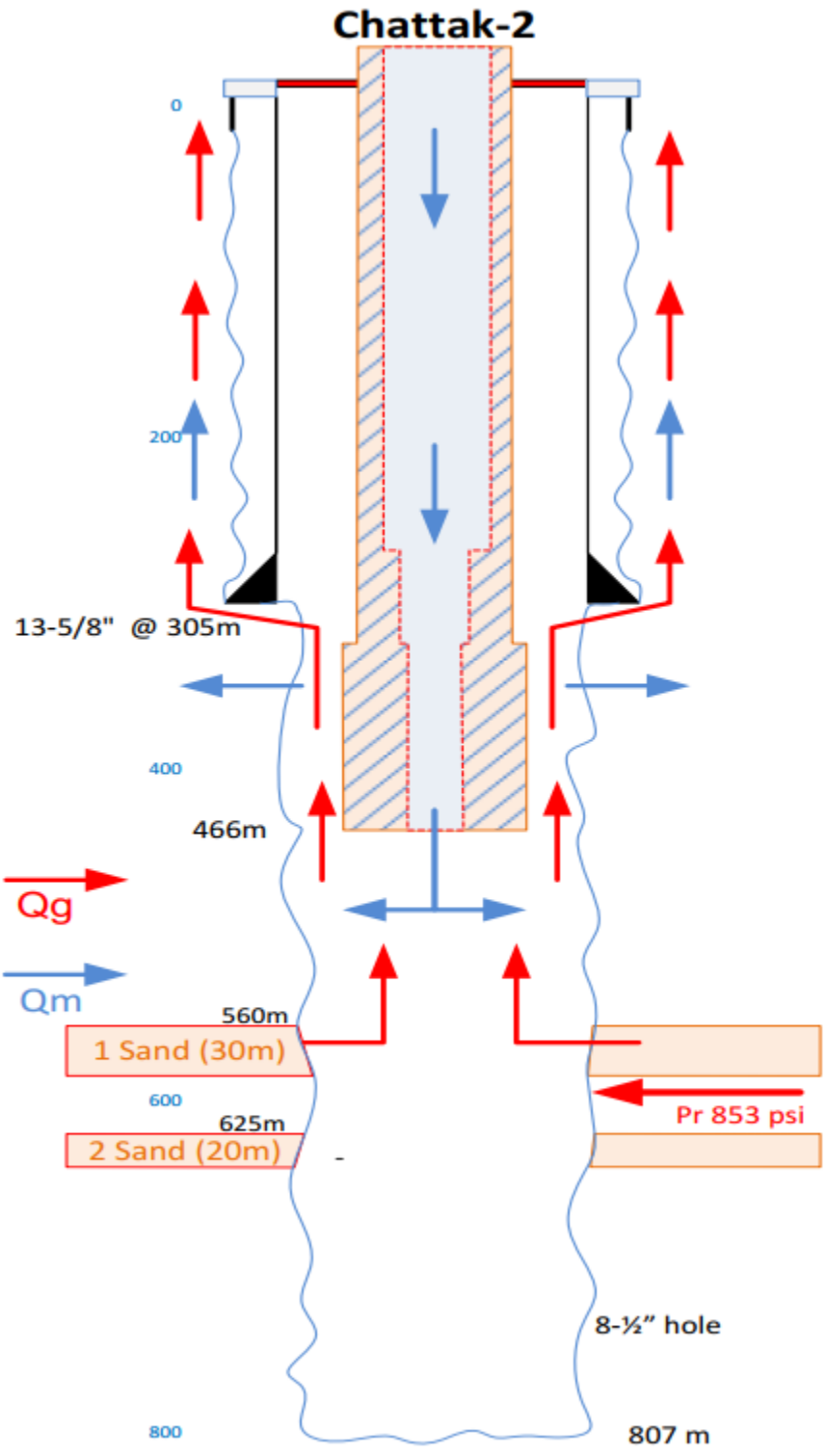


Figure 12.1

[419] Abel, Figure 12.1 at page 41.

8.3.2 The Tribunal's preliminary assessment and the Parties' comments

579. Following the Parties' submissions, including the reports of their experts, the Tribunal provided, in an Annex to Procedural Order No 12 and in preparation for the November 2015 Hearing, *inter alia* some indications of the issues that, in its preliminary understanding, arose from these submission and reports.

580. At the November 2015 Hearing the Tribunal then discussed at length with the Parties, as well as their experts and the Tribunal's expert, the technical issues of critical relevance, in particular with respect to drilling technology and the establishment of a factually reliable narrative of "what actually happened on 7 January".[420]

581. Following that hearing and in light of the argument and evidence presented by the Parties and the experts, the Tribunal presented in a letter of 6 January 2016 its understanding of the possible causes of the blowout of the Chattak 2 Well. To the extent to which the Parties considered the explanations as incorrect, the Tribunal invited them "to specify (a) where they disagree with the explanations, (b) what evidence supports their disagreement and (c) what other more plausible evidence should form the basis of the Tribunal's analysis and decision".

582. The Tribunal noted the absence of any indication that a kick or any other similar problematic event had occurred prior to the wiper trip. In particular, the Tribunal had been shown no evidence that prior drilling through the upper stratum to the marine shale and below through Sand 1 and Sand 2 had encountered any noteworthy problems.[421]

> *From the evidence it appears therefore that the most plausible explanation for the blowout is that a kick occurred during the wiper trip and that this kick was created by "swabbing" which occurred when the drill pipe (or drill string) was pulled up in the drilling mud and the stands were removed from the well. This operation must have created a temporary underbalance in the borehole compared to the surrounding formation, causing gas to enter the borehole.*

[420] HT 2015.11.3 (Day 2), page 338.
[421] This was noted also in the First Enquiry Report, Exhibit R-3: "the well did not encounter unexpected gas pressure while drilling down to 807m" at paragraph 7.1 (b).

583. In response, the Parties provided comments and corrections in their Post-Hearing Briefs and at the Hearing in February 2016.

584. The Claimant discussed possible causes in detail in its Post-Hearing Brief of 22 January 2016.[422] It asserted that:

> *The experts were also in agreement that the specific cause of the kick could not be determined. All three experts recognised that the phenomenon of "swabbing" may have occurred.* […] *Mr Wright also explained at some length a number of potential causes of "swabbing" but he noted that even if it had occurred, it could not be determined with any certainty which particular factor had caused it.*[423]

585. At the February 2016 Hearing, the Claimant addressed specifically the Tribunal's presentation:

> *Niko is comfortable with the Tribunal's summary of the facts in that letter, save for one point of clarification [concerning the passage in which] the Tribunals observe that it appears therefore that the most plausible explanation for the blowouts is that the kick was created by swabbing.*
>
> *The experts did indeed identify swabbing as a plausible explanation for the kick but, as has been pointed out in Niko's post hearing brief, they also identified lost circulation as a plausible explanation for the kick and that is that with the lost circulation is a loss of mud into the formation.*[424]

586. The Respondents reproduced the quoted passage from the Tribunal's letter and did not object to it; they did, however, comment on the possible uncertainty about "exactly what happened during the kick"[425] and drew conclusions with respect to evidence for Niko's claim for a non-liability declaration, an issue that shall be discussed below in Section 8.4.

[422] In particular at C-PHB, paragraphs 166 to 171.
[423] C-PHB, paragraph 166, referring to Wright 1, page 21.
[424] HT 20416.02.22, page 323.
[425] R-PHB, paragraph 101.

8.3.3 The origin of the kick in Sands 1 and 2

587. The circumstances that caused the kick were addressed in the expert reports. These circumstances and the exact time when it occurred were discussed extensively during the November 2015 Hearing. While "swabbing" was considered as a likely cause, different mechanisms causing the swabbing were discussed and, as the Claimant rightly pointed out, other explanations also had been suggested.

588. Later during the November 2015 Hearing, Dr Adams concluded:

> *We have narrowed it down to swabbing or loss of circulation or a combination of both.*[426]

589. The Claimant reached a similar conclusion, as the above quotation from the February 2016 Hearing shows; and the Respondents, quoting Dr Adams as above, also seem to share this conclusion. The Tribunal therefore will focus on these two possible explanations for the kick.

590. The first of the possible causes, **Swabbing**, is a piston like effect as explained above in Section 8.1. During a wiper trip it may occur when the drill bit is pulled up by removing stands from the drill pipe. In the present case, 12 stands were removed in successive steps before the blowout was noticed by the crew. At each step of these removals, the piston effect operates and the pressure is reduced. It is essential for a successful wiper trip that the reduction of the pressure is limited and quickly compensated. Mr Wright explained the procedure at the November 2015 Hearing:

> *… when you have moved the pipe up it is going to create a slight under-pressure. You just want to make sure that you have got enough over-pressure that you are still over-balanced when you move the pipe up. That is why you move it slow. That is why you have the right mud properties, that you do not do it too much.*[427]

591. In other words, the kick is not caused solely by "slight under-pressure" occurring during this operation. An additional factor is extant: disruption of the hydraulic balance in the wellbore by virtue of reduction of the pressure in the wellbore below the pressure in the surrounding formation.

[426] HT 2015.11.05 (Day 4), page 906, line 25 to page 907, line 1.
[427] HT 2015.11.03 (Day 2), page 452, lines 7-14.

The speed with which the drill bit is pulled up is a critical element of the prevention of kicks.

592. There is no direct information about the manner in which the wiper trip was performed. It is therefore not known how fast each of the stands was removed and, at each of these operations, the bit was pulled up. Only the total time of the operation is recorded.

593. Based on the information that 12 stands were removed during the 50 minutes preceding the blowout, Mr Wright calculated the average duration of each step in the operation. He concluded: "This is a reasonably slow tripping speed and should avoid swabbing given the assumed data."[428]

594. The Respondents contest these explanations. They point out, *inter alia*, that some months after the first blowout, Niko itself gave swabbing as one of the reasons for the blowout. In its Drilling and Evaluation Programme for a Chattak 3 well, dated 16 October 2005, Niko gave as one of the contributing factors for the blowout "swabbing while tripping".[429]

595. The First Enquiry Report gave a more detailed explanation, to which Mr Wright referred at the November 2015 Hearing:[430]

> *During tripping out, 12 stands were pulled out in 50 minutes or each stand took an average of 4 minutes. The gears were at the lowest ratio. The average speed of pulling out is considered slow. This does not provide information on the speed of pulling out of first couple of stands. In absence of chart record actual speed of pulling out for each stand could not be ascertained. Analysis of other information indicates that the reason for well becoming under balance is swabbing.*[431]

596. At the November 2015 Hearing Mr Wright also recognised that he did "not have enough direct evidence from the rig data. All we have got to glean from is the basic average times."[432] He accepted that "the possibility of

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[428] Wright 1, page 21 and his explanations at the November hearing: HT 2015.11.03 (Day 2), page 440.
[429] Marginal Field Development – Chattak, Drilling & Evaluation Program for Chattak 3 (Updated), 16 October 2005, Exhibit R-35, page 12, quoted at R-PHB, paragraph 152.
[430] HT 2015.11.05 (Day 4), page 905.
[431] First Enquiry Report, Exhibit R-3, page 7, paragraph 6.10.
[432] HT 2015.11.05 (Day 4), page 905.

pulling too quick is obviously there but we do not have any evidence to say that is what [the drilling supervisor] did".[433]

597. Mr Wright also considered another mechanism that could cause swabbing. He described it as the drill bit being "**balled up with clay**" from drilling through the regional seal.[434] In his first report he explained:

> *If the bit was balled up then the swabbing effect would happen at a much lower trip speed. The rig crew, however, reported there was no over pull during the trip to alert them that it was a problem. Further, based on the BHA and the nature of the formations involved here, it is unlikely that there was any such balling up.*[435]

598. When Mr Wright referred to balling up at the November 2015 Hearing, he confirmed that balling up increased the risk of swabbing: "even if you are pulling slower you could still swab in gas even if you are pulling the proper speed".[436] However, he mentioned it as a possibility; but he did not provide any concrete indications that it may have occurred and caused the kick in the present case.

599. In any event, Mr Wright does not assert that "balling up" is an occurrence that would come at a surprise to the drilling crew and that could be disregarded when designing the well and planning the drilling.

600. The possible alternative cause for the kick on which the experts and the Parties agree is described as **loss of circulation** or a **loss of mud into the formation**. Mr Wright explained in his report:

> *A possible explanation for the influx is when pulling the BHA (bottom hole assembly) through the highly permeable Sands 1 & 2, some of the filter cake (drilling mud residue on the walls of the formation) may have been removed causing a small loss of mud into a fracture with a swap of gas (i.e., a few bbls of mud go into the formation and few barrels of gas come into the wellbore at the same time) which may not*

[433] HT 2015.11.05 (Day 4), page 881.
[434] HT 2015.11.03 (Day 2), page 444 and HT 2015.11.03 (Day 4), page 885.
[435] Wright 1, page 22, also at page 8; the mechanism was explained at the November 2015 Hearing by Mr Abel at HT 2015.11.02 (Day 1), page 251.
[436] HT 2015.11.05 (Day 4), page 883.

create a noticeable gain in the trip tanks since the gas is not over pressured.[437]

601. Per Mr Wright's explanation, the loss of circulation commences with "**removal of filter cake**". At the November 2015 Hearing, he explained that filter cake is formed by particles in the drilling mud which produce a deposit on the surface of a permeable formation and prevent gas from entering the well bore.[438] He described the removal of the filter cake as follows:

> *It could also be because you have got a permeable sand and, let us say, if you are really wiping the hole and pulling the filter cake off the wellbore then you could be losing some fluid into that permeable sand that is dropping the level slightly.*[439]

602. There is no evidence that such removal of filter cake occurred and there is no record of corresponding fluid loss that might have caused the kick. Indeed, Mr Wright conceded that it would be "pure speculation".[440] In any event, Mr Wright describes the mechanism:

> *… you pull all the filter cake off when you are pulling it up that would create the suction that would make the gas come into the well.*[441]

603. He confirmed that a kick occurring in such circumstances would be a case of swabbing.[442]

604. Dr Adams confirmed these explanations about the formation and removal of the filter cake. He stated that its removal may have been the reason for the wiper trip "to wipe the hole and get rid of that filter cake which you do not want".[443] He did, however, not provide any evidence for that assumption, and the Tribunal has not seen in the record any indication that the removal of the filter cake was the reason for the wiper trip.

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[437] Wright 1, page 7 and HT 2015.11.03 (day 2), pages 453 – 454.
[438] HT 2015.11.05 (Day 4), pages 884 and 885.
[439] HT 2015.11.03 (Day 2), page 445, lines 18-23.
[440] HT 2015.11.05 (Day 4), page 885.
[441] HT 2015.11.05 (Day 4), page 885, lines 22-24.
[442] HT 2015.11.05 (Day 4), pages 885 and 886.
[443] HT 2015.11.03 (Day 2), page 484.

605. Dr Adams also had another explanation for the possible lost circulation that appeared different from that of Mr Wright; he attributed it to possible **excessive pressure in the borehole**:

> *… the pressure inside the well from the hydrostatic pressure by drilling fluids exceed[ed] the rock strength. When that occurs it creates a fracture.*[444]

606. Dr Adams suggested that the fracture occurs "in the bottom of the hole somewhere that has opened up";[445] in later explanations he seemed to accept that the fractures may occur at other locations in the well bore. He stated that, as a result of the fracture of the formation, quantities of drilling mud enter the "the rock somewhere and we do not necessarily know where they go".[446]

607. The Claimant pointed out that this explanation implied that the pressure of the drilling fluids (or mud) would have exceeded the resistance of the rock in which the well was drilled and therefore caused the wellbore to fracture. It concluded:

> *This is the direct opposite of the position taken by Mr Abel in his report, wherein it was suggested that the mud overbalance during the trip was too low.*[447]

608. The apparent contradiction is resolved when one follows Dr Adams' explanation to its next step. As a result of the flow of the mud into the formation, so Dr Adams opines,

> *… the pressure from this mud column is reduced and if it reduced below formation pressures then whatever is in those formations can start flowing into the rock, so on occasions lost circulation is a cause for a kick.*[448]

609. Dr Adams' explanations, assuming that a fracture occurred in the formation, would imply that mud was lost into the formation. Dr Adams

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[444] HT 2015.11.05 (Day 4), page 921, line 24 to page 922, line 2; see also C-PHB, paragraph 170.
[445] HT 2015.11.03 (Day 2), page 483.
[446] HT 2015.11.05 (Day 4), page 922.
[447] C-PHB, paragraph 171.
[448] HT 2015.11.05 (Day 4), page 923, lines 19-23.

has not pointed to any evidence that would indicate that such fluid loss did indeed occur, and so confirm his hypothesis.

610. Despite the differences in their explanations, the experts agree that the information available does not allow a conclusion as to how exactly the kick was caused.

611. Mr Wright concluded:

> *… we do not know what the exact mechanism was. It was probably some swabbing with some losses simultaneously.*[449]

612. Dr Adams, having reduced the options to swabbing and loss of circulation, concluded:

> *What we are saying is we cannot really define between these two but we have excluded everything else.*[450]

613. Having considered the different explanations proposed by the Parties and their experts, **the Tribunal** notes that, in all plausible explanations, the circumstances that led to a kick, and in particular the loss of pressure when the drill bit is pulled up, are events that occur not infrequently during tripping. The operation is risky when the trip moves through sands containing gas. In such situations, it is incumbent on the drilling team to perform the trip in such a manner that the reduction of the pressure, caused by pulling the drill bit or by other events described above, is limited in time and the pressure in the borehole is preserved at a level above the pressure of the gas in the formation.

614. Relying on Mr Wright's explanations, the Claimant emphasises that the critical part of this activity relates to the drilling mud and its density:

> *… determining fluid density or "mud weight" involves an intricate balance between maintaining an overbalance to keep the gas in the formation surrounding the bore hole, yet avoiding too heavy a mud*

[449] HT 2015.11.04 (Day 3), page 553, lines 18-20.
[450] HT 2015.11.05 (Day 4), page 907, lines 2-4.

weight which creates a higher pressure and can fracture the wellbore.[451]

615. Mr Wright indeed insisted on the need for careful balancing of the mud weight and emphasised the importance of determining and maintaining the adequate mud density. Indeed, he considered "drilling mud density" as one of an "initiating factor" for the swabbing.[452] At the November 2015 Hearing he explained:

> *… so you have to balance very carefully between what is a sufficient pressure to over-balance your reservoir but not having too much over balance that you are going to have drilling problems or induce losses.*
>
> *It is not an easy thing to do. It is not possible to make a drilling programme by somebody in an office in Calgary, Canada, and say this is exactly what mud weight you are going to run. That is not possible. It is not realistic.*
>
> *The responsibility has to go to the drilling supervisor on location to assess what he sees as he is drilling the well. You need to have the weight as close as possible, have a bit of over-balance hopefully, and you are in the right direction because of the uncertainties and then you monitor the hole as you drill it. That is basically the way it is done.*[453]

616. Mr Abel explained the basic design objective of adjusting the mud density to keep the "mud hydrostatic slightly bigger than the pore pressure".[454] The Well Proposal had specified characteristics of drilling fluid, including mud type. For the mud density of the 8 ½" hole (in the well bore below the 305m casing foot) it was indicated: "Mud Density as hole conditions dictate".[455]

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[451] C-PHB, paragraph 172, quoting testimony of Mr Wright at HT 2015.11.03 (Day 2), pages 400 – 401.
[452] HT 2015.11.04 (Day 3), page 559; also slide 20 of Mr Wright's presentation at the November 2015 Hearing (Exhibit CH-5).
[453] HT 2015.11.03 (Day 2), page 401, line 9 to page 402, line 1.
[454] HT 2015.11.02 (Day 1), page 230, adjusted by reference to the terms used in his slide 23, Exhibit THE- 1.
[455] Chattak-2 Well Proposal, Exhibit C-15, page 15; see also above paragraph 526.

617. Mr Wright explained that such an approach was common practice in circumstances as those prevailing here; it means that the entire responsibility is placed on the drilling team:

> *This is a common practice in drilling, particularly when there is little information available upon which to specifically program the mud weights. It calls for the drilling supervisor and responsible members of the rig crew (driller, rig superintendent, mud man, mud loggers, etc.) to monitor the well conditions (including gas monitoring and losses) and assess whether increasing or decreasing the mud weight is warranted. Niko appears to have made a conscious decision to do this to make sure the crew was alert to hole conditions.*[456]

618. At the November 2015 Hearing, and as mentioned above, Mr Abel described the process by explaining that "the hole speaks to you, listen to what it is saying".[457] He confirmed:

> *Each company will have a different guideline for their man on the rig but the general thing in that from my experience is that the man on the rig, the drilling supervisor, has the authority and the directive that if the hole speaks to him that he must change the drilling parameters, one of which being the mud weight. So, in my experience, most drilling personnel on site have that authority to change the mud weight up or down depending on what they think is happening in the hole.*[458]

619. **The Tribunal concludes** that it was the responsibility of the drilling supervisor and the crew to prevent gas from entering the wellbore, in particular by providing the appropriate mud weight. During the wiper trip on 7 January 2005 they did not succeed in this task and gas entered the wellbore, creating the kick at the origin of the first blowout.

8.3.4 <u>From the kick to the underground blowout at 19:50h.</u>

620. According to the Daily Drilling Report and the Sequence of Events report of the drill crew, the first blowout occurred at 19:50h. It manifested itself by a sudden gain of mud in the trip tank and spillage around it. Within a

[456] Wright 2, page 24.
[457] HT 2015.11.02 (Day 1), page 204.
[458] HT 2015.11.05 (Day 4), page 831, lines 6-16.

very short time, one or two minutes, some 42 bbls moved up through the wellbore.

621. In the circumstances, it does not appear that this surge was the immediate result of the initial kick. When discussing the origin of a kick through the loss of circulation, Mr Wright explained, as quoted above, that a few barrels of gas would come into the wellbore; and he continued:

> *Once in the wellbore, this small volume of gas would migrate upwards through the thin water-base mud expanding near the surface and causing the well to be underbalanced at Sands 1 & 2 and gas to flow into the wellbore. This could explain the rapid gain in the trip tank of 42 bbls in 1 to 2 minutes reported by the mud logger (**Exhibit C-21**).*[459]

622. At the November 2015 Hearing, Mr Wright explained that the small volume of gas was "less dense, it is a buoyancy difference, it is going to migrate like bubbles on a scuba diver, it is going to work up the well".[460] Later at the hearing he described the process again:

> *… just a small kick and it only takes about three or four barrels to under-balance the well like we saw but three or four barrels comes in and given 20 minutes or so it works its way up the wellbore until the top of the sand at 560 metres goes under-balance. The second it goes under-balance, then it starts to flow and when it starts to flow every psi that it goes under-balance it flows harder and harder and harder so that takes off very fast.*[461]

623. Mr Wright described the action of the gas entering the well bore after it had become under-balanced: the gas "moves the mud up like a piston"; and:

> *When it starts expanding rapidly then that is when the mud is getting blown out of the well.*[462]

[459] Wright 1, page 8, and HT 2015.11.03 (Day 2), pages 453 – 454.
[460] HT 2015.11.03 (Day 2), page 459.
[461] HT 2015.11.05 (Day 4), page 886, lines 15-24.
[462] HT 2015.11.03 (Day 2), pages 457 and 460.

624. Mr Abel reached a similar conclusion:

> *The reported sudden and violent flow at the end of the wiper trip has the signature of a kick that has migrated to near the surface and then becomes eruptive due to rapid gas expansion. Based on the information provided, an undetected kick that migrated to near surface is the most likely scenario that resulted in a sudden well flow followed by a violent eruption of mud.*[463]

625. There are some variations about the assessment of the time it took the "bubble" to work its way up the wellbore, *i.e.* between the entry of a small volume of gas and the blowout recorded at 19:50h. At the November 2015 Hearing, Mr Wright also mentioned that the first entry of gas could have occurred some 30 minutes before the "unloading".[464]

626. In his first report, Mr Wright provided a calculation of that period of time:

> *If 3 to 4 bbls of gas flowed into the wellbore at 560m it should migrate to the surface in 9.1 ppg water-base mud in approximately 15 to 20 minutes (assuming 0.5 m/sec gas migration velocity). As the bubble reached near the surface, the Sands 1 & 2 would go underbalanced and start to flow. This timing is consistent with the amount of time that the trip would have taken to pull the drill pipe from Sands 1 & 2 to 466m.*[465]

627. Dr Adams did not wish to commit to a specific period of time, but he opined that there was some time for the crew to react:

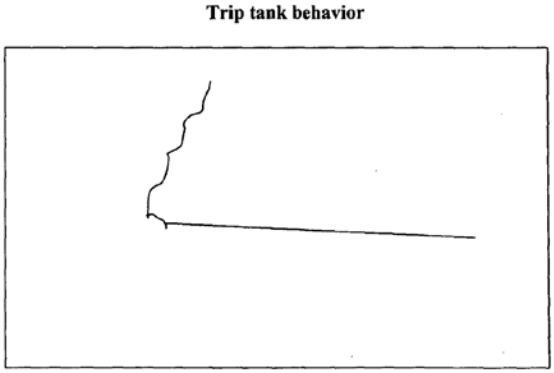
> *I said there may have been something going on 15 or 20 minutes ahead of time. John [Wright] threw out a number 30. During that period of time if something is changing that is a time that the crew can do something.*[466]

628. The Sequence of Events report of the drill crew states that "Trip sheet was maintained during this entire trip". The trip sheet might have provided some information about the question whether and if so when the crew

[463] Abel, pages 35-36.
[464] HT 2015.11.03 (Day 2), page 501.
[465] Wright 1, page 23.
[466] HT 2015.11.03 (Day 2), page 505, lines 12-16.

detected the kick, as it was moving up through the well. Unfortunately, this sheet was lost.

629. There are, however, two items of information that provide some indication: (i) the drill crew reported that, while the 12 stands were being pulled up, "we were losing mud (total loss for 12 stands was 2.48 bbl)";[467] (ii) at the end of the report, the crew reproduced a small drawing, entitled "Trip tank behaviour":



630. Mr Wright and Mr Abel have explained the functioning of a trip tank for the purpose of detecting whether gas enters the wellbore. The main tool for this function is the "Trip Tank Indicator", shown on the following drawing of a trip tank, as Mr Wright represented it:[468]

[467] Sequence of Events Report, Exhibit C-19.
[468] Wright 1, page 23; the trip tank can also be seen on slide 12 of Mr Abel's presentation at the November 2015 Hearing (TEH-1).

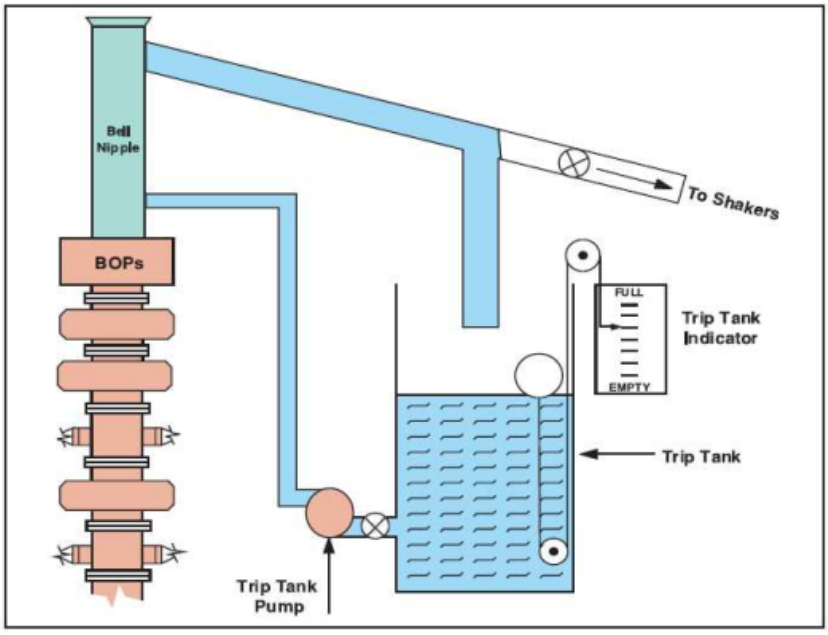


Figure 3-6: Example Diagram of a Trip Tank

631. The Trip Tank Indicator shows the volume of mud in the trip tank; changes in this volume reflect changes in the volume of mud circulated through the wellbore. When gas enters the wellbore, it replaces the mud in the wellbore and the quantity of mud in the trip tank increases. Mr Wright described the mechanism as follows:

> *Okay, the first thing you look at is if we are taking gas into the wellbore and if we are monitoring our trip tank properly and we do not have any losses, then we would get a gain in our trip tank because we have swabbed a volume of gas in. So we have pulled the bit up through that sand slowly and it reduced the pressure underneath, probably not a whole lot but enough to maybe bring in a few barrels.*[469]

632. The other element of information provided by the Sequence of Events report was that, during the removal of the 12 stands, 2.48bbl mud were lost. Mr Wright considered this information and concluded: "Since the hole is kept full with the trip tank and only a small loss of 2.5 bbls was recorded, the sands should not have gone underbalanced."[470] Mr Wright also provided an explanation for the quantity of mud loss reported by the

[469] HT 2015.11.03 (Day 2), pages 451, lines 11-19.
[470] Wright 1, page 23.

drill crew. He opined that the initial kick could have brought some four or five barrels of gas, but the crew only mentioned 2.5 barrels of mud loss:

> *The mud loggers only show 2.5 barrels of losses so perhaps four barrels of gas came in the well and six and a half barrels of mud went out of the well during this trip phase.*[471]

633. Mr Abel referred to this phenomenon in similar terms:

> *… two things or three things can be going on down hole which mask all of it, so you can have exchange where it is drinking and it is kicking at the same time. You can have migrational effects which the expansion of the – and all those are nonlinear and that would – superimposed onto that.*[472]

634. At the November 2015 Hearing, Mr Wright considered this loss "unusual". As possible explanations he mentioned "permeable sand", or the bit could have been "balled up with clay" or "pulling the filter cake off the wellbore".[473] Later at the November 2015 Hearing, he commented:

> *So there has got to be something going on with the losses and gains simultaneously or there is something wrong with the equipment.*[474]

635. Mr Wright also linked the information about the 2.5 barrels of mud loss with the graph of the trip tank. He saw as a possible explanation that at each removal of a stand 0.2 barrels of mud were lost. But "the pump keeps the hole full of mud so if you lose some mud down here it does not reduce the mud hydrostatic because the pump is keeping it full". He was not sure whether the loss of the 2.5bbl of mud was something to be concerned about; but he would "want to know what is going on". [475]

636. Dr Adams analysed the graph shown above with the objective of demonstrating the development of the mud volume over time.[476] He related the dents in the curve to the removal of the last four stands and the effect

[471] HT 2015.11.05 (Day 4), page 910, lines 15-18.
[472] HT 2015.11.03. (Day 2), page 498, lines 5-11.
[473] HT 2015.11.03 (Day 2), pages 444 and 445.
[474] HT 2015.11. 04 (Day 3), page 501.
[475] HT 2015.11.03 (Day 2), pages 445 – 446.
[476] HT 2015.11.03 (Day 2), page 466.

of this removal on the mud volume. At the end of his explanations, the Tribunal summarised how it understood his testimony:

> *So that means when they are moving stand 11 and 12 gas was in the borehole and had already the effect of increasing the volume of mud flowing out of the top.*
>
> *DR ADAMS: That seems to be what this suggested to me, yes.*[477]

637. The difficulty with this analysis is that the drawing does not identify values and scale; while one may assume that the coordinates show time and volume, there are no values indicated on the axes for either of them. As Mr Wright pointed out, the drawing does not provide sufficient information to allow "any logical observation as to what is going on". He stated:

> *In my opinion, we do not have enough information. We have got a little squiggly line that somebody ripped off the bottom of a log without any details …*[478]

638. Mr Abel was of the opinion that the diagonal line above the sharp turn to the right in the drawing indicated that "the gas has been in the hole for a little while […] we know the source of the gas is at the bottom of the well not near the surface so, therefore, something had to bring it from 500-something to this level and that is all I can conclude from that"; but otherwise "the data is very vague"[479] and, later in the discussion, concluded "we just do not know".[480]

639. When discussing the possible reaction of the drill crew, Mr Abel emphasised the distinction which Mr Wright had made, as quoted above: the initial kick brought in a small volume of gas which moved up, like a "bubble", in the wellbore and then caused the wellbore at Sands 1 & 2 to become under-balanced producing the sudden surge of mud – the "unloading":

> *I think there needs to be a distinction between the violent nature of the unloading and the kick detection. The kick detection is that point*

[477] HT 2015.11.03 (Day 2), page 474, lines 2-7.
[478] HT 2015.11.03 (Day 2), page 496, lines 15-18.
[479] HT 2015.11.03 (Day 2), pages 498, 497.
[480] HT 2015.11.05 (Day 4), page 924.

where the trip tank is telling you there is a small gain and you can react and then there is the point when there is a violent flow and its impossible to react. That is all I am saying, is that I think, typically, you should have seen the small gain before it became violent. That is what I think should have happened and I fault them if they did not because I know there was a warning. Maybe they just were not looking. I do not know.[481]

640. The Claimant asserted that "[n]either Dr Adams nor Mr Abel were able to identify any evidence in the record that particular warning signs were present that should have alerted a reasonable rig crew to the kick any earlier".[482] This is not quite correct. The evidence just discussed shows that both the small mud loss prior to the blowout and the graph of the trip tank showed signs that were, in the words of Mr Wright, "unusual". They may have been signs of the initial kick moving up through the wellbore, announcing the subsequent unloading of the well. Mr Wright stated that he did not "understand why they did not see it" in this initial phase.[483]

641. Moreover, the record shows only what the crew noticed. It does not show any warning signs which may have occurred but were overlooked by the crew.

642. This being said, the Tribunal must nevertheless consider the difficulties that the three experts faced when interpreting this evidence. The experts had time to study the evidence before they prepared their reports and they discussed it at length at the November 2015 Hearing. Notwithstanding their unhurried examination and analysis of the circumstances, the experts could not reach a firm conclusion. In these circumstances, the Tribunal finds it difficult to conclude that the drilling supervisor, the drill crew and the mud loggers, engaged in the work on the wiper trip, should have analysed this evidence within minutes and concluded that it was the sign of an imminent blowout. Of course, the drilling team may have had other information which is not available in these arbitrations and which may have included a warning sign; but the Tribunal has no basis for assuming that to have been the case. In sum, while observing that there were signs that indicated an anomaly in the wellbore, the Tribunal is reluctant to conclude that the crew present at Chattak 2, operating with

[481] HT 2015.11.05 (Day 4), page 912, lines 7-19.
[482] C-PHB, paragraph 187.
[483] HT 2015.11.05 (Day 4), page 910.

the tools available to it, should have detected the small volume of gas, the "bubble", moving up through the wellbore quickly enough to take remedial steps.

8.3.5 The attempted blowout control

643. When the crew noticed the surge of mud, it closed the BOP. Mr Wright explained what he considered the normal procedure to be followed in such a situation:

> *The proper procedure to follow when taking a kick while tripping pipe is to shut the BOP and install a full opening safety valve (FOSV) or a check valve on the drillpipe at the floor as soon as possible after the flow is observed.*[484]

644. Mr Wright stresses the urgency of this operation: "Close the BOP, to stop the flow as fast as possible […] to limit the amount coming in".[485] In this case, the crew let 42 bbls come in before they closed the BOP; they recorded that this flow "happened within a minute or two".[486]

645. The Tribunal understands that a drilling team has these means of observing that gas is moving through the wellbore: (i) instruments that measure the speed of the flow of the mud and (ii) the trip tank indicator attended by the mud loggers. Mr Wright explained "the mud loggers are monitoring the pits continuously" and "the driller has his own independent sensors as well with alarms".[487] Similar explanations were provided by Dr Adams.[488]

646. In the evening of 7 January 2005, the sudden inflow of gas was indeed observed both in the trip tank and in the instrument measuring the flow of the mud. The Sequence of Events report noted a "sudden gain in trip tank" and "the return sensor also showed a sudden increase in flow from 17% to 60%": In the Sequence of Events report, the crew described the steps it then took:

[484] Wright 1, page 25.
[485] HT 2015.11.03 (Day 2), page 282.
[486] Sequence of Event Report, Exhibit C-19, page 1.
[487] HT 2015.11.03 (Day 2), page 286.
[488] HT 2015.11.03 (Day 2), pages 290 – 295.

> *Pattapong* [a member of the drilling crew and one of the authors of the report] *tried to call rig floor, no response. Ferdous* [another member of the drilling crew and co-author of the report] *opened the door to rush to rig floor to inform the gain; he found well flowing & mud rising up to 20 m from the rig floor. BOP was closed by rig crew.*[489]

647. Mr Wright expressed the view that in "hindsight allowing a 42 bbl gain in the trip tank before closing the BOP could be viewed as high volume for a trained crew". He explained, however, that in the circumstances, the time it took the crew to close the BOP was "not unreasonable". He envisaged possible scenarios explaining the interval:

> *The 42 bbl gain reportedly happened in 1 to 2 minutes, just as the rig crew were breaking the connection on the 12th stand of drillpipe. The driller (who is responsible for shutting in the well) and the other crew would be focused on that safety critical activity and not typically observing the trip tank. This would leave the responsibility to the mud logger.*
>
> *In my experience (from performing unannounced kick drills), mud loggers are not typically very fast in observing and responding to a mud gain. If it took the mud logger even 30 seconds to notice the gain, then another 15 seconds to determine that it was not part of the rig crew adding mud to the trip tank (which has to be filled from time to time during a trip out), and then call the rig floor, a minute has already passed.*
>
> *The driller could easily be away from the phone for a few seconds while doing some activity on the rig floor. By the time the mud logger gets to the drill floor, the mud flow is increasing rapidly and noticed by the driller who closes the BOP and stops the flow.*[490]

648. These considerations are, of course, hindsight speculations. The described conduct might appear surprising, as both the mud loggers and the drilling crew are engaged in the operation of performing a wiper trip through the

[489] Sequence of Events Report, Exhibit C-19, page1.
[490] Wright 1, page 26; he gave similar explanations at the November 2015 Hearing at HT 2015.11.03 (Day 2), pages 284 -286.

reservoir, with the risk of a kick. The operation had lasted for less than an hour and one might expect that both the mud loggers and the drilling crew, had they been properly warned of the risk of a kick, would have remained alerted. The Tribunal, nevertheless, wishes to avoid being overly influenced by the wisdom of hindsight. It is aware of the difficulties the experts had in interpreting the events. Mr Wright, for example, pointed out that "first of all they have to be aware that something is not right", and he was of the opinion that that "may take several minutes".[491]

649. Still, the fact remains that the speed with which the BOP is closed is critical for the success of the operation. Mr Wright explained that, given the low strength of the formation between the casing foot and the marine shale, the blowout had to be caught before it reached 20 bbls. He referred to the Leak-off Test on 6 January 2005, which had shown the unrealistically high value of 18 ppg. If that value had been correct, the formation "would have contained" the gas. "When they closed the BOP to stop it from coming through the drill floor it would have stopped it."[492] But the formation did not have this strength:

> *If that value is incorrect and it is really 12 and a half or 13-pounds per gallon, then you would not be able to close in but you could close in, say, 20 barrels of kick, so if the crew can react quick enough to close the BOP before you get 20 barrels and can stop the influx, then they could circulate that kick-out and get back to a normal pressure and everything would be fine.*[493]

650. The crew did not react quickly enough. By the time the crew closed the BOP, 42 bbls of mud had been ejected and the gas had reached the weak formation between the casing foot and the marine shale. Confined in the wellbore, the gas could not move up any more. It found its way out by broaching the formation and pushed up outside the wellbore. Mr Wright explained:

> *Once the well was shut-in with a 42 bbl gain, the gas from Sands 1 & 2 was already at the 13-3/8" casing shoe and the shut-in casing pressure was 650 psi indicating there was also gas to the surface. At this point, the gas pressure is greater than the formation strength at*

[491] HT 2015.11.03 (Day 2), page 285.
[492] HT 2015.11.03 (Day 2), page 461.
[493] HT 2015.11.04 (Day 3), page 523, lines 7-14.

the shoe causing the formation to fracture with gas flowing at high rates into the formation and eventually fracturing to the surface as there is no seal above the 300m shoe depth. In effect, a blowout was occurring underground virtually immediately upon shutting in the well. [494]

651. The drilling team does not seem to have been aware of the full measure of this dramatic situation. It made attempts to control the blowout. The measures are explained in the Sequence of Events report:

> *Tried to circulated thru choke: first 16 bbl, 10 min off, then 70 bbl. MW was 9.1+ ppg. Mr. Zhang told Geoservices to monitor any gain in pits. Before circulating Mr. Zhang told Peter (MI Mud Man) to increase MW by adding barite. 5 bags of barite were mixed to 9.2+. It was noticed that ground started cracking near bell nipple. Mr. Zhang told everybody to go to a safer place; so we left the location.* [495]

652. At the November 2015 Hearing, Mr Wright was questioned by the Tribunal to explain the measures taken by the crew, as described in this report:

> *PROFESSOR MCLACHLAN:*
>
> *[…]*
>
> *What does that tell us about what they tried to do in remedial terms and what is the significance of it insofar as you can tell?*
>
> *MR WRIGHT: Okay. When you have a kick on a drilling rig, what the crew is trained to do is to shut the well in as quickly as possible. So when it is shut in, the assumption is that the kick is contained in the wellbore and you have got a solid cylinder. There is not any movement anymore, there is nothing flowing underground, there* [*are no*] *losses so the gas is trapped in the wellbore and everything is held in that cylinder. They do some calculations based on their casing pressures and drill pipe pressures and they are going to circulate that gas bubble out of the well. So they pump mud down the drill string and up the annulus through a choke and they use this choke, which is just*

[494] Wright 1, page 8.
[495] Sequence of Events Report, Exhibit C-19.

a valve, to keep their drill pipe pressure at the bottom of the hole constant as this gas comes through the choke and replaces the gas with mud.[496]

653. Mr Wright provided further explanations about the process which the drill crew adopted. From these explanations the Tribunal understands that the measures taken by the crew were based on the assumption that they faced a kick, consisting of a small quantity of gas – the bubble described previously by Mr Wright. Following the "the basic system that […] rig crews are trained to do […]",[497] the crew attempted to "circulate out a kick", venting the bubble out through the choke. In reality, however, the situation was much more serious: the gas was "flowing into the sand outside the well" but had not yet reached the surface;[498] there was what Mr Wright described as an "underground cross-flow". Mr Wright described this situation as follows:

> *But by this time, as we know, the well was already above the fracture gradient, if we are assuming it is 13 pounds per gallon – and we know it broached to surface, so that is a pretty good assumption – is already flowing underground. My experience is that very, very few drilling crews will recognise that they have an underground blowout going on, particularly in the first hour of the event occurring. So this crew has, as you mentioned yesterday, is happily making a trip and all of a sudden the well is blowing out on them, they shut it in rapidly and they are having to make very fast decisions on what they are supposed to do next. So they are following their – basically, what they are trained to do and that is shut the well in and try to circulate the kick-out.*[499]

654. Mr Wright concluded about the procedure adopted by the drill crew:

> *If you knowingly have an underground cross-flow going on with a lot of gas coming up the well, then using this procedure will not work. So it is not a procedure that you would want to use to control the well, but of course at this point they do not know that.*

[496] HT 2015.11.04 (Day 3), page 535, lines 4-24.
[497] HT 2015.11.04 (Day 3), page 538.
[498] HT 2015.11.04 (Day 3), page 544.
[499] HT 2015.11.04 (Day 3), page 541, line 13 to page 542, line 4.

PROFESSOR MCLACHLAN: It will work for small amounts of gas trapped but not large amounts?

MR WRIGHT: That is correct.[500]

655. Mr Wright also explained the incident with the degasser, recorded in the Daily Drilling Report:

> *Try to circulate gas cut mud out through degasser at 30 spm, but heard noisy sound inside degasser after pumped 2 min, like a piece of junk inside. Stop pumping and shut in well.*[501]

656. As explained above in Section 8.1, a Degasser is a big tank in which gas can be separated from the drilling mud. The mechanism in the tank is not designed for operating without any mud. If pure gas is blown into the tank, the noise described in the Daily Drilling Report occurs. Mr Wright explained:

> *…at the bottom of the mud gas separator there is a u-tube and it is usually long enough so that it creates some back pressure in the mud gas separator so that the gas does not go back over to the pit system, so the gas goes up through the vent at the top and then safely off location. So if you are bringing pure gas into there at very high rates, then that mud gas separator is not designed to be able to do that.*[502]

657. Dr Adams also criticised the use of the Mud Gas Separator; but referring to the noise recorded, he concluded, without any explanation, that the apparatus was "overloaded with mud and gas".[503]

658. In any event, the incident with the degasser does not seem to have had a major impact. Mr Wright reached the following conclusion from the records:

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[500] HT 2015.11.04 (Day 3), page 547, lines 11-20.
[501] Daily Drilling Report, Exhibit C-20, page 26; similarly in Draft Report, Exhibit C-21.
[502] HT 2015.11.04 (Day 3), page 543, lines 6-15.
[503] Adams 1, page 32, commented in Wright 2, page 26.

So they stopped to investigate what is going on and I am sure still at this time they still do not have an idea that they have an underground cross-flow.[504]

659. The records show that the crew continued their attempts to control the blowout. They stopped circulating mud and investigated the causes of the noise and then resumed. In the Daily Drilling Report, the Drilling Supervisor reported for the time from 20:40h to 21:00h:

20:40 – 21:00: Try to circulate gas out again at 30 spm while adjusting hydraulic choke, pumped 70 bbls in hole, was informed noticed gas leaking on ground from substructure toward southwest.

21:00 – 24:00: Fully open choke, divertor to flare line. Light flare line gas blow. Blow underneath ground getting stronger and stronger. Gas flow through flare line decreased.[505]

660. The further events until the crew evacuated the site, the derrick fell into the crater and the "gas blow fired itself", have been recorded above in Section 8.2.6. Mr Wright commented on the resumed pumping by opining that the crew "still do not have an idea that they have an underground cross-flow".[506]

661. The experts agree that the measures taken by the drilling team to control the blowout were inadequate or even counterproductive. Mr Wright stated: "you can usually control an underground cross-flow but if it broaches then you are not going to control it unless you drill a relief well".[507] In his report he wrote:

Given the fact that the well is now an underground blowout, and not a normal gas bubble circulation in a competent wellbore, there is absolutely no chance of controlling the well at this point using normal kick circulation techniques that the driller would be trained in.

[504] HT 2015.11.04 (Day 3), page 543, lines 16-19.
[505] Daily Drilling Report, Exhibit C-20, page 26.
[506] HT 2015.11.04 (Day 3), page 543.
[507] HT 2015.11.04 (Day 3), page 559.

An underground blowout like this takes a dynamic kill approach to be successful. A typical rig crew including the company representative would not have experience in these techniques and would not know how to proceed.[508]

662. Both Mr Wright and Dr Adams described possible approaches for controlling the blowout.[509] Mr Wright was firm in insisting that such measures cannot be expected from an ordinary drill team.

663. The Tribunal concludes that the drilling team was slow in reacting to the blowout when it was noticed and that the measures taken by the team were not only inadequate to control the blowout, but in parts even aggravated the situation. The question whether this inadequate reaction can be held against the drilling team and Niko will be considered in the next Section.

8.4 Niko's breaches

8.4.1 The Issues

664. In Section 7 above the Tribunal has discussed Niko's obligations by reference to which it must determine Niko's liability under the JVA for the blowouts. It has identified the "prudent operator standard" as the principal reference for this determination. The preceding parts of the present Section 8 have determined the causes for the first blowout and for the failure to control it. It now remains to be seen whether and to what extent these causes must be attributed to breaches by Niko of its obligations, considering specifically the breaches alleged by the Respondents.

665. The breaches alleged by the Respondents have evolved over time and were defined more precisely as the arbitrations progressed. In the submissions prior to the November 2015 Hearing, the Parties addressed the question of Niko's liability for the two blowouts in a manner that prompted the Tribunal to give the following guidance to the Parties in the Annex to Procedural Order No 12 of 21 October 2015:

5. In a provisional manner, the Tribunals have endeavoured to identify in the submissions of the Parties and in the expert reports the

[508] Wright 1, page 8.
[509] HT 2015.11.04 (Day 3), pages 525, 550 and 583, respectively.

Breaches that have been alleged and to which, according to Procedural Order No 12, the Tribunals' examination now is limited. The Tribunals suggest to express these Breaches in the following manner:

(i) The casing design and setting depth for the 13-3/8" casing;

(ii) The well design for kick tolerance;

(iii) The well design for trip margin of overbalance;

(iv) The reaction of the rig crew when the blowouts occurred;

[…]

(ix) Failure to conduct a shallow gas hazard analysis and failure to achieve a proper understanding of the shallow gas hazards;

(x) Failure to calculate formation pressures properly;

(xi) Failure to determine fracture gradients adequately;

(xii) Failure to use a large bore diverter system instead of the classical blowout preventer (BOP) actually used;

(xiii) Crew training and experiences, including certification;

(xiv) Gas dispersion analysis;

The Tribunals point out that this identification is made on their present provisional understanding of the case. They invite the Parties and the experts to correct, or complement, where necessary, the identification and description of these Breaches. If any of the Breaches identified in the Parties' submissions and in the expert reports are not included in the above list, the Parties are invited to add them to the list. Such corrections and additions must

be identified precisely, indicating the parts of the Parties' submissions or expert reports where breaches were described.

6. What are the consequences, in terms of liability, of Niko's choice of personnel and consultants and the due diligence reflected in this choice, distinguishing between the drilling of the Chattak 2 well and the relief operations?

666. These issues and the Parties' positions with respect thereto were considered during the November 2015 Hearing. Mr Wright in particular examined the areas of possible breaches identified by the Tribunal for the first blowout under the heading of "Possible Contributing Causes of Chattak 2 Blowout". He eliminated

- Shallow hazard survey
- Requirement for diverter system
- Pore pressure and fracture pressure assessment
- Crew certification and training
- Crew response after gas influx

but retained as possible causes

- Surface casing design criteria and options, and
- Drilling mud density and trip margin overbalance.[510]

667. As mentioned above, the November 2015 Hearing focused on the technical and factual aspects of the events that led to the blowouts; the legal questions of liability were addressed in prior and subsequent submissions and at the February 2016 Hearing.

668. In its letter of 6 January 2016, the Tribunal provided further guidance by communicating its understanding of the causes of the blowouts and the measures that could have prevented them so as to assist the Parties in the discussion of acts and omissions attributable to Niko which may have generated liability, without thereby restricting the Parties' arguments. The letter included the following passages:

The experts seem to agree that the kick that occurred in the evening of 7 January 2004 could have been contained and the blow-out could

[510] Slide 20 of Mr Wright's presentation at the Hearing, recorded as Exhibit CH-5.

have been prevented, if the well casing had been installed below the depth of 305 m to a deeper level with higher rock strength.

If these explanations are correct, it seems to result from the explanations of the experts that the only actions which could have prevented the first blow-out were

(i) a performance of the wiper trip in which the extent of swabbing that must have occurred and the resulting kick were avoided, e.g. by slower movements or increased mud weight;

(ii) a control of the kick before it reached the level of strength assumed in the kick tolerance which the design allowed;

(iii) a well design for a "full column of gas" which would have required casing to a depth that reached the marine shale;

(iv) alternatively, the installation of an adequate "diverter".

If the Parties consider that this explanation does not correctly reflect the evidence before the Tribunals, they are invited to specify (a) where they disagree with the explanations, (b) what evidence supports their disagreement and (c) what other more plausible evidence should form the basis of the Tribunals' analysis and decision.

To the extent to which the Parties consider that these assumptions are correct, it would seem that causes (i) and (ii) are operational in nature while causes (iii) and (iv) concern the design. The Parties are invited to address the question on which grounds a blow-out caused by the circumstances so identified will justify any liability of Niko.

669. The Parties addressed these points in their Post-Hearing Briefs of 22 January 2016. The Respondents quoted the four types of action identified by the Tribunal and stated:

… these actions were required by the JVA's diligent, conscientious, and workmanlike operations standard, the Bangladesh Petroleum Act, and by the generally accepted standards of the international

petroleum industry. Niko's failures to take them were thus breaches of the JVA. As noted by the Tribunal, these actions would have prevented the blowout. Therefore, but for Niko's breaches, the blowout would not have happened. In these circumstances, but for causation is sufficient to establish legal causation. The test for causation is met with regard to each of the actions listed by the Tribunal. Niko's breaches caused the Chattak 2 blowout.[511]

670. The Respondents added, however, that there were "additional causal breaches of the JVA's diligence requirement and generally applicable standards"; they listed the following alleged failures of Niko:

> *1) to gather relevant information,*
>
> *2) to plan its well based on shallow gas environment in which it would drill,*
>
> *3) to train its crew based on that plan, and*
>
> *4) to carry out its operations in accordance with that plan.*[512]

671. At the February 2016 Hearing, the Respondents developed their arguments further and summarised the position as follows:

> *… the proper question is was it diligent, conscientious and workmanlike for Niko to set casing at 305 metres because of a fear of shallow gas pockets, then drill without a diverter, then conduct a wiper trip without preparing the crew and without circulating mud and relying on kick tolerance?*
>
> *It is the combination of all of those things that Niko did and them individually, but one cannot look at just individually, it is a decision after another after another that together created a very dangerous circumstance and was not diligent or conscientious.*[513]

[511] R-PHB, paragraph 158.
[512] R-PHB, paragraph 160.
[513] HT 2016.02.22, pages 456, 457 (corrected version).

672. In its Post-Hearing Brief, the Claimant reviewed the issues as they had been identified by the Tribunal. It pointed out that "only breaches that are causal and could therefore give rise to liability are at issue in this arbitration". With respect to the blowout at Chattak 2, it confirmed the relevance of the four issue that had been identified in the Tribunal's letter of 6 January 2016, presenting its understanding of these issues as follows:

> *(i) Surface Casing Depth*
>
> *(ii) Use of Diverters*
>
> *(iii) Performance of the Wiper Trip*
>
> *(iv) Crew Response to the Influx of Gas.*[514]

673. The Claimant also mentioned some additional issues which it addressed "where those issues relate to the specific issues identified by the Tribunals". It mentioned specifically "shallow gas" and "crew training and certification".[515]

674. Considering these positions of the Parties, the Tribunal will group its examination in what emerged as the two principal categories of issues, viz. (a) the design of the drilling operations, specifically with respect to casing depth, and (b) the qualifications and performance of the drilling crew. As a preliminary question the Tribunal will consider the issue of shallow gas and related issues.

8.4.2 Shallow gas

675. As can be seen from the summaries above, the issue of shallow gas was a major part of **the Respondents**' case about the deficiencies in Niko's planning of the well design. The Respondents insisted on the importance of "shallow gas handling" and stated: "It is, therefore, uncontested, that shallow gas is a circumstance requiring special precaution".[516] The Respondents described the shallow gas issue as twofold:

> *First, Niko knew, or should have known, that it would be drilling in a shallow gas zone. This is not only because Southeast Asia is prone to*

[514] C-PHB, paragraphs 49 and 50.
[515] C-PHB, paragraph 51,
[516] R-PHB, title at page 29 and paragraph 68.

shallow gas, but because of the known depths of the sands. Second, Niko determined that it had an additional shallow gas risk because of bubbling gas in the area of Chattak 1 (which turned out not to be an issue). That Niko did not encounter the feared pocket of gas does not negate the first shallow gas risk: Niko still needed to be and was not prepared for the high pressure and rapidity of any influx in case of a kick. It was not.[517]

676. The Respondents insisted that Niko should have taken "the necessary precautions when planning and training for shallow gas" and should have used a diverter for shallow gas operations.[518] They reproached Niko on the ground that it "did not properly investigate the area for shallow gas risk and it did not plan or train the crew in shallow gas handling".[519] The Respondents asserted:

> *Niko's first breach was failure to gather knowledge and design an adequate, safe well plan. One key deficiency was its failure to develop sufficient understanding of the two shallow gas risks it faced.*[520]

677. When describing the manner in which "Niko breached generally accepted industry standards", the first item mentioned by the Respondents was:

> *Niko failed to gather and consider all relevant information, especially considering the shallow gas risks, to make safe drilling and contingency plans;*[521]
>
> and
>
> *Niko failed to take necessary measures [by failing to] adequately obtain data and plan its well for the shallow gas environment.*[522]

[517] R-PHB, paragraph 88.
[518] R-PHB, paragraph 82.
[519] R-PHB, paragraph 87.
[520] R-PHB, paragraph 122.
[521] R-PHB, paragraph 151.
[522] R-PHB, paragraph 155.

678. An important aspect of the Respondents' argument about shallow sands is that gas in such locations is very prolific, with high flow rates. Dr Adams explained:

> *Shallow Gas Characteristics*
>
> *1. High permeabilities (>1000 md) = very high flow rates.*
>
> *2. Little or no response time.*
>
> *3. High drill rates negate conventional flow check guidelines.*[523]

679. Had it properly prepared its drilling operations, so goes the Respondents' argument, Niko would have been warned about these high flow rates and the resulting risks.

680. There was some debate in these arbitrations about the **definition of "shallow gas"** and **"shallow gas hazard"**, including the question whether there was a limit to the depth within which shallow gas and the related hazard would have to be accounted for. The essential point, however, was that, in the Respondents' argument, shallow gas had high flow rates and had to be expected in the Chattak field.

681. The Claimant responded that it had no reason to expect shallow gas hazards when it drilled; and it insisted that in fact the field did not have the characteristics of the hazards described by the Respondents and Dr Adam. Mr Wright explained:

> *Niko was not drilling shallow gas hazards as understood in the industry. They were drilling through the S1 and S2 sand packages with known depth from the offset well Chattak 1 and 3D seismic. There was uncertainty with respect to the exact pressure of the tip of S1 due to the gas water contact uncertainty, as well as inflow performance uncertainty …*[524]

[523] Slides for Dr Adam's presentation at the November 2015 Hearing, Exhibit RH-3, slide 8.
[524] Wright 2, page 7.

682. Mr Wright insisted on the difference between "shallow gas hazard" and "shallow gas handling". He asserted that "[s]hallow gas hazards are typically understood in the industry as unexpected gas trapped in shallow sands that might be penetrated prior to setting surface casing and before installing a BOP stack".[525]

683. The Claimant and Mr Wright also objected to the characterization of Sands 1&2 as shallow gas hazards, having the high flow rates described by Dr Adams. Mr Wright accepted that these sands "could be classified as shallow reservoir sands […] but not as shallow gas hazards as generally understood in the industry".[526]

684. Relying on Mr Wright's explanations, the Claimant concluded that:

> *Based on the information available to Niko prior to drilling Chattak 2, there is no evidence indicating, and it is not reasonable to suggest, that Niko should have identified Sands 1 and 2 as "shallow gas" in the sense meant by Dr. Adams (i.e. highly permeable and certain to have a prolific flow). Indeed, there was nothing in the information available to Niko at the time that indicated that Sands 1 and 2 might be highly permeable and prolific. As Mr. Wright explains:*
>
> > *Based on the information available to Niko at the time that it was programming the Chattak 2 well, there was apparently no indication that it was going to be drilling into a high risk shallow gas field. To the contrary, I understand that they were expecting a marginal gas development project and planned accordingly.*[527]

685. Relying on the evidence from the experts, the Claimant further denied that "Niko knew or ought to have known that Sands 1 and 2 would exhibit the characteristics of what BAPEX terms shallow gas" and that Niko was alerted "to taking special precautionary measures".[528] The Claimant referred to what it described as the only characteristics of shallow gas

[525] Wright 2, page 5, emphasis in the original.
[526] Wright 2, page 5.
[527] C-PHB, paragraph 120, quoting from Wright 2, page 10.
[528] HT 2016.02.22, page 340.

identified by the Respondents, *i.e.* "abnormal pressure and high permeability or an expectation of a sand being a prolific producer".[529]

686. Addressing this position concerning shallow gas and shallow gas hazard, the Claimant pointed out that no gas was encountered by Niko when drilling down to the marine shale; there was no shallow gas hazard in this part of the well.[530]

687. This is indeed the evidence before the Tribunal: **no gas was encountered** in the ground **above the marine shale**. **The Tribunal concludes** that any deficiency of Niko in planning for shallow gas in this part of the well remained without consequence for the blowout which the Tribunal has to consider.

688. The kick and the blowout originated **below the marine shale in Sands 1 and 2**. These were **known reservoirs**. Mr Wright explained in his second report:

> *Importantly here, the source of the blowout on Chattak 2 (and 2A) was not the result of a "shallow gas hazard" (as described above), but the reservoir sands S1 and S2. These sands were well identified from the offset well records on the nearby Chattak 1 well and from 3D seismic shot in 2004. They could be classified as shallow reservoir sands (although there is no reference in API that I am aware of that defines what depth constitutes a "shallow reservoir"), but not as shallow gas hazards as generally understood in the industry.*[531]

689. It follows that the conception of Mr Wright and the Claimant of "shallow gas hazards" as "unexpected gas trapped in shallow sands" penetrated before the installation of a BOP is not relevant here. The question is what Niko should have expected specifically in Sands 1 and 2, how it should have planned for it, and what it should have taken into consideration when designing the well and preparing the crew for the operation.

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[529] HT 2016.02.22, page 342, referring to quotations from Dr Adams and Mr Abel, shown on CH-11, slides 10 and 11.
[530] HT 2016.02.22, pages 335 – 338.
[531] Wright 2, page 5.

690. The Claimant places great emphasis on a statement in the First Enquiry Report to this effect:

> *All the known gas horizons of this field are normally pressured.*[532]

691. At the February 2016 Hearing, Mr Tarnowsky stated for the Claimant:

> *So the only and the clear and compelling evidence in relation to formation pressure expectations prior to the drilling of Chattak 2 is that sands 1 and 2 were reasonably expected to be normally pressured […]*
>
> *PROFESSOR MCLACHLAN: […] is there anything in the subsequent records that might suggest that that assumption as it turned out was incorrect?*
>
> *MR TARNOWSKY: No and in fact as I pointed out it is the opposite. The Enquiry Committee after the event still says all of the known gas horizons in this field are normally pressured.*[533]

692. The Claimant also relies on API RP 64 which states under the heading "Shallow Gas Flow":

> *Shallow gas sands are usually abnormally pressured and capable of flowing at high flow rates and in large volumes.*[534]

693. The Claimant submitted "that there is no evidence indicating the presence or possible presence of either of these two factors in advance of drilling the Chattak well".[535]

694. Mr Wright explained what should be understood by "normally pressured":

> *… it is important to understand formation pressure characterization. It is common industry practice to call a gas reservoir normally pressured if its pressure is derived by a column of formation water*

[532] Enquiry Report, Exhibit R-3, paragraph 6.4, referred to by the Claimant at HT 2016.02.22, page 345.
[533] HT 2016.02.22, pages 347 – 348.
[534] API RP 64, Exhibit R-42, paragraph 4.3.1.
[535] HT 2016.02.22, page 342.

from the surface to the gas water contact (GWC) (or the base of the gas bearing portion of the reservoir). There are various geologic circumstances where a reservoir is generally called abnormally pressured (i.e. where the pressure is materially greater than a formation water gradient, usually by the fluids supporting a portion of the overburden), but there is no indication that such were the circumstances in Sands 1 and 2. They are, therefore, normally pressured.[536]

695. In other words, stating that the "gas horizons [were] normally pressured" refers to the method by which normally the pressure of the gas in a reservoir is determined at the gas water contact (GWC). It does not indicate the actual gas pressure throughout the reservoir which is determined by various factors, in particular by the shallow location of the reservoir, the porosity or permeability of the formation, and the distance to the GWC. This means: saying that the known gas horizons in the Chattak field were "normally pressured" does not mean that Sands 1 and 2 would not behave as shallow reservoirs, according to the description in API RP 64, must be expected to behave. It does not mean that Niko did not have to expect these sands to behave as shallow reservoirs.

696. Niko had collected information on the Chattak field and analysed it in the Marginal Field Evaluation and could avail itself of information on Chattak 1, close to the Chattak 2 Well. It knew that the targeted Sands 1 and 2, started at a depth of some 560m. Mr Wright characterised these reservoirs as "shallow" and Niko had to allow for gas in these circumstances.

697. **The Tribunal** sees no need to determine whether the gas in Sands 1 and 2 and its pressure should be defined as "shallow gas" or constituting a "shallow gas hazard", as understood by the Respondents and their expert. Based on the evidence, these reservoirs were not "abnormally pressured" in the sense of the term used by the First Enquiry Report. Rather it was in a shallow location, and thus gave rise to **the risks of a shallow reservoir**. The question which the Tribunal must address is whether Niko acted as a prudent operator when (i) designing the well for the gas in this specific shallow reservoir and (ii) dealing with the kick and the blowout that followed.

[536] Wright 2, page 20.

698. Finally on this issue, the Tribunal addresses, further to its communication of 14 March 2016, (i) the Respondents' submission of 5 March 2016 and the new argument it presented with respect to the definition of shallow sands, together with the new exhibit produced as R-47 and (ii) the Claimant's 16 March 2016 objections to the admissibility of this new submission, including the Claimant's references to passages in earlier submissions where the issue had been dealt with. The Tribunal noted that (i) the Respondents' new submission may contain elements relevant for the quantification of the damage; but (ii) the submission did not contain any element that would have required, with respect to the principle of liability in this first phase, any modification in the conclusion which the Tribunal has reached on the basis of the earlier argument and evidence. Consequently, (i) no further submissions were necessary during the phase on the principle of liability and (ii) the Claimant may comment on the new evidence in its submissions on quantum.

699. The Tribunal notes that the Respondents' new submission may contain elements relevant for the quantification of the damage; **but this submission did not contain** any element that would have required, with respect to the principle of liability in this first phase, any modification in the conclusion which the Tribunal has reached on the basis of the earlier argument and evidence. The Claimant may therefore comment on the new evidence in its submissions on quantum."

8.4.3 The design of the Chattak 2 Well and the decision on casing depth

8.4.3.1 The design as implemented and the relevant standards

700. The Chattak 2 Well design provided for casing to a depth of 305m. This was specified in the Well Proposal and implemented. For the parts of the wellbore below the casing shoe, the design relied on kick tolerance. This is uncontested.

701. The difference between the Parties concerns the question whether this design, as implemented, met the standard that Niko had to comply with.

702. With respect to casing design, the Respondents identified in their Post-Hearing Brief the following conduct from Niko as required by the "various sources of generally accepted standards of the international petroleum industry and the sources":

- *Gathering and using all available information and data to design a safe drilling and contingency plan;*

  […]

- *Calculating and considering formation pressure and fracture gradients in the well design and to maintain the appropriate hydrostatic pressure while tripping;*

- *Setting casing deep enough to withstand anticipated pressures from drilling and kicks;*

- *Using a diverter when there is a risk of shallow gas; and*

- *Taking the necessary precautions when planning and training for shallow gas.*[537]

703. The sources identified by the Respondents for these standards were set out in a table in their Post-Hearing Brief which specified the following standards:[538]

    - "Well planning: All available information and data must be gathered and considered to make safe drilling and contingency plans", relying on API RP 59, paragraph 5.1;

    - "Casing: Casing should be set deep enough that it is in rock that can withstand anticipated pressures from drilling and if a kick should occur", relying on API RP 59, paragraph 5.2;

    - "Diverter: A diverter should be used when there is a risk of shallow gas", relying on API RP 64, paragraphs 4.3, 4.3.1 and 4.4.2 (pages 5 and 6);

704. The Respondents also argue that the generally accepted standards thus identified "are confirmed in well control training manuals, in professional writings and by the well control experts".[539]

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[537] R-PHB, paragraph 82.
[538] R-PHB, paragraph 36.
[539] R-PHB, title at page 19.

705. The Tribunal will consider the information provided about the relevant standards in its examination of the decisive issues. It will consider the question of the casing depth below in Sections 8.4.3.3, 8.4.3.5 and the issue of kick tolerance in Sections 8.4.3.4, 8.4.3.9 to 8.4.3.11 . The alleged requirement of a diverter is examined in Section 8.4.3.7.

706. It will be seen when considering the standards relied upon by the Respondents that they contain some general considerations but few, if any specific requirements for casing design. In the absence of such specific requirements, the Parties' arguments about Niko's casing design are thus based to a large extent on the prudent operator standard and on the views expressed by the experts in this respect.

8.4.3.2 The positions of the Parties and their experts

707. **The Respondents** have asserted that "Niko did not conduct petroleum operations in a diligent, conscientious and workmanlike manner." Their argument commences by quoting the First Enquiry Report of 7 February 2005: "Niko is responsible for the blowout at Chattak for its gross negligence in designing the casing program and inefficient operational supervision."[540] The Respondents developed this position, arguing that Niko did not properly prepare its drilling programme. They asserted that Niko had failed to gather relevant information on shallow gas and on the reservoirs into which it was expecting to drill. They stated that it was "particularly unreasonable to choose a shallow casing setting depth",[541] and:

> *… setting the casing in weak formation rock at 305 meters [was] the fatal decision that was a primary cause of the Chattak 2 blowout.*[542]

with the result that:

> *Niko's failure to set casing so that it had sufficient depth to withstand foreseeable pressure events is a breach of the generally accepted standard on setting casing depth …*[543]

[540] R-PHB, paragraph 104, quoting from Enquiry Report, Exhibit R-3, paragraph 8.2, and title III.A.2.a.
[541] R-PHB, paragraph 109.
[542] R-PHB, paragraph 94.
[543] R-PHB, paragraph 128.

708. At the February 2016 Hearing, the Respondents insisted that the decision on the casing depth had to be seen in the context of the circumstances of the specific well and the qualifications of the crew:

> *So the standard is not as Niko has put it, did the joint venture agreement specifically require Niko to set the casing in the marine shale. The answer to this question is yes in the circumstances faced by Niko but the proper question is was it diligent, conscientious and workmanlike for Niko to set casing at 305 metres …*[544]

709. **The Claimant** justified the decision of setting surface casing at 305m by the observation of gas bubbling around the Chattak 1 Well, giving rise to concerns about shallow gas pockets above the marine shale. It explained that from the existence of a nearby water well of some 300m depth, it concluded that this risk did not exist above that level and that therefore it could drill safely to that depth. It sought to avert the risk of the gas pockets below the casing by the installation of a Blowout Preventer and observing kick tolerance in the drilling operations. The reasoning was explained as follows:

> *The surface casing was installed at approximately 300 meters, as planned. Niko fixed the depth at 300 meters largely because of concern that the drill could encounter shallow gas pockets. Niko employees had observed gas bubbling to the surface from around the nearby Chattak 1 well, likely due to a poor casing cement seal. A water well in the vicinity had been drilled to a depth of approximately 300 meters. Niko felt that there was no material risk of encountering shallow gas before that depth. Given the possibility of shallow gas pockets after that point, it was desirable, from a safety perspective, to have surface casing in place to enable the BOP to be installed before risking intersection between the drill and a shallow gas pocket.*[545]

710. Based on these assumptions, Mr Wright expressed the opinion that Niko's well design, and specifically the decision to set casing at ~300m, was "in accordance with the reasonable operator standard".[546] He accepted that the design decision was driven by a safety concern:

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[544] HT 2016.02.22, page 456; for a complete quotation see above in Section 8.4.1.
[545] C-CD.2, paragraph 102.
[546] Wright 1, page 17.

The safety concern was to get casing in the ground as shallow as practical to safely drill to TD (target depth) and get the BOP installed to mitigate the risk associated with a shallow blowout that could occur if a gas pocket was encountered.

8.4.3.3 The Claimant's justification for the casing depth

711. The Well Proposal of December 2004 does indeed provide for surface casing of 13 3/8 inch diameter with the casing shoe at 990 feet, corresponding to some 302m.[547] The document does not contain any explanation about the choice of this depth and there is no direct evidence to explain this choice. Mr Mercier, the senior drilling manager of Niko Canada at the time and tasked with the well design,[548] did not testify[549] and no notes about his casing design have been produced.

712. When Dr Adams explained his views on the casing design, he was asked whether there were any documents that shed any light on the reason why 305m was chosen as the depth for the surface casing. He responded that there was nothing in Niko's Well Proposal and that he had not seen any calculations determining the depth of that casing.[550]

713. The only information about the considerations leading to the choice of casing depth at some 300m is the witness statement of Mr Adolph and some explanations by Mr Hornaday at the November 2015 Hearing. The Claimant summarised its position as follows:

> *Niko had observed at least one water well drilled to 1000 feet (305 meters), and, as such, had comfort that there would not be any significant gas accumulations in the area around Chattak 2 down to that depth, which would therefore render it safe to drill to that depth without a BOP installed. However, Niko did not know whether any gas accumulations might exist below that depth. In relation to this concern, it is important to note that although drilling records from*

[547] Chattak-2 Well Proposal, Exhibit C-15, page 14.
[548] WS Adolph, paragraph 28. See also section 8.3.2.
[549] Mr Adolph testified that Mr Mercier left Niko in 2009 or 2010 (HT 2015.11.05 (Day 4), page 947. He also explained that he continued to meet Mr Mercier: "we have talked about this incident over the last ten years probably at least a couple of times a year when we meet" (HT 2015.11.06 (Day 5), page 1041).
[550] HT 2015.11.04 (Day 3), pages 644 – 645.

> *Chattak 1 indicated that there was no continuous seal above the marine shale, the upper sands (i.e. the sands above the marine shale) could not be expected to be entirely homogenous, and clay "stringers" (i.e. clay strips of a more limited thickness and breadth) would likely exist. Smaller accumulations or "pockets" of gas could therefore have existed in the upper sands below 305 meters, as Mr Wright noted in his report.*[551]

714. Mr Wright had no direct information about the elements that underlay Mr Mercier's decisions. Mr Wright's reference to clay "stringers" was not based on conditions at Chattak 2 or on what might have been Mr Mercier's analysis, but on what Mr Wright thought "typically, a sand like this would have".[552]

715. In his witness statement Mr Adolph explained the following in relation to the casing depth decision at some 300m:

> *This was higher than the depth at which casing had been set for the old well, Chattak 1. However, I recall from conversation with Mr Mercier that a major reason for setting casing at 300 meters was that gas had been observed bubbling at the surface in the surrounding area, indicating a risk that gas might be trapped in shallow sands above the regional seal. A water well had previously been drilled in the vicinity of the Chattak 2 location to approximately 1000 feet (or 300 meters), which gave Niko some confidence that there would not be significant gas pockets above 300 meters, but left us unsure about the depth below.*[553]

716. At the November 2015 Hearing Mr Adolph stated that he did not participate in the well design:

> *MS PASIPANODYA You did not participate in the designing of the Chattak 2 well either, did you?*
>
> *MR ADOLPH: That is correct.*

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[551] C-PHB, paragraph 92.
[552] HT 2015.11.05 (Day 4), page 870 in response to a question from Mr Tarnowsky.
[553] WS Adolph 1, paragraph 30.

MS PASIPANODYA: You tell us in your witness statement that Peter Mercier, Niko Canada's senior drilling manager designed the Chattak 2 well.

MR ADOLPH: Yes, Pete was working in Bangladesh in 2004 as our drilling manager and he did the design work and the operations work for drilling in Feni and also for moving to Chattak to start the drilling.[554]

717. In his witness statement Mr Hornaday referred to "bubbling gas" that he had seen at the Chattak 1 well site,[555] when he visited it in 2003; but he "did not have significant involvement in the design of the Chattak wells or the plans to develop the Chattak field".[556] He offered no explanations about the well design in his witness statement. At the November 2015 Hearing, Mr Hornaday confirmed his observations about the bubbling gas[557] but stated that his involvement in the well design was "very limited".[558] He nevertheless explained that a water well 1000 feet deep determined the depth of the casing to that depth.[559]

718. As the questioning continued, Mr Hornaday expanded on his recollection of his discussions with Mr Mercier. He explained that, after the presentation of the Well Proposal, there was no feedback from BAPEX. The exchange at the hearing continued as follows:

THE PRESIDENT: So, in fact, it was basically Mr Mercier who decided on this drilling programme and then it was implemented.

MR HORNADAY: Yes, yes.

THE PRESIDENT: There was no critical review of the programme, was there?

MR HORNADAY: We did discuss, you know, the –

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[554] HT 2015.11.05 (Day 4), page 946, line 22 to page 947, line 9.
[555] WS Hornaday 1, paragraph 16.
[556] WS Hornaday 1. paragraph 13.
[557] HT 2015.11.06 (Day 5), pages 1110 *et seq.*
[558] HT 2015.11.06 (Day 5), page 1115.
[559] HT 2015.11.06 (Day 5), page 1116.

THE PRESIDENT: When you say "we discussed" ...?

MR HORNADAY: I did discuss the, you know, some aspects of the programme verbally with Mr Mercier before he finalised –

THE PRESIDENT: Did you discuss with him, specifically the choice he made of casing to 305 metres and kick tolerance for the rest?

MR HORNADAY: Not specifically the – you know, I am aware of the kick tolerance methodology but certainly the issue of the shallow gas and how do we handle that.

THE PRESIDENT: You discussed that with Mr Mercier.

MR HORNADAY: Yes

[…]

MR HORNADAY: I discussed the logic of the setting depth of the casing definitely. Just I was aware that the design basis for the drilling out of the shoe was on a kick tolerance methodology.

[…]

THE PRESIDENT: Anybody else with whom Mr Mercier discussed this basic option?

MR HORNADAY: Not to my knowledge, no. He was our principal and drilling person in the country.[560]

719. When questioned about the reaction of BAPEX to the Well Proposal, Mr Hornaday replied:

[560] HT 2015.11.06 (Day 5), page 1122, line 15 to page1123, line 12, page 1124, lines 20-24, and page 1126, lines 2-6.

MR HORNADAY: Yes, I was not directly involved. I was in Canada at the time but, yes, as the record has shown we submitted it and invited.[561]

720. There is another source of information about Niko's decision on casing design which Mr Wright does not seem to have taken into consideration: Shortly after the blowout, in the course of preparing its First Enquiry Report, the Government Committee also spoke to Mr Mercier, who at that time was in Bangladesh. The report deals *inter alia* with the casing design, but it makes no mention of the explanation provided by Mr Adolph and confirmed at the 2015 Hearing by Mr Hornaday. Instead it provides a different explanation for the casing design and the casing depth:

> *The well plan for Chattak # 2 is not much different than Feni. NIKO perhaps wanted to repeat its success in Chattak without considering the geological difference in Chattak. In Chattak # 1, 13 3/8 inch casing was set at 452m. Setting of 13 3/8 inch casing at 450m plus could have saved the well from blowout under similar condition. Exact depth for setting casing will depend on the result of seismic interpretation and correlation with Chattak # 1.*[562]

721. This explanation seems to be confirmed by the Well Proposal for Chattak 2. This proposal seems specific for the Chattak 2 Well, except for two pages providing details on the casing design, one for surface casing the other for production casing. These two pages have an additional title "Feni/Chattak". Thus, the page relevant here is entitled:

Feni/Chattak

Surface Casing Design[563]

722. Considering this evidence, it cannot be excluded that, when preparing the casing design for Chattak 2, Mr Mercier used the design he had prepared previously to be used for the Feni wells and used that design for Chattak 2. Indeed, the first trace of a detailed analysis on record in these

[561] HT 2015.11.06 (Day 5), page 1122, lines 8-11.
[562] First Enquiry Report, Exhibit R-3, paragraph 6.12.
[563] Chattak-2 Well Proposal, Exhibit C-15, page 14; the two casing design pages also have been produced as Exhibit C-82

arbitrations considering the water wells and the information they might provide is contained in the 22 February 2005 comments of Mr Grace about the need of an observation well to precede the relief well drilling.[564]

723. Mr Adolph and Mr Hornaday were not involved in the well design of Chattak 2 which Mr Mercier prepared in Bangladesh while they were in Canada. Mr Adolph's explanations, and those presented at the November 2015 Hearing by Mr Hornaday, were of course given no less than eleven years after the time of the casing design.

724. Be this as it may, the Tribunal observes that the explanation in Mr Adolph's witness statement, as quoted above, remained uncontested in these proceedings. The Respondents and their expert assumed, like the Claimant and Mr Wright as well as Mr Abel, that "gas bubbles" caused Mr Mercier to be concerned about pockets of gas above the marine shale, and that the depth of the water well assured him that no such risk existed above 1000 feet so that the installation of the BOP was not needed above that level but was required below. Casing thus had to be introduced at 300m so that the BOP could be installed. For the remainder of the well down to the marine shale Mr Mercier relied on protection by kick tolerance. For its analysis, the Tribunal therefore makes the same assumption.

725. Under this assumption, the decision to set surface casing for the first 300m of the wellbore appears reasonable. Apart from the controversy about the use of a diverter, this conclusion seems to be shared by the Respondents and their expert. The difference concerns the range between the casing shoe at 305m and the marine shale. The Claimant and Mr Wright are of the view that it was reasonable for Niko to rely on kick tolerance; the Respondents, Dr Adams and Mr Abel are of the view that, in the circumstances, it was not.

8.4.3.4 Reliance on kick tolerance as a reasonable solution

726. A design that relies on kick tolerance identifies (i) the risks of a kick arising and (ii) the means available for the crew to prevent that the kick turns into a blowout. The Respondents have not identified any published standards regulating this design method.

[564] Attached to the revised Minutes of Meeting of the Joint Management Meeting of the JVA held on 22 February 2005, Exhibit C-31, page 10.

727. Dr Adams described the kick tolerance concept in the following terms:

> *The concept uses mud density and fracture gradients to calculate the maximum number of barrels of influx that can be allowed into the wellbore without fracturing the exposed rock formation from excessive surface pressures.*[565]

728. Mr Wright described the kick tolerance concept in the context of decisions on the depth of casing:

> *The setting depth for a casing string is primarily driven by the formation's fracture gradient (the pressure at which the formation will start to fracture) and the anticipated pore pressure that will be encountered in the target producing reservoirs. When the pore pressure of the formation at the bottom of the open hole being drilled reaches a value where the formation at the casing shoe may fracture if a certain volume of fluid (oil/gas/water) enters the wellbore (normally called kick tolerance), for example from a permeable sand, the next casing string is typically set before drilling deeper.*[566]

729. No standard has been identified in these proceedings that specifically prohibits or discourages the use of kick tolerance in the design of a well like Chattak 2. The dispute rather relates to the question whether the prudent operator standard had been complied with.

730. The Parties disagree about the question whether it was reasonable for Niko to rely on kick tolerance and, if so, whether the method, correctly applied, justified the decision to set the casing shoe at 300m rather than at a lower level, *i.e.* at 378m as advanced by Mr Abel,[567] or at the regional seal at around 485m,[568] as preferred by the Respondents and Dr Adams.

731. The Claimant argues that casing design relying on kick tolerance "is common in the industry, and moreover, was acceptable according to industry standards in the circumstances facing Niko".[569] It refers to "a very clear understanding that any well at Chattak would have to be drilled in a

[565] Adams 1, page 26.
[566] Wright 1, page 15.
[567] Abel, page 28.
[568] See above Section 8.1.
[569] C-CD.7, paragraph 58.

cost-sensitive manner to have any prospect of economic viability".[570] It clarified that it was not its position that "economic constraints permit the taking of unacceptable risks to the safety of persons and property"; but noted "that BAPEX and Petrobangla were fully cognizant, and apparently supportive of, the need for Niko to 'be extra careful with costs' when drilling wells in a marginal and abandoned field such as Chattak".[571]

732. The Respondents argue that reliance on kick tolerance was not in compliance with Niko's obligations as a prudent operator:

> *Niko's choice to rely on kick tolerance (which put the onus on the crew to identify the kick and control it) was not diligent. It was even worse to rely on kick tolerance and take the risks Niko did, including failing to properly plan and train its crew for kick tolerance.*[572]

733. Dr Adams went even further and asserted that, generally, reliance on kick tolerance in shallow gas is inappropriate; it could only be used in "deep wells":

> *A KT [kick tolerance] application is restricted to deep wells. The misapplication of this concept, KT, can be dangerous when misunderstood as evidenced by Chattak 2 and Chattak 2A.*
>
> *As Mr. Abel pointed out, the KT concept was inappropriate in a shallow gas formation such as the Chattak Field. Because the blowout rate does not allow sufficient time to monitor pit levels, Niko and Mr. Grace made a terminal error when the concept of KT was used as the basis of well control planning for Chattak 2 and Chattak 2A. These shallow formations are prolific producers because their permeability values are greater than deep rock gas formations by a factor of 500-1000. The rate of influx is so large that it is impossible for a rig crew to respond quickly. In numerous recorded instances, the flow rate causes the mud volume in the well to flow out at the surface before the rig crew can observe indications of a problem.*

[570] C-CD.7, paragraph 59.
[571] C-CD.7, paragraph 61.
[572] R-PHB, paragraph 112.

The only reliable means to safely handle this type of event is to deploy a diverter system designed with reduced closure times.[573]

734. At the November 2015 Hearing the Claimant disagreed:

It is a common industry approach to use kick tolerance for designing wells and it was reasonable to do so in all the circumstances.[574]

and

It is unchallenged that kick tolerance is an often used methodology for determining casing setting depth for land wells …[575]

735. Mr Wright had supported that view:

The kick tolerance design concept is often used in land development drilling (such as Chattak 2) where you have offset well data.[576]

736. At the February 2016 Hearing, the Claimant presented the following conclusion about the discussion on kick tolerance:

It is unchallenged that kick tolerance is an often used methodology for determining casing setting depth for land wells and that 20 barrels is not an uncommon value for kick tolerances for land wells, and that even a ten-barrel kick tolerance or less, as Mr Wright referred to, is not uncommon for land wells.[577]

737. In response, the Respondents clarified that kick tolerance is a standard procedure in well design. They do not accept, however, that it was appropriate to use the method in Chattak 2:

… if we look at Niko's decision to rely on kick tolerance in isolation it might not appear to be a breach of international standards and may not have been the sole clause of the blowouts. Kick tolerance is in many circumstances a standard well control procedure but kick

[573] Adams 1, page 26.
[574] HT 2015.11.02 (Day 1), page 147, line 23 to page 148, line 1.
[575] HT 2016.02.22, page 365, lines 19-21.
[576] Wright 2, page 25.
[577] HT 2016.02.22, page 365, lines 19-25.

tolerance was not a valid option when Niko was drilling into a shallow reservoir and particularly when it had decided to set casing in soft formation rock at 305 metres.[578]

738. **The Tribunal concludes** that, as a matter of principle, a design relying on kick tolerance may well be an acceptable solution. The question is whether, in the circumstances of the Chattak field, it was reasonable and prudent for Niko to rely on this method. Before addressing this question, the Tribunal will consider the options that Niko had when deciding on the casing design.

8.4.3.5 The options available to Niko: lower casing

739. It has been generally accepted in these arbitrations that it would have been possible for Niko to **set casing to a lower level**, including the possibility of **casing in the marine shale**; and also accepted that, if that had been done, the kick could have been controlled and the blowout thus avoided.

740. The First Enquiry Report stated: "A casing covering major part of the sand from the cap rock overlaying the first gas sand to surface would have been the logical choice."[579]

741. Mr Wright explained:

If the casing had been set deeper then they could have contained it without it broaching.

[…]

When you set surface casing you would like to set it in an impermeable formation like a shale. That is what you would like to do because even if the fracture gradient is high enough, when you have got gas flowing in your annulus to that very highly permeable sandstone where your casing is set, that gas can flow into that sandstone at very high rates – extremely high rates –

[578] HT 2016.02.22, page448, line 25 to page 449, line 9.
[579] First Enquiry Report, Exhibit R-3, paragraph 7.1(d).

[…]

I would not under the circumstances, though, want to drill all the way to 485 from the surface. I would have still set my casing like they did at 305 and then set a second casing in the marine shale.[580]

742. Mr Wright also stated that he had been informed "by talking to the gentlemen from Niko" that, in addition to the 13 3/8" casing for the surface casing and the 7" casing for the production casing as shown in the Well Proposal, **Niko had at the site casing of 9 5/8"**.[581] This information was not contested. It would, therefore, have been possible for Niko to add such 9 5/8" casing between the casing shoe at 305m and the marine shale.

743. The availability of this size casing finds some confirmation to which Dr Adams called attention in the course of the November 2015 Hearing: the Well Proposal contains a page entitled Drilling Fluid Proposal, including the sentence: "Start to build KCL/PHPA mud once finished with 9 5/8" casing cement job."[582] Dr Adams pointed out that "nowhere in this casing programme does it say 9 and five-eighth inch casing" and he found this "troublesome". He did not conclude from this mention that Niko had reserved the possibility of casing of this size.

744. The Tribunal finds confirmation for the possibility of additional casing to be set in Mr Wright's explanations at the November 2015 Hearing: he discussed this option, indicating that it was available to Niko, once it had set the casing shoe at 305m as foreseen in the Well Proposal:

… I was told that additional 9 and five-eighths casing string was available based on the conditions so ***that they could have run a second casing string and put it in the marine shale*** *and covered that sand all the way back to the surface.*[583]

745. At the February 2016 Hearing the Claimant was asked this:

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[580] HT 2015.11.04 (Day 3), pages 559, lines 12-14, 560, lines 3-11, and 562, lines 16-20.
[581] HT 2015.11.04 (Day 3), page 565.
[582] Chattak-2 Well Proposal, Exhibit C-15, page 16; also shown on Dr Adam's slide 23 (Exhibit RH-3) and discussed by him at HT 2015.11.04 (Day 3), pages 645 – 646.
[583] HT 2015.11.02 (Day 3), page 567, lines 13-18, emphasis added.

… there were, in fact, no pockets of shallow gas that were encountered in the drilling process down as far as the marine shale. At that point, once you get to the marine shale and you have not encountered those risks, why not stop and case down to the marine shale at that point? Would that not have reduced significantly the risk of the operation because you would not then be relying on kick tolerance and you would not have been subject to the possibility of a lateral blowout once you then penetrated the marine shale and got into the lower sands?

MR TARNOWSKY: Yes and I think the evidence on that from all of the experts is clear, that certainly if a string of casing had been set in the marine shale you would then have had ultimate safety.[584]

746. The Tribunal has also considered whether setting casing in the marine shale would have caused important **additional costs in time and money**. BAPEX argued that this would not have caused substantial additional costs and would not have required much additional time. Based on Dr Adams' explanations, BAPEX asserted:

> *Setting the additional casing would have cost only about USD 30,000 and required only "maximum of a day" of additional work.*[585]

747. Mr Abel also considered the additional time and cost of lower casing and spoke of a "small increment of cost and time".[586] He discussed the factors to be considered in such calculations and confirmed: "you are really not adding but an incremental expense to go deeper […] a small increment […] maybe a day".[587]

748. The Claimant did not argue that a lower level of casing would have been very costly:

> *In fact, even though there is some evidence that the cost would have been relatively small to take the time to run a second string of casing*

[584] HT 2016.02.22, page 367, lines 5-21.
[585] R-PHB, paragraph 94, referring to Dr Adam's explanations at HT 2015.11.05, pages 771 to 772.
[586] Abel, page 28; the quotation concerned the additional 73 meters of casing required for his proposed method based on a full column of gas.
[587] HT 2015.11.04 (Day 3), page 675.

and the casing itself was relatively small, the obligations under the agreement to be as cost conscious and effective as you can are an aspect to consider in that.[588]

749. While the Tribunal recognises the objective of a cost conscious and effective operation as a justified concern, the level of costs that has been identified for the additional surface casing in the marine shale appears indeed modestly incremental compared to the overall drilling costs and the gain in safety. In this context it must be borne in mind that the Chattak 2 Well Proposal provided for production casing down to 5741 feet (1750m); additional casing would thus have had to be set in any event, even though at a smaller diameter.[589]

750. The **Tribunal concludes** that additional casing from 305m to a lower level, especially to the marine shale, was a particularly safe solution, feasible in the circumstances. The additional costs in money and time would have been small and cannot be taken as a consideration militating against this choice of a casing design.

8.4.3.6 Other design options: full column of gas

751. In the course of the proceedings, other design options were also considered. In particular, Mr Abel had stated that, according to his opinion, casing beyond 305m was necessary but the additional casing did not have to reach the marine shale at about 500m depth but only to 378m, using the approach described as "a full column of gas". By this method kick tolerance would be increased from the level of 16.4 bbls, as calculated by Mr Abel, to what he considered a safe level.[590]

752. Mr Abel explained the criteria for casing design and specifically for deciding the depth to which casing must be set:

In casing design, there are two basic options for design for pressure control and they are:

- *full column of gas to the surface (conservative more cost, kick can be large) or*

[588] HT 2016.02.22, page 368, lines 4-10.
[589] Chattak-2 Well Proposal, Exhibit C-15, pages 13 and 15.
[590] Abel, page 28.

- *kick tolerance (less cost, but relies on crew reaction to keep kick size within limits).*

In the Chattak 2, Niko chose the latter design case of kick tolerance.[591]

753. Mr Wright agreed that the full column of gas approach was an acceptable method for determining casing depth and that it was a conservative approach. But he opined that it was not an industry standard on land. In his second report he wrote:

> *Mr. Abel suggests that designing surface casing for a full column of gas is a standard industry practice. I disagree to the following extent. It is a conservative design approach and, in my experience, it is not considered an industry standard on land. It is a more common approach applied to offshore drilling historically, but regulators are open for operators to set their individual design criteria.*[592]

754. The question considered here is not whether a particular design approach is industry standard on land or generally. The question is instead whether, in the circumstances of Chattak 2, a full column of gas approach was a viable option at reasonable costs; and whether it provided a higher degree of safety. Mr Wright does not contest that it was a viable design option and, by saying that it was a "conservative design approach", seems to accept that it was a safer approach than that chosen by Niko.

755. **The Tribunal concludes** that, in addition to the option of additional casing down to the marine shale, Niko had the option of a full column of gas approach to increase safety of the well.

8.4.3.7 Other options: diverter

756. The Respondents and Dr Adams were of the opinion that Niko should have used a **diverter**. Dr Adams explained the order of preference for design methods to be used in a situation as that at Chattak 2:

[591] Abel, page 19.
[592] Wright 2, page 25.

> *… the most eloquent solution to drilling this would have been to drill it with casing set somewhere in the range of what we have seen* [*i.e.* to the marine shale].
>
> *The next best solution is to drill it with a diverter down to this depth.*
>
> *Number 3 on the list of options, which is a bad solution, is to set blowout preventers at 305 metres, as was done, because the calculations are just basic history of all these cases in the case that what would happen is what in fact did happen.*[593]

757. Based on the opinion of Dr Adams and relying on API RPs 59 and 64, the Respondents assert that Niko should have installed a diverter in Chattak 2. They assert: "Niko's failure to use a diverter was a further breach of the generally accepted standards outlined above."[594]

758. The Respondents present as the relevant "Generally Accepted Standard":

> *A diverter should be used when there is a risk of shallow gas.*[595]

759. In support of this assertion, the Respondents rely on API RPs 64 and RP 59. The former describes its purpose as follows:

> *This recommended practice (RP) is intended to provide accurate information that can serve as a guide for selection, installation, testing, and operation of diverter equipment systems on land and marine drilling rigs (barge, platform, bottom-supported, and floating).*[596]

760. The Respondents rely on the following extracts of API RP 64:

> *Diverters are primarily used to divert flow from the rig in three situations: 1) shallow fluid and gas flows; 2) drilling with a rotating head; and, 3) drilling with a marine riser.*

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[593] HT 2015.11.04 (Day 3), page 774, line 19 to page 775, line 5; Dr Adams explained that by "eloquent" he meant "appropriate" (page 776).
[594] R-PHB, paragraph 130.
[595] R-PHB, table at page 18.
[596] API RP 64, Exhibit R-42, 1.1.

> *Shallow gas sands are usually abnormally pressured and capable of flowing gas at high flow rates and in large volumes. […] A diverter system should be considered when drilling below the first casing string and the anticipated formation fracture gradient is insufficient to permit circulation and/or spotting of kill weight fluid. If the well is shut-in with the blowout preventer (BOP) at this stage of drilling operations, uncontrollable flow up the outside of the casing string may result.*[597]

761. The Respondents also quote from Section 6 of API RP 59, dealing *inter alia* specifically with diverters:

> *A diverter system is designed to provide a means of flow control during the initial stages of a drilling operation by directing well flow encountered at relatively shallow depths away from the rig and personnel. The system provides a degree of protection prior to setting the casing string upon which the blowout preventer stack and choke manifold will be installed. […]* ***A diverter is not designed to shut in or halt flow, but rather permits routing of the flow to a safe distance****. At this stage of drilling, if the well is completely shut in uncontrolled flow around the outside of the shallow casing could result.*[598]

762. The Claimant and Mr Wright sharply disagreed that the use of a diverter was required or even that it would have been useful and safe. The Claimant asserted: "You do not typically use diverters to drill into your target reservoir".[599] Mr Wright added emphatically that a diverter would not be used, "because how dangerous a diverter system is".[600] Mr Wright also opined that "implementing shallow gas handling procedures with diverters is not the mitigation method that should have been employed to mitigate the uncertainties concerning the Chattak 2 S1 and S2 sands, let alone an industry standard as suggested by Dr Adams". He added that "gas handling procedures that involve gas diversion are, by their nature, an extreme safety hazard", as they divert the gas into the atmosphere.[601] Dr

[597] R-PHB, page 18, quoting from API RP 64, Exhibit R-42, paragraphs 4.3, 4.3.1 and 4.4.2.
[598] R-PHB, page 18, quoting from API RP 59, Exhibit R-43, paragraph 6.1, emphasis added.
[599] HT 2016.02.22, page 340.
[600] HT 2015.11.04 (Day 3), pages 527 – 528.
[601] Wright 2, page 7.

Adams confirmed that using a diverter meant saving the rig but losing the gas.[602]

763. The Tribunal notes that API RP 64 does not require the use of diverters. To the contrary, it recognises that "equally effective solutions are available. The introductory chapter points out:

> *These recommended practices were prepared recognizing that alternative installations, arrangements, and/or operations may be equally as effective in meeting well requirements and promoting safety of drilling personnel, public safety, integrity of the drilling equipment, protection of the environment, and efficiency of ongoing operations.*[603]

764. In the main text, API RP 64 states plainly: "A diverter is not a well blowout prevention device".[604]

765. As to the use of diverters, API RP 62 explains the limited use of these installations:

> *The diverter system is not intended to shut-in or halt well flow, rather it provides a low-pressure flow control system to direct controlled or uncontrolled wellbore fluids away from the immediate drilling area for the safety of personnel and equipment. Although there are other uses, the diverter system is primarily used for the potentially hazardous flows that can experienced prior to setting the casing string on which the BOP stack and choke manifold will be installed.*[605]

766. In other words, the diverter might have been of use for the initial phase of drilling, until the BOP was installed on casing down to 305m or to the marine shale. This is indeed what Dr Adams' proposal implied: his solution was that Niko should have drilled down to the marine shale with no casing but a diverter. Niko would then have set casing and replaced the diverter by a BOP.[606] Any pockets of gas that would have been encountered during

[602] HT 2015.11.04 (Day 3), pages 677 – 678.
[603] API RP 64, Exhibit R-42, paragraph 1.5.
[604] API RP 64, Exhibit R-42, Section A.2, page 37, paragraph 7.
[605] API RP 64, Exhibit R-42, paragraph 4.1.
[606] Exhibit RH-3, slides 30 and 31, HT 2015.11.04 (Day 3), page 682.

that part of the drilling could have been released into the air without damage to the well.

767. The use of a diverter would thus have been a solution for the pockets of gas above the marine shale which, according to the Claimant, were the reason for the decision to set surface casing at 305m and install the BOP at that level. But no such pockets of gas were encountered by Niko when drilling Chattak 2. Once the marine shale would have been reached, Dr Adams' solution required casing and also a BOP, as discussed above.

768. **The Tribunal concludes** that for the circumstances under which the blowout occurred, the use of a diverter is not a recommended solution in the international petroleum industry. The risk of shallow gas above the marine shale, against which it might have been a protection, did not materialise. For the risk of the gas in the shallow reservoir below the marine shale, casing into the marine shale and a BOP would have been preferable.

769. In these circumstances, the Tribunal does not consider Niko's failure to use a diverter to have conflicted with the prudent operator standard.

8.4.3.8 Conclusion on other options

770. The Tribunal need not give further consideration to other well design options discussed in these arbitrations. For the purpose of the present examination it is sufficient for the Tribunal to conclude that Niko had at least one, if not two other viable design options which would have provided a safe operation and that the implementation of these options would have required only marginal additional costs and time.

771. The Tribunal is aware, however, that this conclusion cannot be the end of its analysis. While it is important to note that the design chosen by Niko was not a necessity in the circumstances and that Niko had the choice of another design providing in the eyes of the Claimant "ultimate safety", the Tribunal's mandate is not to determine the most suitable or the safest design for the Chattak 2 Well. Rather, the Tribunal must determine whether Niko's operations leading to the first blowout, and here specifically the design chosen, violated its obligations under the JVA and otherwise. As the Claimant correctly puts it when responding to the Tribunal's question concerning the availability of setting the casing in the marine shale:

> *…we submit that the question for the Tribunals is was Niko required to do that by all of the circumstances and by the standard of conduct under the JVA?*[607]

and

> *Where the dispute lies is whether* [the kick tolerance] *approach was unreasonable, having regard to any generally accepted international industry standards, applied to the circumstances of Chattak.*[608]

772. The Tribunal, therefore, must examine whether, in the circumstances, Niko's reliance on kick tolerance complied with the standard of a prudent operator conduct required by the JVA.

8.4.3.9 The absence of information on kick tolerance in the well design

773. The Respondents assert: "Niko's kick tolerance plan was substandard and inadequate …"[609]

774. The Claimant objects and argues that "Niko's 'kick tolerance' approach and values were reasonable".[610] It asserts that:

> *Niko's casing design, including the proposed setting depth of approximately 300 meters, was expected to produce a kick tolerance of over 20 bbls (barrels) at the top of Sands 1 and 2.*[611]

775. The value of this "expected" kick tolerance of "over 20 bbls" was not indicated in the Well Proposal. This proposal does not identify any kick tolerance value used for the design. Neither this proposal nor any other evidence shows what kick tolerance the designer had determined. There is not even evidence that the designer, Mr Mercier, calculated the kick tolerance.

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[607] HT 2016.02.22, page 367, line 25 to page 368, line 3.
[608] C-PHB, paragraph 103.
[609] R-PHB, paragraph 139.
[610] C-PHB, paragraph 106.
[611] C-PHB, paragraph 104.

776. The Claimant's assertion of a "kick tolerance of over 20 bbls" is derived from assumptions made by Mr Wright in his calculations, as described below; Mr Wright clarified:

> *I did not know what Mr Mercier did. I did not find any specific records whether Mr Mercier – how he made his determination on kick tolerance. I know he had the software to do it because I saw some casing design spreadsheet printouts that showed the depths that you could safely drill with 11.5 pounds per gallon leak-off test at 305 metres. So he had that software available to him in his casing design.*
>
> *I am assuming as a reasonable drilling engineer that he would have made those calculations himself. Whether he would have put those in his drilling report, if there is nobody telling him that he needed to put them in there he may not decide to put them in there.*
>
> […]
>
> *THE PRESIDENT: So you, Mr Wright, you will assume he made the calculation but we cannot find the records for it.*
>
> *MR WRIGHT: That is my assumption. The 20 barrels is the value that I produced based on the estimated fracture gradient and the estimated pressures; that is correct.*[612]

777. The Tribunal finds this situation preoccupying: the Well Proposal was intended for Niko's Joint Venture partner and should have allowed BAPEX to form an opinion about the soundness of the design. One must ask how, on the basis of a document that did not explain that the design relied on kick tolerance and did not identify the assumed value of the kick tolerance, the Joint Venture partner was expected to understand and evaluate the design.

778. The Tribunal also notes that there is no evidence other than the Well Proposal about the information provided by Niko to the drilling crew to guide them in their operations. The kick tolerance value is important not

[612] HT 2015.11.05 (Day 4), page 866, lines 2-17 and page 867, lines 5-11.

only for the designer but also and especially for the drilling crew. As Mr Wright pointed out it is "the main risk factor":

> *The main risk factor the operator must assess when deciding on surface casing setting depth, if kick tolerance is going to be utilized, is whether the well will broach to the surface if the kick tolerance is exceeded and an underground blowout is initiated below the casing shoe.*[613]

779. Consequently, the crew must avoid that any kick exceeds the level of the designed kick tolerance. Obviously, the drilling crew must be informed about that value. The Tribunal assumes, therefore, that information about the kick tolerance and its level is an elementary precaution a prudent operator would provide to the drilling crew.

780. The Tribunal has noted Mr Wright's explanations concerning the manner in which, in his experience, information is passed by the operators to the drilling crew, making "a one-page summary of the whole drilling plan" and reducing various aspects of the plan each "on a large sheet of paper":

> *A lot of the small operators do that, rather than have all of this data about how they came to arrive at this, they just have the paper that says this is how we are going to do it.*[614]

781. There is no indication that this procedure was adopted by Niko for Chattak 2. The only evidence available is the Well Proposal and this document does not assist the drilling crew by identifying the kick tolerance that they had to maintain throughout the drilling operation and in particular during the wiper trip. Mr Abel pointed out:

> *Abel could find no evidence that Niko put a plan in place to ensure that the kick tolerance criteria was met other than relying on the rig contractor to use the trip tank to catch the kick before it exceeded the design allowable. Niko failed to evaluate their own data and estimates for the low temperature and pressure effects at shallow*

[613] Wright 2, page 25.
[614] HT 2015.11.03 (Day 2), pages 403-404.

depths when designing the mud program (overbalance was not sufficient to allow tripping out to be a safe act).[615]

782. This information is not included in the design documents and there is no indication about any other method by which this information was made available to the drilling crew. The absence of the information would have created a serious difficulty for the well control procedures. Indeed, as part of the list of deficiencies of the Well Proposal which he presented at the November 2015 Hearing,[616] Dr Adams pointed out that the Well Proposal did not contain well control procedures.[617]

783. Mr Wright recognised the absence of the relevant information; but he presented such absence as common practice in situations as those which he saw prevailing in Chattak 2:

> *In Niko's drilling plan for Chattak 2 there was not a specified mud density range documented for drilling the 8-1/2" hole section. It specifically states: "as hole conditions dictate". This is a common practice in drilling, particularly when there is little information available upon which to specifically program the mud weights. It calls for the drilling supervisor and responsible members of the rig crew (driller, rig superintendent, mud man, mud loggers, etc.) to monitor the well conditions (including gas monitoring and losses) and assess whether increasing or decreasing the mud weight is warranted. Niko appears to have made a conscious decision to do this to make sure the crew was alert to hole conditions.*[618]

784. For Mr Wright this was an option available to a prudent operator and Niko deliberately chose this option:

> *As a prudent operator they have the option to decide how they want to handle that operational uncertainty based on their experience and the circumstances. They made the decision to install a BOP and drill cautiously through the S1 and S2 sands while monitoring gas content*

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[615] Abel, page 59.
[616] HT 2015.11.04 (Day 3), page 620 and Exhibit RH 3, slied 15.
[617] HT 2015.11.04 (Day 3), page 620.
[618] Wright 2, page 24.

to determine the mud density required for control which is common industry practice in development drilling.[619]

785. The Tribunal recognises the possibility that a competent and experienced designer of a well like Chattak 2 may rely to some extent on judgment, especially where the scope of variations in a factor of the calculations is limited and thus produces only a limited range of uncertainty. As Mr Abel explained: "People will know the range of those numbers without specific data".[620]

786. The Tribunal considers that in the present case, the team for design and drilling had already developed the wells in the Feni field and was moving to another field in Bangladesh. Mr Mercier, the well designer, was in Bangladesh at the time of the drilling of Chattak 2 and, as the Daily Drilling Reports show, he received these reports and transmitted them to BAPEX.[621] It can be presumed that he was in regular contact at least with the Drilling Superintendent.

787. In such a context, the information in the well design documentation may be less complete than what one might expect otherwise. Since the project was a marginal/abandoned field and the JVA had highlighted the need for cost efficient work, relying on judgment where detailed calculations would bring only limited additional certainty and saving on documentation are not necessarily signs of an imprudent operator.

788. The absence of any design information about the kick tolerance, nevertheless, is preoccupying. The well design did not protect against the risk that the kick tolerance would be exceeded; consequently, any error of the drilling team causing the kick tolerance to be exceeded would be fatal.

8.4.3.10 Calculating the kick tolerance and the experts' attempts to determine that value in Niko's design

789. Since the kick tolerance of the Chattak 2 design was not specified by the designer in the available documentation, the experts had to develop it by reference to the available data. Mr Wright explained that the critical

[619] Wright 2, page 7.
[620] HT 2015.11.05 (Day 4), page 864.
[621] See Exhibit C-20.

information for this calculation includes formation pressure, also referred to a pore pressure,[622] and fracture pressure:

> *The formation pressure obviously is the pressure that you are going to need to overcome with your drilling fluid and the fracture pressures are going to determine where you set your casings and what sort of kick tolerance that you have and what sort of mud densities that you can going to have to drill between section to section.*[623]

790. Mr Wright also emphasized the complexity of the design process using kick tolerance:

> *This is a very complicated phenomenon and depends on many geological and blowout related factors with many uncertainties. There is not an industry standard that can guide an operator on this determination. Local knowledge and experience can be very helpful in making these assessments.*[624]

791. The Tribunal concludes that well design using kick tolerance requires particular qualifications of the well designer and drilling team. Due to the number of variables to be considered and the importance of information necessary for the design, it is a risky process if not all this information is readily available.

792. As the kick tolerance value was not indicated in the Well Proposal, Mr Wright had to extrapolate it from other data in the Well Proposal. He calculated the kick tolerance at "over 20 bbls for drilling Sands 1 & 2 and over 10 bbls for Sands 7 & 8".[625]

793. For his calculations, Mr Wright relied on a table showing values "used by Niko in their casing design spreadsheet".[626] The table is contained in a document produced as Exhibit C-82. This document consists of three pages; the first two pages reproduce the "Feni/Chattak Surface Casing Design" and the "Feni/Chattak Casing Design" for production casing,

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[622] Mr Wright at HT 2015.11.04 (Day 3), page 719.
[623] HT 2015.11.04 (Day 3), page 719, lines 16-23 .
[624] Wright 2, pages 25 – 26.
[625] Wright 1, page 7.
[626] Wright 1, page 15, Table 3-2.

respectively, as they were included in the Chattak 2 Well Proposal which Niko had submitted to BAPEX with its letter of 14 December 2004.[627] The third page is included only in Exhibit C-82. It is identified by Mr Wright as "Chattak 2 Casing Design.xls"; no other explanation is provided about the origin of this exhibit and its third page.

794. The table on which Mr Wright relies contains an entry for "volume of influx 10bbls, 1.59 m^3". On that basis Mr Wright calculated that Niko's design provided for **21.6 bbl kick tolerance**. He explained his reasoning as follows:

> *The volume used by Niko in their casing design spreadsheet was a 10 bbls kick tolerance at a depth of 1743m TVD (approximate planned TVD of the Chattak 2 well)…*
>
> *[…]*
>
> *This is the kick tolerance when at the target depth of the well. This produces a different kick tolerance when drilling through Sands 1 & 2 (sand top of 560m TVD) where the influx occurred that lead to the blowout on Chattak 2. At 560m TVD the Niko design provides for a higher volume of approximately 21.6 bbls using the same assumptions and a 9.1 ppg mud density (used when drilling that section), see Table 3.3. This data was input into and the results obtained using a typical 90m BHA length from the Niko Excel spreadsheet entitled "Chattak 2 Casing Design." (Exhibit C-82).*[628]

795. Mr Wright also "plotted the kick tolerance volume for the 113 BHA actually used in the Chattak 2 well when it was drilled and it gives 20.4 bbls with an influx height of 377m TVD".[629]

796. At the November 2015 Hearing Mr Wright explained that a "kick tolerance approach, depending on the depth of the reservoir and the thickness of the gas-water-contact will give you a kick tolerance of somewhere between 15 and 20 barrels".[630]

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[627] Chattak-2 Well Proposal, Exhibit C-15, pages 13 and 14. See above, paragraph 593.
[628] Wright 1, page 15.
[629] Wright 1, page 15 and Figure 3.3 at page 16.
[630] HT 2015.11.03 (Day 2), page 416.

797. Mr Abel also attempted to calculate the kick tolerance. For the "deeper zones of the 7, 8 Sand" he calculated "an overbalance of 215 psi and a static kick tolerance of 39 bbls". He then explained by reference to Figure 4.3 of his report that "at the 560m depth, there is only 18.6 psi over balance and a 16.4 bbl kick tolerance" which he considered a "small over balance and kick tolerance".[631]

798. The Claimant criticised Mr Abel's calculation, stating that he "fails to disclose the full scope of the assumptions underlying [his] analyses and conclusions that there was only an 18.6 psi overbalance and a 16.4 bbl kick tolerance".[632]

799. At the November 2015 Hearing, Mr Abel was questioned about his calculations and explained that, in the absence of other information, he "back calculated the gas-water contact", relying on information gained by the drilling, as will be further discussed in the following Section concerning the assumptions about formation pressure.[633] Later at that hearing, he explained his Figure 4.3, considering the fracture gradient and the kick size. The full scope of assumptions in this part of the calculation remained, however, unclear to the Tribunal. Mr Abel emphasised, however, the extent to which such calculations remain based on "judgment" in coming to a "reasonable interpretation of this data".[634]

800. Since Mr Abel had to use estimates for a number of values for his calculations, and since there are doubts whether some of the values used had been available at the time of the well design, the Tribunal does not rely on the value calculated by Mr Abel.

801. In order to gain an understanding about the reliability of Mr Wright's calculation of the kick tolerance in Niko's design, the Tribunal had to examine the assumptions in these calculations.

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631 Abel, pages 20 and 22.
632 Niko's Comments on the Tribunals Experts' Reports Concerning the Compensation Declaration, 31 August 2015 (C-CD.3), paragraph 53(c).
633 HT 2015.11.05 (Day 4), pages 804 *et seq.*, 822 and 823.
634 HT 2015.11.05 (Day 4), pages 850 *et seq.*, 854, 855.

8.4.3.11 The assumptions made in the kick tolerance calculations (formation pressure and fracture pressure)

802. As explained by Mr Wright in the quotation above, critical factors for the calculation of the kick tolerance of a well are the formation pressure and the fracture pressure.

803. Concerning the **formation pressure**, Niko's Well Proposal submitted to BAPEX indicates in the Reserve Estimate for Sands 1 and 2 an estimate of 0.433 psi. The Claimant explained that this was the value used by Niko for the formation pressure.[635]

804. Dr Adams asserted that the "API documents contain the only available and proper method for determining formation pressure in shallow gas formation. Niko did not use these procedures. Rather Niko made erroneous assumptions as to the formation pressure,"[636] in particular with respect to the gas-water-contact, an essential element for the calculation of the formation pressure.

805. Dr Adams quotes from API RP 64, describing it as "the calculation procedure to determine the amount of abnormal pressure at the top of a shallow gas zone":

> *Estimated pressure at the top of the shallow gas zone is equal to the aquifer pressure at the gas-water contact minus the hydrostatic pressure of the gas column.*[637]

806. Dr Adams concludes from this quotation:

> *This calculation procedure from the API makes it obvious that identification of the GWC is a necessary component for pressure determination. The information available for review from Chattak 2 and Chattak 2A does not appear to have identified the GWC contact. Nor did Niko seem to understand the importance of the determination of the GWC. […] The Chattak 1 noted the GWC at 1,281 m (Figure 3). The GWC for Oxy's [Moulavi Bazar] was 855 m (Figure 4). Mr. Wright's Expert Report and the plans for Chattak 2 and Chattak 2A did not*

[635] HT 2016.02.22, pages 343 – 344.
[636] Adams, page 4, section 3 (a).
[637] Adams, page 18, quoting from API RP 64, Exhibit R-42, Section A.3, page 38.

include any results from an analysis to determine the GWC. Without this knowledge, Niko could not have accurately estimated the formation pressure.[638]

807. Mr Wright responded by describing the difficulties in determining the formation pressure, given the limitations in the information available to Niko. In particular, the gas-water-contact was not known.

808. Dr Adams underlined the importance of knowing the GWC for determining the formation pressure. Relying on API RP 64, he stated that "identification of the GWC is a necessary component for pressure determination"; and he stressed the significance of the unavailability of this information:

> *Knowledge of the depth of the gas-water contact (GWC) in the S1 and S2 sands is necessary to determine formation pressures in these sands.*
>
> *a) Niko seems unaware that the GWC was a necessary variable to calculate formation pressures.*
>
> *b) From the information made available during this investigation, it appears that the depth of the GWC remains a mystery.*[639]

809. Dr Adams also pointed to information from Chattak 1 and Moulavi Bazar which, in his opinion, Niko should have used but failed to consider.[640]

810. Mr Abel also recognised the importance of the gas-water-contact and attempted to determine its level with the available information:

> *In the case of Chattak 2 the gas pressure is derived from a water gradient that acts below the gas zone at what is referred to as the gas-water-contact. The density of the gas in place and the thickness of the zone determine pressure at the top of the gas zone. This is illustrated below for the No.1 Sand where the top is taken as 560m and the gas water contact taken as 600m. The gas water contact depth came from an analysis of the mud weight used to drill the well*

[638] Adams, pages 18-19.
[639] Adams, page 6.
[640] Adams, pages 18 to 22 and Figures 2, 3 and 4.

to 807m with 9.1 ppg. If the gas water contact has been greater than 600m then 9.1 ppg would not have been successful drilling the well without a gas influx.[641]

811. Mr Wright addressed these observations. Concerning Dr Adam's reference to Chattak 1 and Moulavi Bazar, he objected: "These other examples of GWCs are not relevant to assessing where the GWC might be in Sand 1. Any use of them (as presented by Dr Adams) is wholly invalid and misleading".[642]

812. Concerning the calculation by Mr Abel, Mr Wright states:

Mr. Abel used drilling and mud data to infer the GWC at 600m. What Mr. Abel did was essentially back calculate the maximum formation pressure possible given the mud weight used at the time of drilling into Sand 1 was sufficient to overcome the formation pressure. In other words, this assumes the mud weight was equal to (or only slightly greater than) the formation pressure. While this provides the maximum possible depth of the GWC in Sand 1, it is based on hindsight and was obviously not a calculation that Niko could have made at the time of planning the drilling.[643]

813. Mr Wright referred to the "uncertainty with respect to the exact pressure of the top of S1 due to the gas-water-contract uncertainty, as well as the inflow performance uncertainty".[644] The critical value is indeed at the top of Sand 1: the experts agree that the pressure of the reservoirs is highest at the top, and that in order to determine this pressure, the GWC must be known. Mr Wright wrote:

In any gas reservoir, the pressure gradient at the top of the reservoir will be higher than a normal gradient (at the gas water contact) due to the lower density of the gas. This is a basic engineering principle that is well understood by drilling engineers.[645]

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[641] Abel, page 24.
[642] Wright 2, page 24.
[643] Wright 2, page 24.
[644] Wright 2, page 7.
[645] Wright 2, page 20.

and

> *As Dr. Adams notes on a number of occasions in his report, the pressure at the top of the sand can only be estimated with knowledge of the GWC and, on the basis of the available evidence, the GWC in Sand 1 is unknown to this day.*[646]

814. Mr Wright defended what in his opinion Niko had done when preparing the plans for Chattak 2 by stating:

> *The fact is that, with the limited information available at the time, all Niko could do was use its judgment in estimating the formation pressure along with GWC heights and programming the mud weight to be used to counteract the formation pressure. This is normal procedure for many drilling operations where there is uncertainty in these parameters.*[647]

815. In other words, the value of 0.433 psi for the formation pressure was based on an assumption about a value that was not known and for which Niko had to use "judgment". The assumption which was made by Niko has not been identified. As Mr Wright states, the value for the formation pressure thus is based on an unidentified assumption.[648]

816. Variations in the assumption about the GWC affect assumptions about the formation pressure and thus the overbalance required for a safe operation of the well. Mr Wright presented a table, showing different values for the thickness of the GWC. He concluded:

> *Thus, if the S1 sand had a GWC that was 10m in height the mud density required to balance the top of the sand was ~8.5 ppg at 810 psi. If that was indeed the GWC, then the 9.1 ppg was 0.6 ppg overbalance which it appears was the assessment. If the GWC was 40m in height then the over balance was only 0.2 ppg.*[649]

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[646] Wright 2, page 24.
[647] Wright 2, page 24.
[648] HT 2015.11.04 (Day 3), page 723.
[649] Wright 2, page 20.

817. In his second report Mr Wright recognised the uncertainty about the gas water contact, as just quoted. At the November 2015 Hearing he confirmed:

> *So because of the uncertainty and what exactly this gas water contact is, there is some uncertainty in what mud densities are going to be required in the wellbore when you drill into that sand.*[650]

818. **The Tribunal concludes** that the value used in the kick tolerance calculation for the formation pressure for a critically important element was based on an assumption about an unknown factor, an assumption not disclosed in the Drilling Proposal and which remains unknown.

819. The other critical element mentioned above for determining kick tolerance is the **fracture pressure** which determines the strength of the formation.

820. API RP 64 defines formation fracture gradient as: "The hydrostatic value expressed in psi/ft that is required to initiate a fracture in a subsurface formation (geologic strata)".[651] This value determines the resistance to pressure from within the well; this resistance is decisive with respect to the depth to which casing must be set and beyond which kick tolerance can be envisaged.

821. The Respondents underline the importance of the formation pressure for well design by presenting the "Generally Accepted Standard" for Casing in the following terms:

> *Casing should be set deep enough that it is in rock that can withstand anticipated pressures from drilling and if a kick should occur.*

822. In support the Respondents reproduce the following quotes from API RP 59:

> *When considering well control, the most important aspect of casing requirements are tubular strength, setting depth, and size. The internal pressure rating of casing should be designed to handle the anticipated surface pressure.* […]

[650] HT 2015.11.03 (Day 2), page 400, lines 19-23.
[651] API RP 64, Exhibit R-42, paragraph 3.1.47.

> *Each new string should be set at a depth so that formation fracture gradients will exceed anticipated drilling fluid density gradients.*
>
> *[S]urface casing is usually the first well control string and should be set into formations competent to hold drilling fluid densities anticipated […] at least until the intermediate casing string is set.*[652]

823. The Claimant rightly points out that the passages on which the Respondents relied make no mention of the formation having to withstand kicks.[653] The Tribunal is of the opinion that, irrespective of the question whether this or any other API RP spells it out as a recommendation or requirement of competent well design relying on kick tolerance, the formation should be strong enough to resist the pressure of a kick developing into a blowout.

824. Indeed, the Claimant explained:

> *The question of the strength of the rock is only relevant when you consider it in relation to your kick tolerance. That is, as the API standards, as they articulate them themselves, is you have to approximate or estimate or calculate that where you are setting your casing, that the rock strength in that area will be sufficient to deal with anticipated kicks.*[654]

825. Dr Adams explained it in similar terms: Surface casing is set at a depth where "the rock formation just below it is sufficiently strong to withstand anything it might see below that".[655]

826. The Well Proposal assumed a "Formation Breakdown gradient" of 0.676 psi/ft".[656] Mr Wright translated this value into 13 ppg Equivalent Mud

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[652] R-PHB, table at page 17, paragraph 36, quoting from API RP 59, Exhibit R-43, paragraph 5.2 E.
[653] HT 2016.02.22, page 380.
[654] HT 2016.02.22, page 494, lines 10-17.
[655] HT 2015.11.04 (Day 3), pages 597 – 598.
[656] Chattak-2 Well Proposal, Exhibit C-15, page 14 and Exhibits RH-3, slide 25.

Weight (EMW).[657] The value was confirmed at the February 2016 Hearing and remains uncontested.[658]

827. The Claimant explained that the 13 ppg formation breakdown gradient, as it was used in the Well Proposal, was "estimated"; but it did not state on what assumptions the estimate was based.[659]

828. At the November 2015 Hearing, Mr Wright stated that the value was taken from the

> *… similar formation in Feni slightly older, just slightly older geologically, was 14 to 14 and a half pounds per gallon at the same depth, 300 meters. So they anticipated from the data that I have seen 12 and a half to 13 pounds per gallon leak off test.*[660]

829. Mr Wright did not explain from where he had received this information; at other occasions, he explained however, that he had not talked to Mr Mercier, the person responsible for the well design. There is no document showing the origin of the 13 ppg (or 0.676 psi/ft) formation strength and no other explanation on what basis the value of 13 ppg was assumed by Niko for the well design.

830. Dr Adams referred to the cementing programme for the surface casing, as contained in the Well Proposal[661] and pointed out that it relied on 15 ppg.[662] He contrasted it with the value of 13 ppg used in the well design proposal and stated that cementing at 15 ppg for formation of 13 ppg would "lose circulation on it",[663] *i.e.* fracture the formation.

831. Mr Wright made reference to "casing design spreadsheet printouts" he saw and which contained reference to a Leak-off Test showing not 13 or 15 ppg but 11.5 ppg.[664] No further information was provided about this test and the use of the value of 11.5 ppg.

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[657] Wright 1, page 53.
[658] HT 2016.02.22, page 371.
[659] HT 2016.02.22, page 371.
[660] HT 2015.11.03 (Day 2), page 419.
[661] Chattak-2 Well Proposal, Exhibit C-15, page 17.
[662] The document uses as unit "psi/ft", but Mr Abel explained that this must be a typo and should read pounds per gallon; HT 2015.11.04 (Day 3), page 655.
[663] HT 2015.11.04 (Day 3), page 652.
[664] HT 2015.11.05 (Day 4), page 866.

832. No matter what the basis for the value of 13 ppg was, it must have been an assumption; there is no indication in the record of these arbitrations that, when designing the Chattak 2 Well, Niko had information about the actual formation strength below the casing shoe at 305m.

833. A useful precaution was to test the formation strength after the casing shoe had been set. Indeed, API RP 59 recommends:

> *Prior to drilling out the casing shoe, the casing should be pressure tested. A pressure test of the cement job and a formation competency test should be considered after drilling out below each casing string. These tests will dictate the drilling fluid densities that will be allowed before the next string is set. Provisions should be made for a blowout preventer to close on casing.*[665]

834. That is indeed what the drilling team did, once the casing shoe was set: it resumed drilling and stopped immediately at 310m to perform a **Leak-off Test**.[666] When discussing this test, Mr Wright explained that

> *Now, the design method was not totally decided ahead of time because they had a 9 and five-eighths casing on location with the wellheads and everything that they could set an additional string of casing if they felt it was necessary.*[667]

835. The Daily Drilling Report of 6 January 2005 records the result of the test: "EMW 18 ppg".[668] The value of 18 ppg EMW, however, cannot have been correct. Had the formation strength been 18 ppg, it would have contained the blowout. Mr Wright explained: "If it was 18 pounds per gallon then it would have contained it. When they closed the BOP to stop it from coming through the drill floor it would have stopped it".[669]

836. The First Enquiry Report considered the result of the Leak-off Test and concluded that it was not valid:

> *Leak Off Test result at 13 3/8 inch casing shoe was 18 ppg (2.1 gm/cc). According to this result formation below 13 3/8 inch casing*

[665] API RP 59, Exhibit R-43, Paragraph 5.2.E.
[666] See above, Section 8.2.4.
[667] HT 2015.11.04 (Day 3), page 522, lines 21-25.
[668] Daily Drilling Report, Exhibit C-20, page 24.
[669] HT 2015.11.03 (Day 2), pages 460-461.

shoe can hold a pressure of 800 psig, which is much above SCHP of 652 psig recorded. LOT result of 18 ppg (2.1 gm/cc) at 300m in this region therefore may not be considered valid. Leaking of gas onto surface through sandstone support this view. This result is most likely affected by the cement job, which could increase the bond of the formation at that depth and/or pressure recorded inaccurately.[670]

837. Mr Wright reached the same conclusions:

> *The results of the test showed 18 pounds per gallon which is very high, too high really for such a shallow formation. I have seen this happen in sandstones before and sandstones, particularly shallow sandstones, are very tricky to do a leak off test on.*
>
> *It is possible that either from cement or from the, you know, the mud going into the sand gave it additional strength until it finally breaks. So it is probably not really – well, obviously it was not 18 pounds per gallon because if it was 18 pounds per gallon then it would hold the full column of gas and there would be infinite – you would take a kick that would unload the whole well and when you close it in, it would hold it but when we actually unloaded the well it did not hold it. So we know that is not the case.*
>
> *But that would give the drilling people at the rig side a potential confidence that they have got a strong enough casing shoe that they could drill and not be quite as concerned as they might have been if it had been say 11 pounds per gallon or 11 and a half, say.*[671]

838. According to Mr Wright, Niko did not seem concerned by this unreasonably high result of the Leak-off Test. In any event, there is no evidence that Niko made any other Leak-off Tests. Apparently, it assumed that the value of the test at 310m applied throughout the formation down to the marine shale. Niko continued drilling without setting the 9 5/8" casing that, according to Mr Wright, was available – and thus left the formation unprotected.

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[670] First Enquiry Report, Exhibit R-3, paragraph 6.8.
[671] HT 2015.11.03 (Day 2), page 420, line 20 to page 421, line 18.

839. At the time, the Leak-off Test and its result was mentioned not only in the Daily Drilling Report and the First Enquiry Report, but also by the drilling crew in its Sequence of Events[672] and in Niko's Draft Report of 11 January 2005.[673] In these arbitrations, however, the Claimant and Mr Wright did not discuss this test result in the written submissions; and they did not rely on the 18 ppg of the Leak-off Test as formation strength in the calculation of the kick tolerance. As explained above, they used the value of 13 ppb, as it was contained in the Well Proposal.

840. The value of 13 ppg in the Well Proposal, however, is merely an estimate, possibly prepared by reference to the conditions at the Feni well several hundred kilometres away. Since the unreasonably high result of the Leak-off Test on 6 January 2005 did not prompt the drilling team to repeat the test, there is in the file of these arbitrations no actual value for the formation strength below the casing shoe.

841. **The Tribunal concludes** that the value used for the fracture pressure in the kick tolerance calculations was also an assumption, unexplained and untested.

8.4.3.12 Conclusions on the design of the Chattak 2 Well

842. On the basis of the explanations above, the Tribunal concludes that Niko's decision to set casing at 305m cannot be considered as contrary to the prudent operator standard. The critical design decision was for Niko to drill into the shallow sands without any further casing protection and to rely on kick tolerance.

843. As a matter of principle, the Tribunal does not find reliance on kick tolerance as necessarily imprudent. The problems with this design element are rather due to its use in the circumstances of the Chattak 2 Well.

844. Mr Wright identified the main risk factor for design relying on kick tolerance, as quoted above, "the well broach[ing] to the surface if the kick tolerance is exceeded and an underground blowout is initiated below the casing shoe".[674] It is exactly this risk that materialised when the first blowout occurred in Chattak 2.

[672] Sequence of Events Report, Exhibit C-19.
[673] Draft Report, Exhibit C-21.
[674] Wright 2, page 25.

845. Niko had at least two other design options which would have avoided this main risk factor at modest costs in money and time. Adopting, nevertheless, a design relying on kick tolerance as it did, required *inter alia* that Niko fixed a suitable kick tolerance and ensured that, considering the formation pressure, the formation below the casing shoe had sufficient strength.

846. The Claimant has failed to establish how in the Chattak 2 design the value of kick tolerance was established or even that this value had been determined by the well designer. The attempts of the experts to derive a kick tolerance from the evidence available has shown that essential data for establishing the kick tolerance value were not available or uncertain. The kick tolerance value of Niko's design, assuming the well designer established it, thus had an element of uncertainty and hence unreliability.

847. In particular the value for the fracture pressure, determining the strength of the formation below the casing shoe, was uncertain. It was an assumption, unexplained and untested. Indeed, the formation proved to be of insufficient strength to withstand the kick which caused the underground blowout.

848. In these circumstances, the Tribunal cannot accept that the kick tolerance in the Chattak 2 design was safe and met the standard of a prudent operator.

849. In any event, the Chattak 2 design provided drilling into the targeted shallow reservoirs at a depth of only 560m below surface without protection of the wellbore above the marine shale up to the casing shoe. It placed the full responsibility on the drilling crew to prevent kicks from occurring and, if they occurred, to avoid that they exceeded the kick tolerance.

850. Niko's design thus was based on a "risk trade-off", which Mr Wright described in the following terms:

> *It is common to drill development wells that cannot shut-in a full column of gas if they have a reasonable kick tolerance and believe their drilling crew can execute the necessary well control operations*

to avoid exceeding this kick tolerance. This was the risk trade-off made in the casing design setting depth.[675]

851. Two assumptions are essential in this "trade-off": the kick tolerance must be reasonable, and the drilling crew must be able to "execute the necessary well control operations". As just explained, the Claimant has not established that the Chattak 2 design had a "reasonable kick tolerance". The reliance on the capability of the drilling crew meant that any error of that crew causing the kick tolerance to be exceeded would be fatal.

852. The Tribunal concludes that, irrespective of the qualification of the crew, a design that relied on the crew's capability to master the necessary well control operations, in the circumstances of the Chattak 2 Well and despite the availability of safe alternatives, was excessively risky, failed to adequately take into account safety concerns, and thus was not in compliance with the reasonable operator standard. Niko's design breached its obligations under Article 26.2.4 of the JVA.

8.4.4 The qualification of the Drilling Team and the performance of the Wiper Trip

8.4.4.1 The Parties' positions

853. The Respondents assert that Niko "did not employ trained and competent crew";[676] and that the use of "an inadequately trained crew was a breach that caused the blowouts".[677] They list among Niko's failures to act diligently and in a workmanlike manner "its hiring a Chinese drill crew with no attention to training […]."[678] The Respondents also argue that certificates which the crew had were not adequate for the situation,[679] that "Niko did not even bother to ensure the drilling crew had basic general training"[680] and that Niko "did not train its crew in the situation that Niko had created for them". The Respondents referred to the situation created

[675] Wright 2, page 25.
[676] HT 2016.02.22, page 468.
[677] HT 2016.02.22, page 450.
[678] R-PHB, paragraph 117.
[679] HT 2016.02.22, pages 451-452,
[680] R-PHB, paragraph 127.

by Niko "by having set the casing where it did and then continued to drill into the reservoir of gas" and added:

> *… [I]t is BAPEX's position that having created that situation it had the obligation to prepare its crew for that situation and there is no evidence that it did.*[681]

854. The Respondents also argue that "[i]mportantly, Niko did not act diligently with regard to the wiper trip".[682] Relying on explanations of Dr Adams, they assert that "the problem was '[…] poor operation of the wiper trip'", and observe that Dr Adams and Mr Abel agreed "that the information available leads to the conclusion that the wiper trip precipitating the blowout was performed 'improperly'".[683] They also reproach Niko for "its absent and incomplete leadership, and, finally, its conduct of the wiper trip precipitating the blowout".[684]

855. The Claimant objects and argues that "[t]here is compelling evidence that the rig crew for Chattak 2 was appropriately trained".[685] Relying in particular on the First Enquiry Report, the Claimant argues that "… the matter of training did not raise any issues and indeed [the Committee] found that Niko and the personnel there had met all appropriate standards".[686] The Claimant argued:

> *There is nothing out of the ordinary in this case, Niko submits, that would put Niko on any additional notice or standard to do something more than the ordinary crew would do.*
>
> *[…]*
>
> *… there is nothing that this crew should have been expected to do differently or that Niko should have been expected to do differently.*[687]

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[681] HT 2016.02.22, page 449.
[682] R-PHB, paragraph 113.
[683] R-PHB, paragraph 146, relying on HT 2015.11.05 (Day 4), pages 906 – 908 and HT 2015.11.04 (Day 3), page 732.
[684] R-PHB, paragraph 117.
[685] C-PHB, paragraph 191.
[686] HT 2016.02.22, page 374.
[687] HT 2016.02.11, pages 375, lines 4 – 8 and 377, lines 5 – 8.

856. The Claimant also relies on a statement by Dr Adams and argues that "he did not fault the rig crew, and believed that the kick was such that it could not be contained by a typical rig crew".[688]

8.4.4.2 The qualifications of the Drilling Team and its members

857. As explained, the wiper trip was performed by several groups, in particular the drilling crew, the mud loggers and the drilling supervisor. Moreover, the Daily Drilling Reports of the drilling supervisor were addressed to Mr Mercier who thus must have had the possibility of intervening at least with respect to some more general decisions. The performance of the wiper trip was the result of the joint efforts of these different groups. At occasions, the Tribunal will refer to them collectively as the **Drilling Team** as distinct from but including the drilling crew; however, since in these arbitrations and the documents the expression "drilling crew" also was used in a broader sense, the terminology is not always consistent.

858. The Claimant presented the qualifications of Niko's Drilling Team in various submissions.[689] It asserted that "the rig crew for Chattak 2 was appropriately trained";[690] it referred to the "the relevant industry standard regarding crew training and certification" as identified by Mr Abel, viz. "IWCF [International Well Control Forum] certification (or equal) of key personnel"; and stated that there is "ample evidence in the record to show that Niko met the standard asserted by Mr Abel".[691]

859. In support, the Claimant relied on the resumes for the key drilling members from CPTDC, specifically the tool pusher and drilling manager, "showing that specific well-control training had been completed"; and the experience and training of Mr Zhang Zhigang, the drilling superintendent, including his "IADC well-control certification".[692]

860. The Claimant also quoted from the First Enquiry Report, which took account of interviews with Mr Mercier and Mr Zhang a few days after the

[688] C-PHB, paragraph 188, relying on Dr Adams' testimony at HT 2015.11.04 (Day 3), pages 576 – 577.
[689] Niko's Defence in Principle to New Allegations raised by BAPEX's Expert, 9 October 2015 (C-CD.6), paragraph 2; C-CD.7, paragraphs 47-49; and C-PHB, paragraphs 191 *et seq*.
[690] C-PHB, paragraph 191.
[691] C-PHB, paragraphs 192 and 193.
[692] C-PHB, paragraph 193, relying on CPTDC's Technical Proposal, Exhibit C-100, and the CV of Mr Zhang, Exhibit C-108.

blowout, as well as with three of the CPTDC personnel, viz. the project manager, the rig manager and the tool pusher.[693] The Report had a special section entitled "Experience, Qualification and Training of Drilling Crew". In this section, the Report identified "Well control (BOP) certificates" normally required in "any international drilling operation for the Drilling Supervisors, Tool Pushers and Drillers working on the brake". The Report then went on to state:

> *Mr. Zhang Zhigang, Drilling Supervisor of NIKO and Project Manager, Drilling Supervisor, Tool Pusher and Drillers of CPDTC, all of them hold IADC approved well-control (BOP) certificates. For roughnecks and roustabout this is not a requirement. The key personnel mentioned above were found reasonably experienced in drilling operation and supervisory work.*[694]

861. The Findings of the Report include the following passage concerning drilling personnel:

> *The key drilling personnel (technical) were reasonably experienced and held well-control (BOP) certificates but not all of them could communicate in English. JVA does not provide, except requiring to utilise qualified foreign nationals, anything with regard to their qualification, experience or training necessary for working as drilling crew.*[695]

862. The Tribunal notes that the Respondents have not contested the observations and conclusions of the First Enquiry Report; and they have not identified any specific qualifications, set out in that report, that they found missing with the drilling crew. As the drilling supervisor spoke both Chinese and English, the inability of some of the crew members to communicate in English, noted in the First Enquiry Report, does not seem to have given rise to problems in relation to the blowout. In any event, the Respondents do not flag this inability among the causes for the blowout on which they rely.

[693] Enquiry Report, Exhibit R-3, paragraph 3.3.
[694] Enquiry Report, Exhibit R-3, paragraph 4.4, quoted in C-PHB at paragraph 194.
[695] Enquiry Report, Exhibit R-3, paragraph 7.1(h).

863. **The Tribunal concludes** that the crew engaged by Niko for the Chattak 2 drilling met the requirements of certification and experience ordinarily expected of a drilling crew.

8.4.4.3 The adequacy of the crew's qualifications for the circumstances

864. The Respondents made sweeping assertions about the lack of qualification and training of Niko's drilling crew. The Tribunal has just explained that, in this generalized manner, the objection is not justified. The crew did have certificates and training as required for ordinary drilling operations.

865. Elsewhere in their submissions the Respondents have presented their objection in a more focused manner, arguing that the failure of the crew to handle the wiper trip and the kick properly was

> *… not the primary breach of the applicable standard: it was Niko's decision to proceed without proper planning and training for the circumstances. Niko either failed to gather the necessary information about formation pressure, or it failed to use the information to make a safe plan for handling a kick or for avoiding a kick while tripping. Considering the need for special handling and fast and flawless crew reaction in the shallow gas environment, Niko's failure to plan and train made the failed reaction inevitable.*[696]

866. The Respondents added:

> *Niko sent its crew into a very difficult and highly dangerous situation with no planning, no training and inadequate equipment.*
>
> […]
>
> *… if Niko was going to rely on kick tolerance, which was a serious error, it should have taken steps to properly plan and implement procedures based on the circumstances its drill crew would face. It did not. Niko's lack of proper planning left the crew completely unprepared.*[697]

[696] R-PHB, paragraph 148.
[697] R-PHB, paragraphs 139 and 143.

867. The Claimant concedes that no special training was given to the crew. As explained above, the Claimant relied on the ordinary qualifications and experience of the crew[698] that it had used already for the drilling in the Feni field. When asked at the November 2015 Hearing whether Niko or the team used "any well control training manual in Bangladesh", Mr Adolph responded: "No we did not train anyone in Bangladesh on drilling operations".[699]

868. At the February 2016 Hearing, the Claimant responded further to the Respondents' assertion concerning the absence of specific training by referring again to the observations in the First Enquiry Report, and specifically paragraphs 4.4 and 4.5 of the report, as quoted above. These passages do indeed state that the Enquiry Committee found that the drilling supervisor, tool pusher and drillers of CPDTC held "IADC approved well-control (BOP) certificates" and that "for safety of the well BOP drill was generally conducted while drilling flow check was regularly undertaken. Safety meetings were held before major operations like casing running in, pressure test of BOP and other equipment."[700] The Claimant insisted that the Enquiry Committee "found the that Niko and the personnel there had met all appropriate standards".

869. The Tribunal notes that, despite the observations about the experience and certification of the "key drilling personnel (technical)", the First Enquiry Report attributed the kick to swabbing, considered the casing design as "the result of both technical lapse and gross negligence" and found that "the operational steps undertaken following the kick could not be termed satisfactory".[701] Moreover, the safety drills and other measures referenced by the Report were related to the BOP and, as explained, the operation of the BOP was unsuitable for killing the kick and indeed when the BOP was shut, the gas broached the wellbore and caused the underground blowout with its dramatic effects.

870. At the February 2016 Hearing, the Tribunal noted the Claimant's reliance on passages from the First Enquiry Report and put the issue squarely to counsel:

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[698] C-PHB, paragraphs 191 to 197, and above Sections 8.4.4.1 and 8.4.4.2.
[699] HT 2015.11.05 (Day 4), page 952.
[700] First Enquiry Report, Exhibit R-3, quoted at HT 2016.02.22, pages 373 and 374.
[701] First Enquiry Report, Exhibit R-3, paragraphs 7.1(c) and (e).

… do we have any evidence that Niko provided special training, advice, directions to the crew to face this particular risk when tripping. The passage you read to us did not mention tripping and that is why I am asking.

MR TARNOWSKY: No and the only comment I would make in that regard is that as the evidence indicates and as the inquiry committee noted and as was submitted at the hearing of the evidence that was referred to in the brief, all of the relevant personnel had IADC well control certificates. These are people that are trained in the ordinary course of their employment to be prepared to deal with well control, tripping is one of the incidents that can give rise to well control. It is covered by their training.

THE PRESIDENT: Nothing special in a function of the design of this particular well?

MR TARNOWSKY: There is no evidence in this on Chattak 2 that any additional precautions were undertaken by Niko with respect to that beyond the ordinary.[702]

871. This position concerning special training was in line with the Claimant's firm position according to which Chattak 2 was an ordinary well that did not require any precautions beyond those applied by a normally qualified drilling crew. At the same time, the Claimant asserted that "a typical rig crew could not be expected to possess the level of knowledge or skill necessary to execute the type of well-control procedures that might have resulted in regaining control of the well. In short, they performed as could be reasonably expected of them, but were unable to contain the blowout."[703]

872. At the February 2016 Hearing, the Tribunal asked the Claimant specifically whether it accepted that Niko's design of the well, low casing and tripping through a shallow reservoir, required increased precautions. The Claimant firmly denied this proposition:

[702] HT 2016.02.22, page 378, line 5 to page 379, line 1.
[703] C-PHB, paragraph 185.

…[I]f the casing does not go to the marine shale, and you rely on a BOP and a kick tolerance, would that not induce the operator to higher precautions in the manner in which tripping is operated and, in particular, that you would then have to make particular care that kicks are avoided or remain within the kick tolerance?

MR TARNOWSKY: There is nothing out of the ordinary in this case, Niko submits, that would put Niko on any additional notice or standard to do something more than the ordinary crew would do.[704]

873. The Tribunal insisted, referring to a "well which is more exposed to risk than compared to a well that has casing to marine shale". The Claimant responded by explaining that design based on kick tolerance was widely used and that "a 20-barrel kick tolerance or even a 10-barrel kick tolerance would be ordinary and the crew would know what the programmed kick tolerance is, so their conduct of all operations in the well is based on those understandings." This response is not supported by the evidence. As explained above, there is no evidence that the crew was informed about a specific kick tolerance value which it had to meet; nor any evidence that the kick tolerance was even calculated by the well designer. Addressing more specifically the Tribunal's question, the Claimant stated:

The point that Niko makes and response to your question is what you are interpreting into all of this is Niko or BAPEX's suggestion that because you had a heightened risk of shallow gas – that is BAPEX's case – because you had a heightened risk of shallow gas, that greater effort and greater precaution should have been taken in planning a trip.

Mr Wright's evidence was that this is a normal procedure, the kick tolerance was reasonable for what the present, the known circumstances, the reasonably expected circumstances were and there is nothing that this crew should have been expected to do differently or that Niko should have been expected to do differently.[705]

[704] HT 2016.02.22, page 374, line 22 to page375, line 8.
[705] HT 2016.02.22, page 376, line 18 to page 377, line 8.

874. The Tribunal did not find this answer responsive. It clarified again that its concern was not the shallow gas case generally, as argued by BAPEX, but the specificities of Niko's well design. It asked again:

> *… if you have the well protected only halfway through the precautions for tripping would not they have to be higher than if you have a fully protected well?*
>
> *MR TARNOWSKY: My answer to that is on the evidence in the record no.*[706]

875. **The Tribunal concludes** that Niko did not take adequate precautions to prepare the drilling crew to face the risks caused by the chosen design and to ensure that it was able to control the well especially when tripping through the targeted shallow reservoir.

8.4.4.4 The responsibility for the origin of the kick

876. The Respondents identified a number of circumstances in Niko's performance of the wiper trip, including the blowout control, with respect to which they questioned compliance with the prudent operator standard under the JVA. The Tribunal will now examine these circumstances, considering in particular the criticism raised by the Respondents and their expert and the comments by the Claimant and Mr Wright.

877. The Respondents stated that "**the decision to take the wiper trip** might itself have been imprudent". They do, however, not insist on this aspect, adding that "that decision is not the heart of the problem". For the Respondents the problem was that "Niko undertook the wiper trip after penetrating a shallow gas reservoir without having taken standard, prudent actions and precautions to prevent a blowout during the trip".[707]

878. Mr Abel explained that performing a wiper trip is a normal operation to clean the hole that can become necessary for a variety of reasons. The personnel drilling the well will determine when such a wiper trip becomes

[706] HT 2016.02.22, pages 377, lines 20-25.
[707] R-PHB, paragraph 98.

necessary.[708] There is no evidence indicating why it was decided to perform a wiper trip at 807m.

879. Based on the evidence, the Tribunal notes, however, that during the drilling to the final target depth at 1760m, a wiper trip at some stage most likely would have been necessary. A wiper trip starting from a lower level still would have had to traverse Sands 1 and 2. There is no indication on record that such a wiper trip would have posed less risk than the one actually performed. While the decision of commencing the wiper trip at 807m rather than at a lower location remains unexplained and may have been questionable, the Tribunal does not believe that the timing of the wiper trip passing through the shallow reservoir of Sands 1 and 2 or the depth at which it was initiated was of a substantive consequence for the blowout.

880. Concerning the **performance of the wiper trip itself**, the Tribunal's examination above has shown a number of circumstances that were or may have been critical for the dramatic event in the evening of 7 January 2005 and the following night: a kick occurred, gas from the reservoir entered the borehole and remained undetected until it had developed into an underground blowout; the action taken by the crew did not kill the blowout and may have aggravated its consequences. The Tribunal will consider the conduct of the crew and Parties' argument in this respect for each of these steps.

881. **The responsibility for the kick**: The blowout had its origin in a kick caused by gas from the shallow reservoir of Sands 1 and 2. The differences of opinion concerning the cause of the kick and the careful balance that the crew must keep in order to avoid a kick have been discussed above in Section 8.3.3. The Tribunal concluded there that, irrespective of the precise mechanism that caused the kick, the possible causes are events that occur regularly during tripping and that a competent crew must deal with them by keeping an adequate overbalance. If that task was too complex for an ordinary qualified team as the one engaged for the Chattak 2 Well, then Niko chose the wrong team. If the task was not too complex, then Niko's Drilling Team did not perform its task adequately. In both cases, Niko failed to meet the prudent operator standard under the JVA.

[708] HT 2015.11.02 (Day 1), pages 203 – 204.

882. The tripping operation was particularly risky because it passed through sands containing gas. Based on the evidence, the crew failed to prevent the entry of gas into the wellbore in particular by providing the appropriate mud weight to ensure the necessary overbalance.

883. Among the deficiencies in Niko's performance of the wiper trip the Respondents identified two omissions related to the **drilling mud** which they consider, in themselves, a breach of the standard that Niko had to observe. They assert:

> *Niko's failure to circulate while pumping and properly monitor well volumes breach any standard for acceptable operations. In addition, it was not diligent to conduct a wiper trip without pumping "a slug".*[709]

884. Concerning the **heavy slug**, one of the precautions which, in the opinion of the Respondents, Niko should have taken, the Respondents rely on opinions expressed by Dr Adams and by Mr Abel. They quote Dr Adams:

> *The drill crew did not follow the common practice of pumping a heavy slug of mud (a specific volume of mud where the density has been increased) prior to the tripping process. Without a slug, the drill string would have pulled wet. After each wet stand was unscrewed, the volume of mud inside that stand would have drained out of the pipe to the rig floor. This circumstance made it impossible to accurately account for fluid volumes while tripping. Losses or gains could not have been properly monitored by the drill crew. A modest benefit from pumping a slug is that it would have provided heavier mud at the bottom of the well to assist in minimizing the adverse effect of swabbing.*[710]

885. At the November 2015 Hearing, Mr Abel had expanded his observations and explained that "the additional density [of the heavy slug] would increase the hydrostatic slightly which would help the situation but it is not a lot. It is a small amount." He added that slug cleaned up the floor of the hole and thereby assisted in the interpretation of the trip tank,

[709] R-PHB, paragraph 113.
[710] Adams, page 31, quoted at R-PHB, paragraph 113, the emphasis was added by the Respondents.

improving the "ability to understand the in and out of the hole naturally".[711]

886. Mr Wright responded to Mr Abel at the same hearing: "I agree pretty much with what he says but there are a few nuances." He pointed out that "when you pump a slug you need to be careful with the volume", as it "could increase your swab pressure", causing "slightly more under-balance." He also said that the "other thing that is a little bit tricky is that when you first pump the slug it free falls, so you pump it for a little bit and you stop the pumps. Then it falls until it finds its equilibrium"; as a result, according to Mr Wright, "you cannot measure exactly how much is supposed to come back into the trip tank", thus creating some uncertainty in the measurement of the mud quantities. He concluded:

> *So if you want to be really careful and you wanted to be sure what is going on and I am making this my trip because I am trying to figure out is my mud weight the right density then I would not pump a slug. I would do it just the way you do it.*[712]

887. Relying on Mr Wright's explanations, the Claimant argued at the February 2016 Hearing: "the evidence reflects that pumping a slug, which is a heavy portion of mud into the wellbore can actually increase the risk of swabbing, not decrease it".[713]

888. **The Tribunal** notes that the differences between the experts, in the words of Mr Wright, are "nuances". According to Mr Abel, increased hydrostatic pressure resulting from pumping mud is "not a lot" and the contrary effect, presented by Mr Wright, could cause "slightly more under-balance".

889. The Tribunal concludes that usefulness of pumping the heavy slug before starting the wiper trip is contested. Even if it has a positive effect in avoiding a kick, such effect would be small. The Tribunal therefore does not attribute critical importance to the omission of this alleged precaution.

890. The situation is quite different with respect to the other precaution on which the Respondents rely. The Respondents attribute the origin of the

[711] HT 2015.11.05 (Day 4), pages 901 – 902.
[712] HT 2015.11.05 (Day 4) pages 902-904.
[713] HT 2016.02.22, page 498.

kick to Niko's failure to **pump mud while tripping**.[714] They argue that this failure is a "evidence that [the crew was] not properly prepared to handle this situation".[715]

891. In support of their position, the Respondents refer to the Technical Proposal of CPTDC, the company that provided the drilling team, and to the identification of "HSE Critical Task Allocation" which stated for the "Drillers": "Pump out of hole, continue to pump whilst pulling out of hole to minimise swabbing tendency when necessary."[716]

892. The Respondents also rely on Mr Wright's statement:

> *… and pumping while you pull out and that would reduce the swabbing.*
>
> *The company man would know that, so if he chose to pull out then he has got to have a reason why he is doing that.*[717]

893. Mr Wright explained the usefulness of the pumping mud while tripping:

> *… you do not have the swabbing pressure because you are pumping down out of the bit and that overrides any swabbing pressure.*[718]

894. When asked whether such pumping should be done, Mr Wright responded:

> *Well, it depends on the purpose. If the purpose was to make a proper wiper trip then I would say, yes, that should be done.*[719]

895. The usefulness of pumping while tripping seems readily apparent and has not been contested. There was no explanation as to why the "company man" decided not to follow that practice while performing the wiper trip.

896. **The Tribunal** concludes that by failing to pump while performing the wiper trip Niko omitted a precaution which a prudent operator can be expected

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[714] R-PHB, paragraph 145.
[715] HT 2016.02.22, page 450.
[716] CPTDC Technical Proposal, Exhibit C-100, pdf page 189, quoted at R-PHB, paragraph 54.
[717] HT 2015.11.03 (Day 2), page 450, lines 4 – 8, relied upon by the Respondent in R-PHB, paragraph 145.
[718] HT 2015.11.05 (Day 4), page 887.
[719] HT 2015.11.05 (Day 4), page 888.

to take. This failure may well have been a major reason for the kick to occur.

897. In any event, given the design adopted by Niko and the speed with which a kick could develop into a blowout, the first precaution was to avoid any kick. The crew was therefore required to perform the wiper trip in a manner that avoided a kick. It failed to do so.

8.4.4.5 The failed kick detection

898. Concerning **kick detection**, the Tribunal notes that, when the kick occurred, it was important to react quickly and avoid that it grew into a blowout. In Section 8.3.4 above the Tribunal has dealt with the development of the small kick at the origin, moving like a "bubble" through the wellbore until it manifested itself as the major surge of gas and mud at 19:50h on 7 January 2005. It was only at that moment that, according to the report of the crew, a "sudden trip in the trip tank" was observed. There are no indications that the crew noticed any earlier signs.

899. The Respondents argues that the failure of the crew to detect the kick in time was a sign that the crew "did not meet the standard of generally accepted industry practice".[720] They quoted from the Indian training manual:

> *The successful detection and handling of threatened blowouts ('kick') is a matter of utmost importance to any company in the business of oil and gas exploration and production.*[721]

900. The Claimant insists on the absence of any "particular warning signs […] that should have alerted a reasonable rig crew to the kick any earlier".[722] It asserts:

> *The available evidence, including the assessments of Mr Wright and Dr Adams, strongly indicates that there was nothing that occurred that would have alerted the crew to the fact that a kick was occurring*

[720] R-PHB, paragraph 147.
[721] IDT, Well Control Training Manual, page 11, Chapter 1, section 1.0, quoted in R-PHB, paragraph 45.
[722] C-PHB, paragraph 187.

and, by the time it did become apparent, it was not possible for the crew to prevent the blowout from occurring.[723]

901. The Tribunal has pointed out that this is not quite correct. The crew had noted that they "were losing mud (total loss for 12 stands was 2.48 bbl)" and the trip tank had shown unusual behaviour, as reflected in the small piece of the trip tank record that was salvaged. It cannot be known whether there were other evident signs that should have warned the crew about the developing kick. If they occurred, the crew does not seem to have noticed them, since they did not record their occurrence.

902. As to the signs that were recorded, the experts in these arbitrations had difficulties in interpreting them. They did however agree that they were signs of something "unusual", as Mr Wright described it. Dr Adams stated that he would have stopped to investigate what was causing the unusual loss;[724] and Mr Wright said in such a situation he would "want to know what is going on". The crew did not interrupt the wiper trip, and there are no indications that it even tried to find out what was going on.

903. The available evidence does not allow a conclusion that the crew, had it acted as Dr Adams and Mr Wright would have done, could have detected the kick and killed it in time. The Tribunal, therefore, cannot fault the crew for having failed to detect the kick early; it can, however, fault it for not having taken the signs seriously and failed to investigate immediately "what is going on".

8.4.4.6 The failed control of kick and blowout

904. Once the kick had manifested itself as a major surge, the crew took various **actions to control the kick and the blowout**. The detailed descriptions above in Section 8.3.5 have shown that these actions not only failed to succeed but also that they were at least in part unsuitable and even counterproductive.

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[723] C-PHB, paragraph 27.

[724] R-PHB, paragraph 145, relying on HT 2015.11.03 (Day 2), pages 450, 443 – 444, Report Adams, pages 30-31 and HT 2015.11. 05 (Day 4) pages 923 – 924. The Tribunal is aware of the Claimant's objection to the reliance on Mr Abel's opinion, as expressed *e.g.* at February 2016 Hearing, HT 2016.02.21, pages 11 – 15 and elsewhere. Its conclusions are not based on an acceptance of Mr Abel's opinion but on its own analysis of the argument and evidence presented by the Parties.

905. By the time the crew took action, some 42 bbls of mud had already been unloaded in the trip tank and the surroundings, suggesting that the gas in the wellbore had reached a similar volume. This was far above the 20 bbls kick tolerance assumed by Mr Wright's calculations. There is no information about the kick tolerance value that had been communicated to the crew, if it was communicated at all; but it would seem quite unlikely that this value was anywhere near the 42 bbls that had entered the wellbore. In other words, before the crew took any action, the kick tolerance in the well design had been exceeded by far.

906. The first action taken by the crew was to close the BOP. As Mr Wright explained, that initiative would have been safe and proper if the strength of the formation below the casing shoe had been 18 ppg, measured by the LOT of 6 January 2005; but the formation was much weaker. When the crew closed the BOP, as it had been trained to do, it caused an underground blowout. The gas was not contained in the wellbore, as the crew may have expected, but broached the formation.

907. A critically important aspect of the well control operations by the Niko crew was that the crew realized only relatively late or not at all that it was faced with an underground blowout and that the gas had broached the wellbore below the casing shoe. The crew performed what Mr Wright described as "what the crew is trained to do" and not what the circumstances required.

908. What the crew was trained to do, according to Mr Wright, was to "shut the well in and try to circulate the kick out"; but in the given situation, "using this procedure will not work". What would have been required was, in the words of Mr Wright, "a dynamic kill" and the measures described by him and by Dr Adams:

> *An underground blowout like this takes a dynamic kill approach to be successful. A typical rig crew including the company representative would not have experience in these techniques and would not know how to proceed.*[725]

[725] Wright 1, page 8.

909. Relying on the explanations of Mr Wright and the other experts, the Claimant confirms: the crew "performed as could be reasonably expected of them, but were unable to contain the blowout."[726]

910. In any event, as the First Enquiry Report concluded: "the operational steps undertaken following the kick could not be termed satisfactory."[727]

8.4.4.7 Conclusion on the crew's performance and Niko's responsibility for it

911. Niko had successfully drilled the Feni wells and moved with the same rig and crew to drill Chattak 2. The crew was suitably qualified and experienced for what may be called "ordinary" operations, *i.e.* drilling without any special risk factors.

912. In Chattak 2, however, the drilling targeted a shallow reservoir and Niko had designed the well with no protection of the borehole below the casing shoe at 305m. Niko's design, relying on kick tolerance, required that the Drilling Team would keep the well balanced, avoid a kick from the shallow reservoir and, if a kick occurred, would detect it early and circulate it out and, as the last resort, would kill a blowout that may have developed. The situation was aggravated by the failure of the designer to specify the value of the kick tolerance in the Well Proposal or any other design documents that have been produced in the arbitrations.

913. The crew succeeded in none of the tasks the well design required. It may well be that, for these failures, or at least for the majority of them, the crew should not be blamed, given the qualifications and experience for which they were recruited. The responsibility rests squarely on Niko, which chose a risky design and failed to ensure that it had an exceptionally qualified drilling crew that was able to face the "operational uncertainty"[728] and the resulting risks Niko had created by its well design.

914. **The Tribunal concludes** that the drilling crew was not properly prepared for dealing with the risk that Niko had created by its well design. The resulting failure of the drilling crew to control the well caused the blowout. Niko's failure to ensure the safety of the drilling operation cannot be

[726] C-PHB, paragraph 185.
[727] Enquiry Report, Exhibit R-3, paragraph 7.1(c).
[728] Wright 2, page 7.

reconciled with the prudent operator standard. Niko breached its obligation under the JVA.

9. THE SECOND BLOWOUT (THE RELIEF WELL CHATTAK 2A)

915. As stated above, after the first blowout on 7/8 January 2005, Niko first consulted Safety Boss Inc., which concluded that sub-surface intervention or a relief well was required to deal with the blowout.

916. Niko engaged GSM Consulting Petroleum Engineers (GSM) and Robert Grace to drill the relief well. This well also, on 24 June 2005, suffered a blowout. The Parties disagree about the scope of Niko's responsibilities as Operator with respect to the relief operations: the Claimant argues that this responsibility was limited to selecting and engaging a qualified specialist; the Respondents argue that the relief operations were part of Niko's responsibilities as Operator and that it was fully liable for their performance; they also argue that in this performance Niko failed to meet its obligations under the JVA.

917. The Parties also disagree about the suitability of Niko's choice of the relief well specialist, the choice of GSM and Robert Grace, and about the adequacy of the relief well drilling.

918. Finally, the Respondents also argue that the "blowout of Chattak 1 caused the blowout of Chattak 2A and therefore Niko is liable for the Chattak 2A blowout whether or not there were any further breaches in Chattak 2A operations."

9.1 The facts relevant for the drilling of Chattak 2A and the blowout

919. As explained above, immediately after the first blowout, Niko engaged Safety Boss, a Canadian well control and safety consultant who mobilised to the site with firefighting equipment. It then concluded that sub-surface action was required to kill the blowout by means of a relief well. Niko then engaged Mr Robert Grace and his company GSM Consulting Petroleum Engineers.

920. At the November 2015 Hearing Mr Hornaday described in further detail how Niko went about to find Mr Grace and engage him.[729] He explained that Niko first contacted Safety Boss, a Canadian specialist who had been engaged in the well blowout control "in Kuwait after the war". Mr Hornaday

[729] The following account summarises Mr Hornaday's testimony at HT 2015.11.06 (Day 5) pages 1104 – 1109.

stated "it is an emergency so obviously a normal tendering process or whatever" could not reasonably be undertaken.

921. Safety Boss was well known to Niko and available. Niko mobilised Safety Boss who came with its firefighting equipment to the site in Bangladesh, inspected the problem and concluded that controlling the well required drilling a relief well. Safety Boss was not qualified for such an operation and recommended Mr Grace.

> *So they said there was only a few people in the world, you know, really consistent with what we had been told in the previous days, there is only a handful of people in the world that have this type of experience. We did not. They recommended Mr Grace and actually it turned out Mr Grace was in Canada at the time a few hundred kilometres north of Calgary working – just finishing up a relief well there, so we had that recommendation.*

922. Mr Hornaday then met Mr Grace to ensure his availability and reviewed his resume. In parallel, Niko's CFO consulted the insurance company which agreed to the engagement of Mr Grace. When consulting his resume Mr Hornaday noted experience in relief wells. When asked whether he checked what kind of blowouts Mr Grace had been controlling, Mr Hornaday responded:

> *My recollection of the review of his resume is his experience was extensive. He had worked in many countries in many – you know, similar to the gentlemen who are here – extensive experience.*

923. Niko did not consider any other candidates for the task: "We were satisfied that Mr Grace had the capabilities and it was an urgent situation and we engaged him."

924. When Mr Grace arrived at the site, he prepared a Relief Well Programme which was submitted to BAPEX on 13 February 2005. Niko's cover letter requested a meeting on 15 February 2005, suggesting that Petrobangla also attend.[730] The proposal was approved by the Joint Management Committee on 22 February 2005, as recorded in Minutes reflecting subsequent discussions. The suggestion of drilling an observation well was

[730] Cover letter produced as Exhibit C-28.

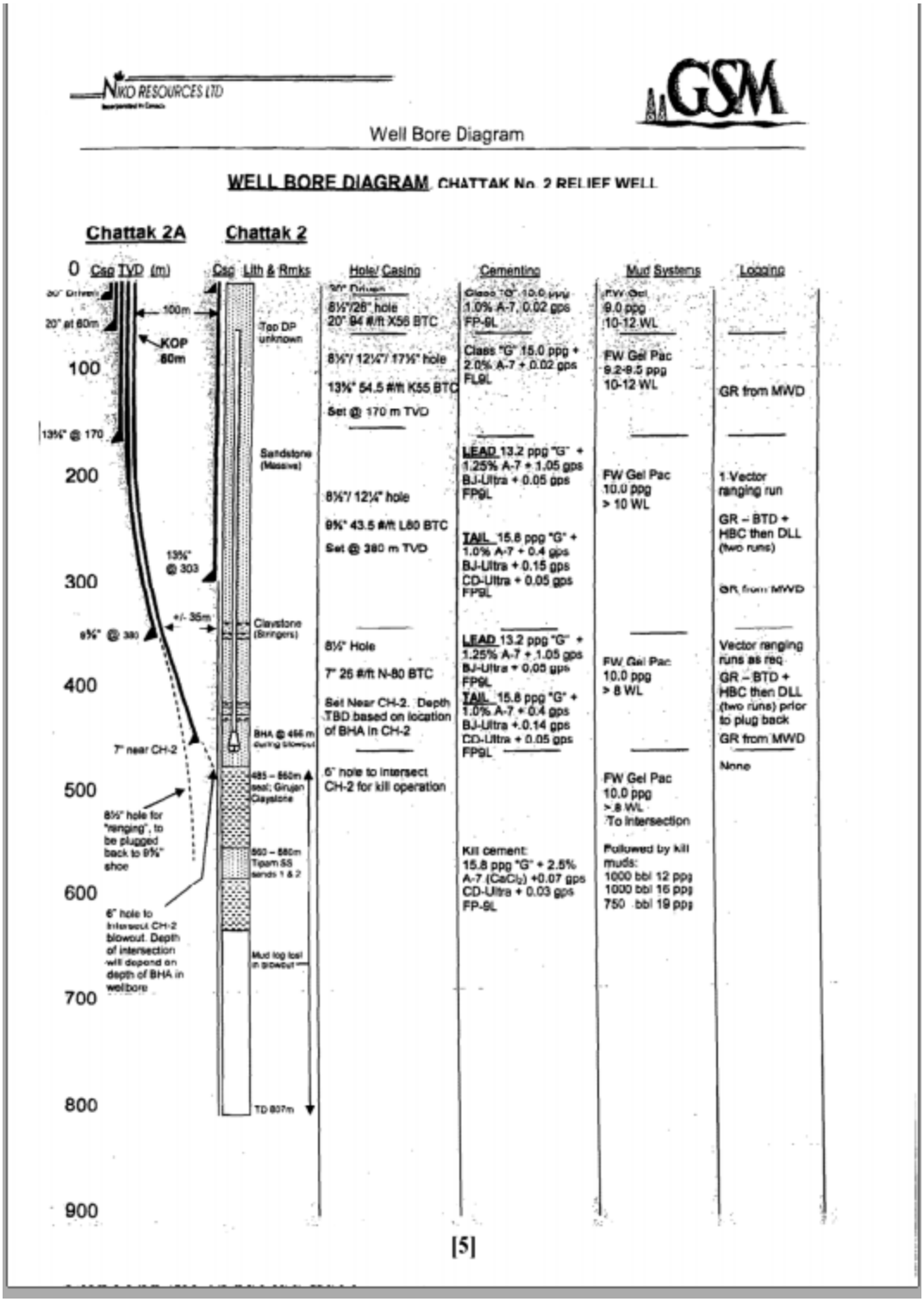
considered and, following comments from Mr Grace, considered as not required.

925. The Relief Well Programme summarised the proposed relief operation in the following terms:

> *The Chattak 2A Relief Well Surface location is 100m west of the blowout surface location. The relief well is designed to intersect the Chattak 2 wellbore as deep as possible and to kill the well with heavy mud and cement slurries. The actual depth of intersection will depend conditions encountered while drilling. If the BHA is still at 466m the intersection will be made there. If it has fallen to bottom the intersection will be made at 560m, the depth of the reservoir top. Four hundred sixty-six meters (1529 feet) is used as the intersection depth in the program for reasons of consistency.*[731]

926. The operation was presented in the following drawing and table.[732]

[731] Chattak 2A Relief Well Plan and Drilling Procedure Exhibit C-86, page 4
[732] Chattak 2A Relief Well Plan and Drilling Procedure Exhibit C-86, page 5.



[5]

927. In addition to engaging Mr Grace, Niko contracted a specialised drilling company for the relief operation. Mr Adolf stated:

We procured the services of the best contractors available to execute the relief well. Niko retained Parker Drilling Inc., one of the world's leading drilling companies, to supply an experienced drilling crew and rig. Precision Drilling, another market-leading service provider, was retained to provide expert directional drilling services. BJ Services was retained to perform cementing services (as they had been on Chattak 2), and pumping services.[733]

928. In order to allow the relief well operator to locate its target, the Chattak 2 Well, Mr Grace employed an electro-magnetic ranging tool, a proprietary equipment developed and provided by Vector Magnetics Inc. The tool relies on magnetic signals to determine the distance between and relative direction of the relief well and the blowout well. Mr Grace explained his choice of Vector Magnetics as follows:

This firm has been involved in virtually all of the relief well operations in the industry world wide since 1981. The founder of Vector Magnetics invented this technology in the early 1980's. Together with founder of GSM, this technology was perfected on a blowout in 1981. Since that time, Vector Magnetics has continued since 1981 to improve its technology and services and has provided that service world wide.[734]

929. Niko also procured special equipment and brought it to the site. Mr Adolph gives the following example:

… Mr. Grace requested that Niko procure certain equipment, including a large mud separator, which he had sourced in Oklahoma. […] Niko arranged for the separator (along with all of its associated equipment) to be transported to Bangladesh by an Antonov aircraft, which was the only way of bringing it to the site reasonably quickly, so as not to delay the drilling of the relief well. The route it took included stops for fuel in Newfoundland and Russia. The transportation alone cost Niko approximately USD one million.[735]

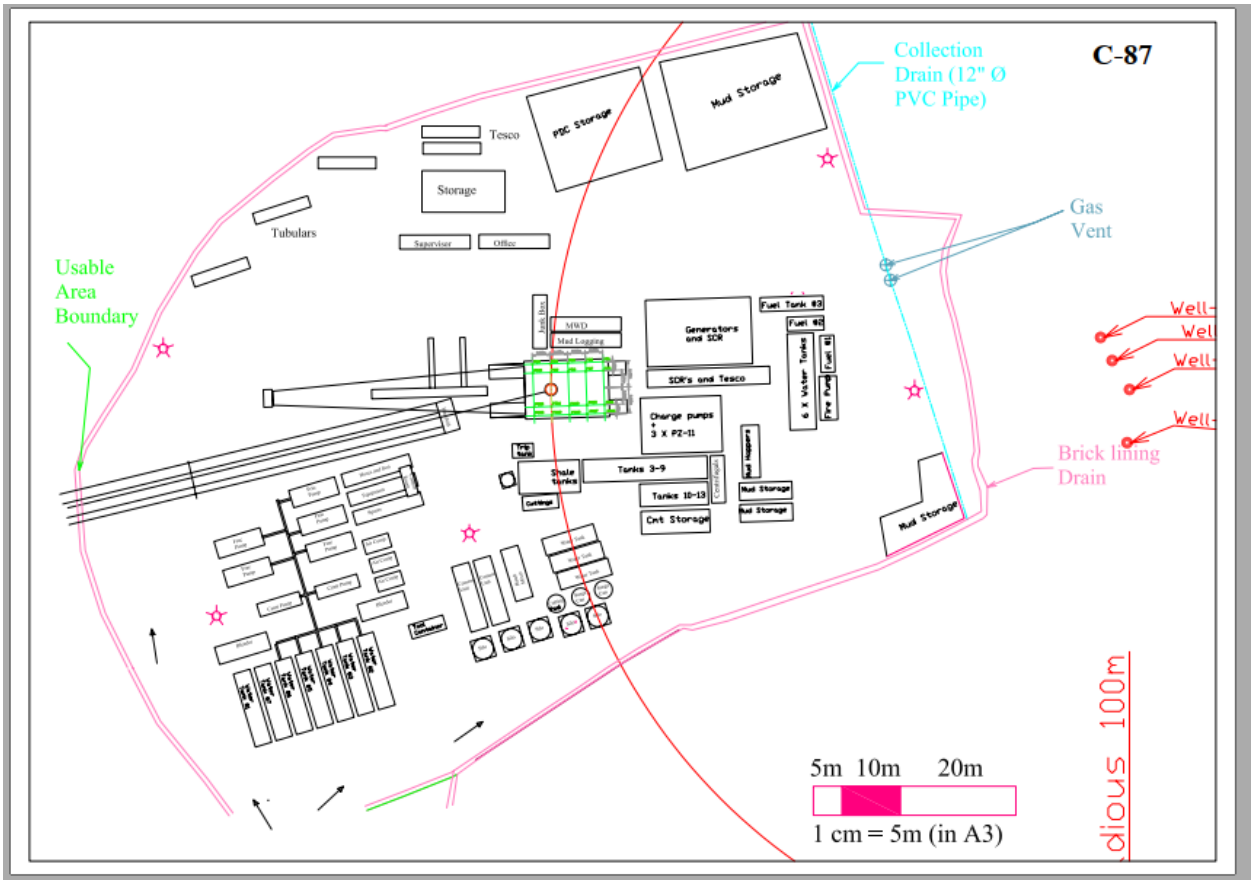
[733] WS Adolph, paragraph 62.
[734] GSM Report on the Chattak 2A relief well, 4 July 2005, Exhibit C-45, page 1.
[735] WS Adolph, paragraph 63.

930. The preparation for the drilling of the relief well required extensive preparation of the site, including the creation of a drill pad and dredging operations, as well as various installations. In order to deal with the risk of gas below the drill pad location, Niko built what Mr Adolph described as

> *… a unique system of pipes and fans beneath the pad to collect and divert subsurface gas away from it. This exercise was, to the best of my knowledge at the time, unprecedented anywhere in the world and entailed procuring the services of technical experts to design and construct the collection and diversion system. The cost was substantial compared to a normal drilling location construction and the installation was time-consuming. However, to my knowledge, it was highly effective in diverting subsurface gas away from the drill pad and in protecting the integrity of the location and the safety of the rig crew.*[736]

931. These installations are represented in the following plan:[737]

[736] WS Adoph, paragraph 74.
[737] Chattak 2A Final Rig Layout, Exhibit C-87, also reproduced in Wright 1, page 51 as Figure 4-20: Chattak 2A Site Map.



932. Drilling of the Relief Well 2A started on 30 May 2005. Mr Grace described the ranging operations effected to locate the blowout well:

> *The first ranging run was conducted at 301m (988 ft) TVD and the blowout could not be detected. At that point, the blowout should have been 41 m (135 ft) east of the relief well according to the geometry of both wells.*
>
> *The second ranging run was conducted at 355 m (1165 ft) MD, 343 m (1125 ft) TVD. The interpretation was that the blowout well appeared to be less than 28 m (92 ft) away. According to the geometry, the relief well should have been approximately 30m (97 ft) from the blowout. However, the data was not good enough to make a definitive. determination.*

Accordingly, drilling continued to 390 m (1280 ft) MD, 377 m (1237 ft) TVD. At that depth the blowout should have been 25 m (83 ft) from the relief well, if the geometry was correct.[738]

933. GSM analysed the data and decided to continue drilling and to continue with a third and a fourth ranging run, the latter at 420m. GSM proceeded with further analysing the data. It also updated the contingency plan.

934. The blowout at the Chattak 2A Well occurred on 24 June 2005 at 3 am at 422.5m depth. The blowout is attributed to a premature and inadvertent communication of the relief well with the blowout well. The GSM report provides a detailed account of the events on 23 and 24 June 2005. The following excepts may be quoted:

> *Drilling continued routinely and without incident to the target depth of 436 m (1430 ft) TVD, 422.5 m (1386 ft) TVD. The directional drillers had finished that section of the hole and were merely working the pipe in preparation for the next ranging run. The hole went on a sudden vacuum and within seconds the well kicked. The contingency plans were executed flawlessly and the flow was turned through the separator.*
>
> *It was immediately realized that the relief well had prematurely and inadvertently communicated with the blowout. Further, it was immediately realized that the relief well had received the full force and flow from the original well. It was 0300 hours on Friday, June 24, 2005, when this event occurred.*
>
> *[…]*
>
> *Within minutes after the initial event, it was apparent that the well was producing large volumes of sand and it was anticipated that the sand would be devastating to the well control equipment. Within minutes, the first leaks due to flow cutting were observed and repaired. Numerous alternatives were attempted to mitigate the*

[738] GSM Report on the Chattak 2A relief well, 4 July 2005, Exhibit C-45, page 2.

erosion problem. However, the erosion continued at an unmerciful rate and it was not possible to continue to make the necessary repairs.[739]

935. The GSM Report continues by describing various contingency measures that were taken to control the blowout, including pumping water to avoid ignition of the escaping gas. The final steps are described as follows:

> *The pumping operation prevented ignition. However, during the morning, the wind changed and the gas cloud drifted over the unmanned pump truck. It then became impossible to refuel the pump truck. At about 1300 hours, the pump truck ran out of fuel. Without water, the flow soon ignited. The fire was aimed to the south. Since the southside of the derrick was the hottest, the rig fell to the south at about 1430 hours.*
>
> *There were no injuries and there was minimal damage to the equipment on location. At this time, the derrick, substructure, and draw works are all that have been lost.*[740]

936. For the subsequent events, including the successful completion of a further relief well and Niko's conclusion about its success, reference is made again to the general account of the facts above in Section 5.

9.2 The scope of Niko's responsibility with respect to the Chattak 2A blowout

937. **The Claimant** argues that drilling relief wells is a highly specialised activity which is performed by specialist contractors. Relying on the explanations of the experts, the Claimant argues that "almost every operator, including the massive 'super-major' oil and gas companies, would seek outside specialist relief well expertise in the event of a blowout, rather than attempting to manage the situation itself"; it asserts that:

[739] GSM Report on the Chattak 2A relief well, 4 July 2005, Exhibit C-45, pages 6 – 7.
[740] GSM Report on the Chattak 2A relief well, 4 July 2005, Exhibit C-45, page 9.

> *… it may fairly be said that in the event of a blowout, hiring a specialist consultant for relief well operations is a generally accepted international standard for an operator.*[741]

938. Asserting that it engaged one of the few specialists in the field who was highly qualified, the Claimant submits that

> *… the selection and engagement of an appropriately qualified specialist represents the totality of Niko's obligation under the JVA regarding the conduct of operations for Chattak 2A.*[742]

939. This position was confirmed at the February 2016 Hearing. The Claimant added:

> *The drilling of relief wells was not the service that was contracted for in the Joint Venture Agreement.*[743]

940. **The Respondents** object and argue that Articles 26.2.4 and 27.1 of the JVA obligated Niko to drill a relief well.[744] In their view, GSM was a subcontractor to Niko for which Niko is responsible like for any other subcontractor:

> *The general rule of contract law is that a main contractor who subcontracts part of the works (even with the consent of the contracting partner) does not thereby alter its obligations to the contracting partner. The main contractor will remain liable for any defects or delay in carrying out the work in the same way and to the same extent as if it had performed the work itself.*[745]

941. They stated:

> *The obligation under the contract is to hire the competent subcontractor but Niko's obligation under the Joint Venture Agreement does not end to having a competent subcontractor, even if the subcontractor is carrying out special duties, the temporal cut-off of*

[741] C-PHB, paragraph 204.
[742] C-PHB, paragraph 214.
[743] HT 2016.02.22, page 500, lines 11–13.
[744] HT 2016.02.21, page 261.
[745] R-PHB, paragraph 165.

> *Niko's duties does not occur because they have hired a subcontractor. If they have the obligation under the contract under Article 27.1 to prevent environmental harm, their obligations are not discharged simply by hiring a subcontractor. Their obligations continue and Mr Grace is not any different from any other subcontractor under any contract where there is a continuing obligation.*[746]

942. As to the Claimant's argument that the drilling of relief wells was not a contract activity under the JVA, given "the difference between whether or not you are carrying out the object of the contract or not", the Respondents replied thus:

> *There is no authority whatsoever in the record for that proposition. The general proposition for which there is authority in the record is that a contractor is liable for the actions of his subcontractors subcontracted to carry out some obligation that he had under the contract. There is nothing, there is no authority for distinguishing between Mr Grace, for instance and the Chinese company. There is no legal authority in the record that creates that distinction and counsel for Claimant has cited none.*[747]

943. **The Tribunal** notes that there is agreement between the Parties that, in case of a blowout, Niko as the Operator had to engage a competent specialist to deal with the blowout. The standard of conduct under Article 26.2.4 of the JVA applies to the performance of this obligation. In the selection and engagement of the relief well specialist Niko had to act as a responsible and prudent operator, as discussed above in Section 7.

944. The difference between the Parties concern the question whether the relief operation is part of the contractual obligations of Niko which Niko performed through a subcontractor for which it remains liable as if it performed the activity itself.

945. The Tribunal accepts that Niko was responsible for the work it had contracted under the JVA, whether it performed the work itself or engaged a subcontractor to do so. The drilling of the Chattak 2 Well and the

[746] HT 2016.02.22, page 407, line 18 to page 408, line 6.
[747] HT 2016.02.22, page 508, line 18 to page 509, line 4.

performance of the wiper trip, for instance, unquestionably were operations that fall into Niko's responsibility under the JVA.

946. This responsibility did not change when Niko engaged CPTDC and other companies to provide certain services related to the drilling of the wells in the Feni field and the Chattak 2 Well. The Tribunal held above in Section 8.4 that this performance was subject to the requirements of Article 26.2.4 of the JVA, even though it was carried out by these other companies.

947. It is therefore necessary to consider the scope of Niko's work under the JVA and distinguish them from activities outside that scope of work. Niko's scope of work is defined in Article 2 of the JVA, which describes as its object in Article 2.1 "the Development and Production of Petroleum"; the same expression is used in Article 11.1 of the JVA. As the Claimant pointed out, relief operations are a specialised activity which are not included in the scope of work of the operator.

948. Articles 26.2.4 and 27.1 of the JVA, on which the Respondents rely specifically, relate expressly to "Petroleum Operations". These operations are defined in Article 1.47 of the JVA as "all the operations of Development and Production and other operations, pertaining to Petroleum as provided for in this JVA." The Respondents have not identified any provision in the JVA that pertained to relief operations and the Tribunal has not seen any.

949. **The Tribunal concludes** that drilling relief wells is not an operation in Niko's scope of work and responsibilities under the JVA. A contract concluded by Niko for provision of this service, therefore, is not a subcontract for the performance of which Niko is responsible as if it was its own performance under the JVA.

950. That does not mean that Niko had no obligations with respect to the control and extinction of the Chattak 2 Well blowout. That obligation was to select and engage the relief well specialist. If this obligation was performed in line with the standard of a prudent operator, Niko has met its obligation. It is not responsible for the performance of the work of this specialist and not liable for any defects in its performance of the relief well operations.

9.3 Niko's selection and engagement of the relief well specialist

951. At the November 2015 Hearing, the experts provided information relevant for the selection of a relief well specialist, the available candidates and the method of selecting them.

952. As to the **available candidates** for relief well operations, the Tribunal summarised its understanding of the experts' explanations in the Note to the Parties of 6 January 2016, inviting the Parties to comment in their Post-Hearing Briefs and make any corrections they saw necessary. The Note contains the following passage:

> *From the evidence at the hearing it appeared that drilling relief wells is a highly complex and difficult operation. The experts named only three specialists in the world who perform such operations or have the reputation to do so. The three experts appearing before the Tribunals at the November 2015 hearing were among them; except that Dr Adams, who performed such operations earlier in his career is retired and no longer performs this type of operation. The experts agreed that Mr Grace is one of the recognised experts.*

953. Both Parties commented on the Tribunal's Note in their Post-Hearing Briefs. The quoted passage remained uncontradicted by the Respondents; the Claimant expressly confirmed it.[748]

954. **The Tribunal concludes** that Mr Grace is one of the few internationally recognised experts for relief operations. The Tribunal has no reason to doubt the solidity of his reputation.

955. The experts also agreed that blowouts that require the **drilling of relief wells are rare**, in the order of three or four per year. Mr Abel wrote in his report:

> *Relief wells are a rare occurrence in the petroleum industry. Even in well control operations, they represent a small fraction of the solutions to blowouts (less than 3% of all blowouts are solved by a relief well).*[749]

[748] C-PHB, paragraph 203.
[749] Abel Report, page 10.

956. It was not clear from the explanations of the experts how many of these wells were drilled in shallow sands, but it appeared clearly from these explanations that there is very little experience with drilling relief wells in shallow sands. A frequent example given was that of Moulavi Bazar in Bangladesh.[750]

957. Concerning the **manner in which relief well contractors are chosen**, the Tribunal summarised the explanations by the experts as follows in the 6 January 2016 Note:

> *In the practice of operating companies in the oil and gas field the selection of the company to perform a relief well drilling operation, according to the experts, is done normally on the basis of prior experience with the selected company or, in the absence of such experience, on the basis of recommendations by trusted sources. Some larger companies, which expect to face the need for relief operations conclude standby contracts with specialists on the basis of which they may require interventions on short notice. In some countries such standby arrangements are now required; but there is no evidence that any such requirement was applicable to Niko in 2004/2005.*
>
> *The experts were not aware of cases in which the company performing the relief operation was chosen on the basis of competitive tenders.*

958. This summary of the experts' opinions also remained uncontested. The Respondents quoted this passage from the Tribunal's Note and confirmed the agreement of the experts "on how companies generally choose well control experts when they face a blowout".[751]

959. The Respondents, nevertheless, criticise Niko's selection of Mr Grace on several grounds, arguing that the selection did not "meet Niko's obligations under Article 26.2.4 of the JVA". Niko's choice of Mr Grace, according to the Respondents did not meet "the diligence standard in the JVA, the standard in the Bangladesh Petroleum Act and the generally accepted

[750] As summarised by the Tribunal in the 6 January 2016 Note and uncontested subsequently.
[751] R-PHB, paragraph 169.

standards of the international petroleum industry on proper planning".[752] The Respondents raise two objections:

960. The Respondents argue that, in the circumstances, "a diligent operator would have made shallow gas experience a primary selection criterion". They describe the manner in which, in their view, Niko should have proceeded:

> *Minimal diligence would have yielded a list of the three individual specialists in the world available to handle the Chattak 2 blowout. Further, simple diligence, such as requesting CVs and a telephone conversation with the specialists, would have allowed Niko to identify which of these specialists had shallow gas experience. Niko would have learned that two of the three specialists had worked on the successful control of the Moulavi Bazar blowout.*[753]

961. The Claimant considered this argument in its Post-Hearing Brief. Relying on the explanations of the experts at the November 2015 Hearing, the Claimant concludes:

> *It is readily apparent from the evidence that there is no merit to the suggestion that Mr Grace was unqualified, or that Niko breached any applicable standard in its selection and engagement of Mr Grace.*[754]

962. The Respondents' argument concerning the missing shallow gas experience of Mr Grace is based on explanations by Dr Adams. At the November 2015 Hearing he stated:

> *The Tribunal has learned during this week that shallow gas is a tricky issue and does not follow the standard well control procedure, so it is important to me that a client ask or a client gets someone that has shallow gas experience if you have a shallow gas blowout.*[755]

[752] R-PHB, paragraph 169.
[753] R-PHB, paragraph 170.
[754] C-PHB, paragraph 213.
[755] HT 2015.11.06 (Day 5), page 1219.

963. Mr Wright was asked "What is the relevance of a complaint in February 2005 or January 2005 that Mr Grace had no shallow gas relief well drilling experience?". He responded:

> *MR WRIGHT: I think that is a ridiculous statement, personally.*
>
> *THE PRESIDENT: Why is that?*
>
> *MR WRIGHT: Because you have got a guy that is 65 years old that is been in well control all his life. He has been involved in I do not know how many relief wells but, you know, several and to specify a shallow gas relief well, first of all, there is not very many people that have any relief well experience at all.*
>
> *[…]*
>
> *What I am trying to say is an operator that is trying to find a relief well specialist and that operator is also not a relief well specialist or a blowout specialist or a well control specialist, they would not have any idea that they needed to seek the expertise of a specific shallow gas expertise.*[756]

964. Mr Wright also insisted on the diversity of situations that have to be addressed when designing a relief operation and drilling a relief well.

> *I mean, every relief well I have been on, you know, it's always been a different sort of one and I didn't go in and say, "Well, I never done one like this". When I did one in Macondo, I'd never drilled a deep water relief well. So I didn't say, "Well, I don't have experience and done it, so I don't feel comfortable doing it".*[757]

965. Mr Abel also was asked to address the question of Mr Grace's qualification and the relevance of the absence of specific shallow gas relief well experience. He responded described Mr Grace as an experienced, intelligent man with a great understanding of the laws of physics and petrochemical and engineering" and added:

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[756] HT 2015.11.06 (Day 5), pages 1221– 1222.
[757] HT 2015.11.06 (Day 5), page 1230.

… the fact that he had not done one of these did not mean that he could not. I think he has every skill that is necessary to do this job.

[…]

That is – it is not a good criticism to say he did not have particularly one exactly that matched in a previous work experience.[758]

966. Mr Hornaday was questioned at the November 2015 Hearing:

Did Niko make any efforts to hire a relief well consultant who had experience killing blowouts and particularly blowouts in Bangladesh after the Chattak 2 blowout?

MR HORNADAY: Based on various recommendations we hired Mr Grace to plan our relief well.[759]

967. Mr Hornaday also explained that, when consulting the resume of Mr Grace, he noted the experience in relief wells. When asked whether he checked what kind of blowouts Mr Grace had been controlling, Mr Hornaday responded:

My recollection of the review of his resume is his experience was extensive. He had worked in many countries in many – you know, similar to the gentlemen who are here – extensive experience.[760]

968. When considering the Respondents' argument of the missing shallow gas experience, **the Tribunal** starts by the uncontested fact that Mr Grace was a highly qualified relief well expert with an excellent reputation. He had many years of experience and had drilled many relief wells. The experts agree that each relief well is different. Designing and drilling a relief well thus requires analysing a new situation and finding a suitable solution for it. Dealing successfully with new situations thus is an essential qualification of a relief well specialist. While there are differences among the experts about the suitability of some aspects of the solution eventually

[758] HT 2015.11.06 (Day 5), page 1224.
[759] HT 2015.11.06 (Day 5), pages 1102 – 1103.
[760] HT 2015.11.06 (Day 5), page 1108.

adopted by Mr Grace, his general qualification to find a viable approach has not been questioned.

969. In addition, designing and drilling a relief well for the Chattak 2 blowout, required of the specialist many other qualifications. Mr Wright explained it as follows:

> *The other thing you have to consider is the person that happened to drill that few shallow gas relief wells, maybe he does not have much experience in all the other ten aspects that are required to make the relief well successful. That is only one of many expertise that you need to make a successful relief well.*[761]

970. The Respondents and Dr Adams have not explained how the absence of shallow gas relief well experience affected the qualification of Mr Grace for designing and drilling the Chattak 2A Relief Well. From the Respondents' argument concerning shallow gas, as discussed above in Section 8.4.2, the Tribunal concludes that Mr Grace had to be aware of and avoid the risk of high flow rates and pressure as the principal characteristic of shallow gas.

971. When he came to the site, Mr Grace could see from the information available about the Chattak 2 blowout that it was caused by a violent eruption of gas from Sands 1 and 2. When asked whether Mr Grace could have known whether he was drilling shallow gas, Mr Wright responded:

> *… he would have known that before he ever got on an aeroplane. He would have got the data before he got on the aeroplane to look at it to see if that is something I want to be involved in or not.*
>
> *THE PRESIDENT: Mr Abel?*
>
> *MR ABEL: I agree with John [Wright].*[762]

972. The Tribunal concludes that Mr Grace must have been perfectly aware of the shallow gas risk he had to face. The Parties and the experts disagree on the question whether the design options taken by Mr Grace, such as the assumption about the drill string location and the technology for

[761] HT 2015.11.06 (Day 5), page 1223.
[762] HT 2015.11.06 (Day 5), page 1231.

locating it, were the most appropriate. As the Claimant points out, "Mr. Grace spent months on site in Bangladesh assessing the circumstances and developing his relief well plans. Based on his direct experience of the conditions at Chattak, and his evaluation of all the information available to him at the time" he made his design based on an assumption about the drill string location.[763] Irrespective of the question whether the design options taken by Mr Grace were suitable, the Tribunal is not persuaded that the choice of these options was determined by the absence of his shallow gas relief well experience.

973. In any event, having contacted one of the very few specialists for relief well operations, highly qualified and well reputed, Niko had to rely on his judgment whether he was qualified to face the challenge of the Chattak relief well. As stated above, this judgement is one of the important qualifications of an expert as Mr Grace.

974. In this case, Mr Grace considered that he was qualified to deal with the Chattak 2A Relief Well. There is no evidence or even allegation that Mr Grace expressed to Niko any doubt about his ability to deal with the particular situation of this relief well.

975. Assuming, contrary to the conclusion just reached about his qualifications, that the absence of shallow gas relief well experience made Mr Grace unsuitable for the assignment, the question would be whether Niko should have been aware of such unsuitability and engaged another relief well expert (assuming also that such another expert would have been available at the short notice, given the urgency).

976. In the circumstance and in view of his qualification as a reputed relief well specialist, the Tribunal is of the opinion that Niko could rely on Mr Grace's determination about his qualification for performing the Chattak 2A relief well operation.

977. **The Tribunal concludes** that Mr Grace was suitably qualified for performing the Chattak 2A relief operation and that Niko could rely on his determination that he was so qualified. When engaging Mr Grace, Niko met the standard of conduct of a prudent operator under Article 26.2.4 of the JVA.

[763] C-PHB, paragraph 233.

9.4 The performance of the relief well operation

978. Niko met its obligation by choosing a qualified relief well specialist and was therefore, for the reasons explained above, not responsible for the proper performance of the relief operation by this specialist. The Tribunal nevertheless adds some comments on this performance and the controversy between the Parties and the experts about it.

979. The evidence shows that Mr Grace decided to aim to position the drill string above the marine shale interception, drill down to the shale, and make the interception in the shale. The reason indicated by him for this decision were:

(a) he could not exclude that the drill string had remained in place and had not fallen to the bottom of the well when the blowout occurred;

(b) he needed to come close to the drill string in the blowout well in order to locate the well by the magnetic vector instruments;

(c) starting the relief well drill by aiming at a lower target would have meant, in case the drill string had remained in its original place, that more difficult further drilling operations had to be performed (changing directions of the drilling, aiming at an upper location or other complications which were discussed at the hearing).[764]

980. This strategy gave rise to different critical observations from the experts, including those pointed out by the Tribunal in its letter of 6 January 2016:

(i) Targeting a deeper location would have been safer for drilling and for the interception. However, it was observed that the target for the interception was in the shelf and therefore may have been safer.

(ii) The choice of the shallow location was based on the assumption that the drill string could still be hanging in its original place, an assumption that may have been unrealistic.

(iii) The magnetic system required that a larger part of the drill hole remained unprotected by casing; this feature, which may be taken as increasing the risk, may have had other advantages. The experts

[764] See in particular the GSM Chattak No 2A Relief Well Plan & Drilling Procedure, Exhibit C-86; Wright 1, pages 29 – 51, Abel Report, pages 43, 57; and Adams Report, pages 32 – 37.

expressed different preferences in favour of the system used by Mr Grace or for other systems.

(iv) The design decision taken by Mr Grace may have required a diverter; but there were differences of view about the required "robustness" and the true protection offered by such a system.

981. The Tribunal has considered these observations. It concluded that they concerned differences of strategy where specialists may have different views. The Respondents seem to have shared this view:

> *THE PRESIDENT: Now apart from the opinion of our three experts, are there any guidance or standards or directives for relief well drilling and the use of equipment and how you go about it?*
>
> *MR SMITH: There is not written guidance on that. The Tribunal will have to use its judgment as finder of fact and judge of the law as to whether or not this was diligent, conscientious and workmanlike in the way that Niko planned through Mr Grace to do this and undertook it.*
>
> *THE PRESIDENT: It is the judgment of the respective performer or operator of the relief operation?*
>
> *MR SMITH: He –*
>
> *THE PRESIDENT: Apart from listening to what the three gentlemen tell us, there is no other outside guidance we would have to say one or the other opinion is more in line with workmanlike or professional activity?*
>
> *MR SMITH: That is correct.*[765]

982. **The Tribunal concludes** that the experts' observations about the relief well strategy of Mr Grace and its implementation do not justify the conclusion that the relief operation itself was performed in breach of the prudent operator and the Petroleum Industry Standard. The performance of the relief operation leading to the blowout of Chattak 2A did not

[765] HT 2016.02.22, page 477, line 23 to page 478, line 18.

constitute a breach of the requirements of Article 26.2.4 JVA, assuming it was applicable to this performance.

10. NIKO'S LIABILTY AND ITS LIMITATIONS

983. In Section 8.4 above the Tribunal found that the blowout in the Chattak 2 Well was caused by a breach of Niko's obligations as Operator under the JVA. Under the law of Bangladesh this breach of a contractual obligation generates Niko's liability for compensating the loss and damage caused by the breach.

984. The Claimant argues that, in the hypothesis of a breach by Niko, BAPEX, as the joint venture partner, must be held to have shared this liability and that, in any event, its liability was limited under the JVA. The Respondents deny any shared liability and contest that Niko's liability is limited under the JVA.

10.1 Shared Responsibility and Contributory fault of BAPEX

985. The Claimant contends that BAPEX shares any liability which Niko may have incurred for the blowouts on two grounds: by approving the well designs explicitly or remaining silent and by withholding relevant information.[766]

986. The Respondents deny shared responsibility on both grounds. They also argue that the law of Bangladesh does not provide for "contributory negligence, a tort concept"; and, contrary to the Claimant's argument, that international law is not applicable.[767]

10.1.1 Shared responsibility on grounds of approval by BAPEX

987. The Claimant recognises that the main issue concerning the design of the Chattak 2 Well was the depth of the casing design at 305m and that this depth was clearly apparent from the Well Proposal. It concludes:

> *If BAPEX, with its deeper experience of drilling conditions in Bangladesh, believed this to be inadequate, as JVA partner, it had a duty to raise the issue.*[768]

[766] C-PHB, paragraph 416 and C-CD.7, paragraphs 62-68..
[767] HT 2015.02.21, page 269.
[768] C-PHB, paragraph 425.

988. Concerning the design for the Chattak 2 Well, the Claimant relies on the report of the First Enquiry Committee which noted that BAPEX received the Well Proposal with enough time to review it before the spud date, but did not scrutinise the Well Proposal using its own knowledge and experience.

989. Concerning the Chattak 2A Well, the Claimant relies on the approval of the Relief Well Programme by BAPEX in the JMC meeting No 4 on 22 February 2005. The Claimant asserts that the approach of Mr Grace and drilling close to the blowout well above the marine shale was clear from this proposal.[769]

990. The Respondents argue that under the JVA Niko was "the exclusive OPERATOR to conduct Petroleum Operations" and that all operations are "at OPERATOR's sole risk and expense".[770] They added: "BAPEX had no role in operations, no obligations with regard to their proper conduct …"[771]

991. With respect to Chattak 2, the Respondents argue that "Niko did not give BAPEX a chance to review and comment on the Well Proposal". They assert that "it takes more than two weeks to review, consider and comment on a well proposal"; and that it is not BAPEX that has to approve but the JMC.[772]

992. Concerning the Chattak 2A Well Proposal, the Respondents argue that Niko ignored BAPEX's comments on Chattak 2A.[773]

993. **The Tribunal** recalls that on 14 December 2004, Niko sent the Well Proposal to BAPEX. As explained above,[774] the Tribunal accepts that this proposal was received by BAPEX at the time. BAPEX did not approve the proposal expressly; but it did not raise objections upon its receipt or when Niko started drilling. It also did not indicate that it needed more time to scrutinise the Proposal. The First Enquiry Report noted the failure of BAPEX to monitor Niko's activities.[775] Such a failure by Niko's JV partner appears surprising to the Tribunal.

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[769] C-PHB, paragraphs 426 and 427.
[770] R-PHB, paragraph 207, quoting from JVA Articles 2.1 and 2.5.
[771] HT 2015.02.21, page 267.
[772] R-PHB, title before paragraph 219 and paragraph 220.
[773] R-PHB title before paragraph 228 and following explanations.
[774] Section 8.2.3.
[775] First Enquiry Report, Exhibit R-3, paragraph 7.1(i).

994. This being said, the Respondents have rightly pointed out that the Parties agreed on Niko as the operator with full responsibility for the operations. BAPEX was entitled to rely on Niko's expertise. It was Niko that prepared the Well Proposal without any interference from BAPEX; Niko was responsible for that proposal.

995. With respect to the relief well Chattak 2A, Niko was responsible for the selection and engagement of the relief well contractor. BAPEX and the competent body, the JMC, did approve the relief well proposal by Mr Grace, as the revised minutes of the 22 February 2005 meeting show.[776] The question of any co-responsibility of BAPEX is moot, however, since the Tribunal found that Niko was not responsible for the design and performance of the relief well.

996. Concerning the action for which Niko was responsible as operator, viz. designing the Chattak 2 Well and selecting and engaging a competent relief well contractor, the Tribunal does not accept that BAPEX's failure to object to the design or its approval of the design reduces Niko's liability.

10.1.2 Shared responsibility on grounds of withheld information

997. The Claimant argues that "BAPEX ought to have ensured that it passed on all known information that could have helped Niko in safely planning its wells"; the Claimant asserts that "BAPEX did nothing".[777]

998. The Claimant relies, in this respect too, on the First Enquiry Report where it had been observed that "the learning from Chattak # 1 and Moulavi Bazar # 1 was not reflected in the design".[778] The Claimant complains that it was not clear what information the First Enquiry Committee was referring to and that the Respondents never clarified the question. The Claimant concluded:

> *… [I]f Niko is to be faulted for failing to take account of particular local conditions, then it must be remembered that BAPEX had greater experience of the local geological conditions, and, at least according*

[776] Revised Minutes of JMC Meeting held on 22 February 2005, Exhibit C-31 and above Section 5.
[777] C-PHB, paragraphs 423 and 424.
[778] First Enquiry Report, Exhibit R-3, paragraph 7.1(f).

to the Enquiry Committee, was privy to other relevant information that it did not share with Niko.[779]

999. The Claimant concludes that Niko's liability should be reduced "correspondingly according to the percentage of BAPEX's own fault".[780]

1000. The Respondents assert that BAPEX had no general obligation to provide information to Niko unless Niko made a request; and that Niko never requested additional information.[781] The Respondents rely on the testimony of Mr Adolf and Mr Baqi.

1001. **The Tribunal** has found that Niko breached its obligation by choosing a design option that, by reference to the information known to Niko, created an unreasonably high risk for the drilling and wiping operations. Niko's Drilling Team was unable to face this risk. This risk was apparent on the basis of the information that had been available to Niko at the time. The Claimant has not shown that the information allegedly withheld by BAPEX was of a nature that it could have required a different risk assessment, leading to a different design solution. Even if the Claimant's allegation were correct, this would not affect Niko's liability, as found by the Tribunal.

1002. In view of these conclusions, it is not necessary for the Tribunal to examine the controversy between the Parties about the question whether any apportionment of liability must be determined under International Law, as argued by the Claimant,[782] or under the law of Bangladesh, which according to the Respondents does not provide for contributory negligence in its Contract Act.[783]

10.2 Niko's Liability under the law of Bangladesh (Section 73 Contract Act)

1003. The principle of liability for breach of contract is set out in Section 73 of the Bangladesh Contract Act 1872.[784] This is undisputed. The differences between the Parties concern the interpretation of Section 73, in particular

[779] C-PHB, paragraph 429.
[780] C-PHB, paragraph 430.
[781] R-PHB, title before paragraph 214 and the following paragraphs,
[782] C-PHB, paragraphs 417 – 422.
[783] HT 2016.02.21, pages 269 – 273.
[784] Bangladesh Contract Act of 1872, CLA-4.

the categories of damages which must be compensated, and the application of Section 73 to the present circumstances.

1004. **Section 73 of the Contract Act** is worded as follows:

> *Compensation for loss or damage caused by breach of contract*
>
> *73. When a contract has been broken, the party who suffers by such breach is entitled to receive, from the party who has broken the contract, compensation for any loss or damage caused to him thereby, which naturally arose in the usual course of things from such breach, or which the parties knew, when they made the contract, to be likely to result from the breach of it.*
>
> *Such compensation is not to be given for any remote and indirect loss or damage sustained by reason of the breach.*

1005. The Parties agree that Section 73 reflects the principles that had been set out in the earlier English case of ***Hadley v. Baxendale*** (1854).[785] The Claimant contends that Section 73 "is very similar to the *Hadley v. Baxendale* standard as originally articulated by that court".[786] For the Respondents, Section 73 "simply mirrors the test in *Hadley v. Baxendale*".[787] Both Parties refer to the decision of the Bangladesh Supreme Court, High Court Division in the case of ***Bangladesh Petroleum Corporation v. M.T. Saraband Ex-Sunrise-I, Kutubdia, Chittagong and others***, where the court quoted the relevant passage from *Hadley v. Baxendale* and then stated: "the language of the Section 73 of the Contract Act, though somewhat different, does not go beyond the rule as stated above."[788]

1006. The Parties differ, however, with respect to the precise correlation between the Section 73 and the two "limbs" of *Hadley v Baxendale*.

1007. For the Claimant the first paragraph of Section 73 distinguishes two situations in which damages are recoverable: (i) where the loss or damage

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[785] *Hadley & Anor v. Baxendale & Ors*, Judgment, 9 Ex. Ch. 341, 23 February 1854, CLA-42.
[786] HT 2016.02.21, page 93.
[787] HT 2016.02.22, pages 395 – 396.
[788] *Bangladesh Petroleum Corp. v. M.T. Saraband Ex-Sunrise-I, Kutubdia, Chittagong and Others*, Supreme Court of Bangladesh (High Court Division), Judgment, 1997 17 BLD 169, 29 January 1997, RLA-82, paragraph 34.

"naturally arose in the usual course of things from such breach" and (ii) loss or damage "which the parties knew, when they made the contract, to be likely to result from the breach of it". The former type of damages, according to the Claimant, are "direct" damages and correspond to the "first limb of *Hadley v. Baxendale*"; the other type of loss or damage corresponds to the "damages resulting from special circumstances [which] were communicated at the time of the conclusion of the contract", as they are compensable under the second limb of *Hadley v Baxendale*.[789]

1008. The second paragraph of Section 73, according to the Claimant, "explicitly excludes any indirect damages that would otherwise fall within this second branch of *Hadley v. Baxendale*."[790] According to the Claimant, this second paragraph excludes indirect damage, even if it is of the kind that the parties knew would likely arise in a case of breach and thus would be recoverable as "special damages" under the second branch of the first paragraph of Section 73 of the Contract Act.

1009. The Respondents argue that the Claimant "misconstrues the Contract Act". They assert that Section 73 "in its entirety is a reflection of *Hadley v. Baxendale*", the first paragraph representing the first limb of *Hadley v Baxendale*, while the second paragraph corresponded to the second limb. The Respondents added:

> *In Hadley v Baxendale the first limb is set up with two parts to it, which is damages that actually arose in the usual course of things and reasonably foreseeable damages. The second limb is remote damages or special circumstances, which is the second part of this.*[791]

1010. The Respondents repeated: "the first limb of *Hadley v. Baxendale* has two parts, which is naturally arose and foreseeable, and which the parties knew is a different phraseology of foreseeable"; "indirect and consequential losses [are viewed by English courts] as second limb losses".[792] The Respondents confirmed their view by reference to Section 73 of the Contract Act:

[789] HT 2016.02.21, pages 106 – 108.
[790] HT 2016.02.21, page 108.
[791] HT 2016.02.21, page 226, lines 15 – 21.
[792] HT 2016.02.21, page 227.

> *… paragraph 1 references to the first limb of Hadley v. Baxendale, paragraph 2 refers to the second limb […] which is not in the paragraph 1, as alleged by Claimant […] Section 73 of the Contract Act does not go beyond Hadley v. Baxendale to exclude liability. You do not have to meet both limbs of Hadley v. Baxendale to recover losses.*[793]

1011. The Parties also disagree with respect to the requirements of the second limb of *Hadley v Baxendale*. The Respondents, as shown in the passage just quoted, refer damage that was "foreseeable". The Claimant objects and insists that the standard for this second category "does not address foreseeability, it addresses what was actually foreseen".[794]

1012. In this context the Claimant relies in particular on the English court case ***Transfield Shipping Inc v Mercator Shipping Inc*** (2008),[795] in which the House of Lords dismissed a claim for the loss resulting from a lucrative foregone follow-up contract, holding that this loss was not in the specific contemplation of the parties at the time of contract. It quoted Lord Hoffmann in the following terms:

> *The fact that the loss was foreseeable is not the test. The question is whether the loss was a type of loss for which the party can reasonably be assumed to have assumed responsibility.*[796]

1013. The Respondents also refer to *Transfield Shipping*, but assert that the Claimant does not understand the ruling in that case. The denial of compensation for losses from the lucrative follow-up contract, in the Respondents' view, "would be a question for damages".[797]

1014. **The Tribunal** considers that, when applying statutory law of Bangladesh, it must be guided by the relevant provision of the applicable statute and any interpretation by the courts of Bangladesh. Reliance on case law from other common law jurisdictions, which may provide guidance in other situations in the absence of a statute, can be relied upon only if they are

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[793] HT 2016.02.22, page 395, line 25 to page 396, line 8.
[794] HT 2016.02.21, page 89 with further references.
[795] *Transfield Shipping Inc. v Mercator Shipping Inc. (The Achilleas)*, [2008] 4 All ER 159, RLA-93.
[796] HT 2016.02.21, page 89, referring to *Transfield Shipping Inc. v Mercator Shipping Inc.*, RLA-93.
[797] *C Czarnikow Ltd. v Koufos (The Heron II)*, [1966] 2 All ER 593, Exhibit RLA-75.

not in conflict with the statute and its interpretation by the courts of Bangladesh.[798]

1015. In the present case, the Parties have not identified a decision by the courts of Bangladesh that provides guidance for the application of Section 73 of the Contract Act, apart from the reference to *Hadley v. Baxendale* in the case of the *Bangladesh Petroleum Corporation*, referred to above. That decision quoted *Hadley v. Baxendale* and said that Section 73 of the Contract Act was somewhat different from rule in *Hadley v. Baxendale* but does "not go beyond [that] rule"; the decision does not refer to the cases on which the Respondents rely in their argument and according to which under English law a clause excluding consequential loss does not necessarily exclude direct loss of profit.[799]

1016. Section 73 of the Contract Act is clear on its face insofar as, in the first paragraph, it specifies the two types of losses or damage that must be compensated in case of a breach, those which *naturally arise* and those *known by the parties to be likely*. The former are recoverable whether or not the particular defendant was conscious of the consequences (because contract breakers are held to what the reasonably expected consequences of their acts), whereas the latter, often referred to as "special", require proof of specific contextual understanding of the parties.

1017. The Tribunal notes here that, as a matter of general law (subject always to express contrary contractual provision), loss of profits *may* be recoverable under the first limb of *Hadley v. Baxendale* or, as expressed in section 73 of the Contract Act, as "damage…which naturally arose from the usual course of things from such breach". The question is simply whether loss of ordinary business profits as a kind of damage does naturally arise from the usual course of things.[800] The question will be discussed in further detail below in the context of the examination of the term "consequential loss or damage", as contained in Article 27.2 of the JVA.

1018. The second paragraph of Section 73 excludes "such compensation", *i.e.* compensation provided by the preceding paragraph. It follows that even where the specific contextual understanding was that a particular type of

[798] In this sense the Claimant in C-PHB, paragraph 400, stating that "English precedents have no application to the case at bar".
[799] R-PHB, paragraphs 247 – 251. These cases will be discussed below in section 10.3.2.
[800] *Chitty on Contracts* (33rd edition, 2018), [26-146].

damage might flow from non-performance, it will nevertheless not be recoverable if it is "remote and indirect". The Tribunal considers that this does not "go beyond" the *Hadley v. Baxendale* rule; it might rather be suggested that the available compensation is more clearly restricted.

1019. In any case, the Tribunal will apply Section 73 as it is written; even loss or damage which the parties knew would likely arise in a case of breach is excluded if remote and indirect.

1020. Against this background of the scope of liability under the law of Bangladesh, the Tribunal will consider the limitation of that liability agreed by the Parties in the JVA.

10.3 Limitation of Niko's liability by the JVA

1021. The Claimant argues that "the JVA expressly precludes claims for lost production and pollution such as those asserted in the Money Suit".[801] In its opinion, the limitation of liability in the JVA precludes claims against Niko by the Government and Petrobangla in the courts of Bangladesh. The Claimant relies specifically on the reference to loss of production and loss of profit in the second sentence of Article 27.2 of the JVA.

1022. **Article 27 of the JVA** is entitled "Health, Safety & Environment (HSE)". The article is drafted in a manner that suggests that the chapeau to the first paragraph also applies to the second:

> *27.1 While conducting Petroleum Operations, OPERATOR shall take necessary measures in accordance with generally accepted standards of the international petroleum industry, for conservation, safety of life, property, crops, fishing and fisheries, navigation, protection of environment, prevention of pollution and safety and health of personnel, including but not limited to*
>
> *[…]*
>
> *27.2 Bear responsibility in accordance with laws applicable in Bangladesh for any loss or damage to third Parties caused by*

[801] C-PHB, paragraph 37.

the wrongful or negligent acts or omissions of the OPERATOR or the OPERATOR employees or sub-Contractor's or sub-Contractor's employees and indemnify BAPEX and the Government against all claims and liabilities in respect thereof. Under no circumstances shall a Party be liable to the other Party for any consequential loss or damage including but not limited to lost profits or lost production or other consequential loss or damage resulting from pollution.

1023. The beginning of paragraph 27.2 seems incomplete. When looking at Article 27 as a whole, it is obvious that it refers to an obligation of the Operator. Considering the opening words of paragraph 27.1, one may complete the beginning of paragraph 27.2 by the words "While conducting Petroleum Operations the Operator shall …". This is confirmed by a comparison with the PSC that in 2001, some two years prior to the Niko/BAPEX JVA, the Government, Petrobangla and BAPEX had concluded with three companies belonging to the Tullow, Chevron and Texaco groups.[802] That PSC contains an Article 10, entitled "Contractor's Obligations". Paragraph 10.1.21 of that article, practically identical with paragraph 27.2 of the JVA, is part of a long list preceded by a chapeau with the words: "Contractor shall in addition to its obligations under other provisions of the Contract be obliged to […] 10.1.21 Bear responsibility …"

1024. The Respondents do not accept that the JVA contains a "general 'liability limitation regime'".[803] They argue that (i) the second sentence of paragraph 27.2 has a narrow scope and only limits the liability under the first sentence, (ii) that sentence applies only to claims between BAPEX and Niko, and not to claims by the Government and Petrobangla, and, in any event, (iii) the limitation excludes only "indirect" loss or damage and therefore does not extend to the loss of gas and environmental damage which, in their view, are direct damages.

10.3.1 Scope of the provision

1025. The Respondents point out that the first sentence of Article 27.2 of the JVA creates specific liability by providing for indemnities by Niko to the

[802] Production Sharing Contract for Bangladesh Block 9, Exhibit C-10, Article 10.1.21.
[803] R-PHB, paragraphs 232 and 236 *et seq.*

Government and BAPEX. They argue that the second sentence of Article 27.2 of the JVA:

> *… limits Niko's liability for third-party losses and does not generally limit Niko's responsibility for loss or damage caused to BAPEX. There is simply no clause (and certainly no unambiguous clause) in the JVA that generally limits Niko's liability and overrides the regime established under Bangladeshi law.*[804]

1026. The Claimant contests this narrow interpretation. It points out that the second sentence of Article 27.2 starts with the words "under no circumstances" and that, contrary to the unilateral indemnity in the first sentence, the limitation in the second sentence is drafted in mutual terms, providing limitation of liability also to BAPEX. The Claimant concludes:

> *The language of Article 27.2 thus makes it clear that the second sentence does not merely qualify the first sentence. Instead the second sentence applies in all circumstances.*[805]

1027. The witness statement of Mr Hornaday that the Claimant produced contained a passage according to which the exclusion of liability in Article 27.2 of the JVA was "one of the key terms in the JVA", and that the limitation of liability was "a significant factor in Niko's final decision as to whether to sign the JVA".[806]

1028. **The Tribunal** considers, as the Respondents pointed out, that Mr Hornaday testified at the November 2015 Hearing that he was not concerned with the drafting of the JVA and had no specific knowledge of the clause in question.[807] While the quoted statements in Mr Hornaday's witness statement are plausible from a commercial perspective, the Tribunal does not take this testimony as a basis for the interpretation of the clause in question.

1029. The Respondents propose that, based on the *contra proferentem* rule of interpretation, any ambiguity in Article 27.1 has to be interpreted against

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[804] R-PHB, paragraph 241.
[805] C-PHB, paragraph 395.
[806] WS Hornaday, paragraphs 11, 13.
[807] HT 2015.11.06 (Day 5), pages 1081, 1067 and 1076; discussed in R-PHB, paragraphs 255 – 258.

Niko.[808] The Tribunal notes, however, that the clause in question appeared almost literally in the 2001 PSC mentioned above that the Government, Petrobangla and BAPEX had concluded with three IOCs.[809] It was thus not drafted specifically for the JVA but had been taken from an earlier agreement. There is no evidence about the drafting of that clause in the 2001 PSC; but it would seem quite unlikely and it has indeed not been argued that Niko had any involvement in the drafting of the clause in the 2001 PSC. The Tribunal therefore does not see grounds for an application of the *contra proferentem* principle of interpretation. The Tribunal thus must apply an objective interpretation.[810]

1030. The Respondents rely on the title of Article 27 JVA and argue that limiting the scope of Article 27.2 second sentence to loss or damage resulting from pollution is "consistent with Article 27 of the JVA as a whole, which deals with 'Health, Safety & Environment'".[811]

1031. The Claimant points out that "titles are not conclusive" and that "there are other provisions that do not exactly correspond with the title". What is relevant in its view is "the exact language of a specific exclusion clause" and the "framing of the provision".[812]

1032. The Tribunal notes that in Article 27 of the JVA a large variety of subject matters are regulated, exceeding the scope of the title of the clause. It is therefore not justified to interpret any specific provision in this Article as restricted by the title.

1033. Concerning the Respondents' argument that the second sentence in Article 27.2 has to be interpreted as restricted to the scope of the first sentence, it does indeed appear as a possible interpretation to presume that a second sentence in the same paragraph relates to the first and applies within the same limits.

1034. This first appearance is, however, contradicted by other observations: in particular the two sentences differ with respect to the parties identified as

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[808] R-PHB, paragraph 233.
[809] Production Sharing Contract for Bangladesh Block 9, Exhibit C-10, Article 10.1.21; see C-PHB, paragraph 332 and the discussion by the Claimant at the February 2016 Hearing, HT 2016.02.21, page 104.
[810] In this sense also R-PHB, paragraph 269.
[811] R-PHB, paragraph 254.
[812] C-PHB, paragraph 391 and HT 2016.02.21, page 117.

being liable. The first sentence sets out obligations of Niko as the Operator. If the second sentence were merely a qualification of the first, one would expect it to provide a limitation of Niko's liability to BAPEX: but that is not the case. The limitation in the second sentence is, as the Claimant points out, "drafted in mutual terms"[813] - no party shall be liable to the other beyond the identified limit. The second sentence of Article 27.2, thus, relates to a relationship different from that in the first sentence.

1035. Moreover, the second sentence of Article 27.2 starts with the words "Under no circumstances". This has a very broad meaning and must be taken as a clear expression of distinction between the second sentence and the first. The Respondents also argue that the last words of this second sentence, *i.e.* "or other consequential loss or damage resulting from pollution", qualify "all of the consequential loss or damage referred to" in that sentence. In the opinion of the Respondents the word "other" must be interpreted to mean that "lost profit and lost production also refer to damage resulting from pollution".[814]

1036. As the Claimant points out, the Respondents' construction of the sentence "fails as a matter of English grammar. The term consequential loss or damage is repeated twice in the same phrase": in the first part of the sentence it is qualified by the words "including but not limited to lost profits or lost production"; the expression then appears again as "other loss or damage.[815]

1037. The Tribunal sees these two parts as distinct. The words "resulting from pollution" qualify "other consequential loss or damage" and not the entire sentence. The Tribunal does not accept that the entire exclusion clause should be read as being limited to loss or damage resulting from pollution.

1038. The Tribunal concludes that the second sentence in Article 27.2 of the JVA concerns liability in general. It does not concern merely liability with respect to the indemnities in the preceding sentence and is not restricted to loss or damage resulting from pollution.

[813] C-PHB, paragraph 394.
[814] HT 2016.02.21, pages 240 – 241; also R-PHB, paragraph 254.
[815] HT 2016.02.21, pages 114 – 115.

10.3.2 The meaning of "consequential" as a legal term

1039. Article 27.2 excludes liability "for any consequential loss or damage". **The Respondents** treat "consequential" as synonymous with "indirect".[816] They argue:

> *When inserted in an exclusion clause, the word "consequential loss" has an established meaning under English law. That is to say, "consequential" is considered equivalent to the word "indirect".*[817]

1040. In support of this position, the Respondents refer to a number of English court cases interpreting clauses that excluded "consequential loss". These cases shall be discussed in detail below. The Respondents conclude from them the following:

> *As regards exclusion clauses in particular, the term "consequential loss" has been held to encompass only indirect losses, not direct losses.*[818]

1041. **The Claimant** accepts that "English courts view indirect and consequential losses as falling within the second limb [of *Hadley v. Baxendale*] only – *i.e.* damages that will be recoverable if they were reasonably deemed in the specific contemplation of the parties when they contracted. Under English law, consequential damages are thus synonymous with indirect damages."[819]

1042. The Claimant distinguishes the English court cases on which the Respondents rely from cases in other common law jurisdictions. It quotes from a decision of the Supreme Court of South Australia that concluded "that the English courts' interpretation of 'consequential loss' was too restrictive".[820] The relevant passage of this decision reads as follows:

> *To limit the meaning of indirect or consequential losses and like expressions, in whatever context they may appear, to losses arising only under the second limb of Hadley v Baxendale is, in my view, unduly restrictive and fails to do justice to the language used. The*

[816] R-PHB, paragraph 244: "indirect (*i.e.* consequential)".
[817] R-PHB, paragraph 248.
[818] R-PHB, paragraph 249.
[819] C-PHB, paragraphs 397 – 398.
[820] C-PHB, paragraph 401, quoting from *Alstom Ltd. v. Yokogawa Australia Pty Ltd. & Anor (No 7)*, Judgment, [2012] SASC 49 (Austl.), CLA-55.

word "consequential", according to the Shorter Oxford English Dictionary means "following, especially as an effect, immediate or eventual or as a logical inference". That means that, unless qualified by its context, it would normally extend, subject to rules relating to remoteness, to all damages suffered as a consequence of a breach of contract. That is not necessarily the same as loss or damage consequential upon a defect in material where other remedies are also provided.[821]

1043. The Claimant also cites a decision of the New Zealand High Court: "It is preferable … to consider the ordinary commercial meaning of the terms 'consequential losses' in the context of the particular contract".[822] The Claimant concludes from its review of cases:

> *… there is no universal legal rule for classifying losses arising from breach of contract as direct or consequential. The classification will depend on the nature of the contract and the exact wording of the exclusion clause.*[823]

1044. The Claimant distinguishes the English court cases also from the law in Bangladesh and asserts that the position held in these cases is

> *… untenable under Bangladeshi law. Section 73, second paragraph, of the Bangladesh Contract Act expressly bans recovery of any "indirect" damages.*[824]

1045. Concerning the English court cases, the Claimant argues that "English law has expanded the test of *Hadley v Baxendale* beyond what was originally stated by that case and is reflected information in section 73".[825] It adds:

> *In the second half of the 20th century, English jurisprudence took a questionable turn that has not been followed elsewhere. English judges interpreting contracts held that businessmen referring in those contracts to consequential damages must have had in mind the*

[821] *Alstom Ltd. v. Yokogawa Australia*, CLA-55, paragraph 281.
[822] C-PHB, paragraph 402, quoting from *Oceania Furniture Ltd. v. Debonaire Products Ltd.*, Judgment, (H.C. 27 August 2009) (N.Z.), CLA-53, paragraph 121.
[823] C-PHB, paragraph 403.
[824] C-PHB, paragraph 399.
[825] HT 2016.02.21, page 93.

second limb of Hadley v. Baxendale. English courts, therefore, began interpreting contract clause referred to consequential damages as reflecting this inferred intent.

[…]

In Bangladesh however, indirect damages as a matter of statutory law are never recoverable. Section 73 of the Contract Act provides only for direct damages to be recovered and for special damages that the parties actually knew were likely to result at the time of entering into the contract.[826]

1046. **The Tribunal** notes that the term "consequential" is contained not in an enactment in Bangladesh but in the JVA, a contract. The Tribunal must therefore consider the meaning of that term by way of contract interpretation. In the absence of Bangladeshi court decisions addressing the construction of this term, the Tribunal seeks guidance from decisions in other common law jurisdictions, as the courts of Bangladesh frequently do.

1047. As a contract term, the words "consequential" loss or damage have been considered in many court decisions. The Parties have attributed particular importance to decisions from English courts, where the interpretation by some courts might be taken as an authoritative construction of the term. The Tribunal will therefore examine in some detail the principal decisions of English courts and will then consider the international context of the present contract.

1048. As both Parties recognise, there is a long **history of cases in England**, in which the term "consequential" was considered. This line starts with ***Millar's Machinery*** (1934) which is often quoted. In that case the supplier of a machine guaranteed to replace defective parts or make good defective workmanship, adding: "We do not give any other guarantee and we do not accept responsibility for consequential damages". The machine delivered was not performing as promised, the seller made attempts to correct the defects but failed. The buyer then rejected the machine and bought a new one from another supplier at a higher price. The Court of Appeal awarded reimbursement of the down payment under the contract and the price

[826] HT 2016.02.21, page 107, line 24 to page 108, line 21.

difference for the replacement contract. The buyer also claimed (i) for the loss caused by the machine having to stand idle while the seller tried to repair it; (ii) the cost of product which the buyer had to purchase to fulfil another contract.

1049. Branson J, who had tried the case, interpreted the exclusion clause to mean: "We will replace defective parts for you, but if your machine has to stand idle while we do so we shall not pay you damages on that account". gave effect to this understanding of the clause. With respect to the cost of fulfilling another contract, he said:

> *I am not satisfied that when the present contract was entered into it was entered into with [the other] contract in mind, and I think the claim of the [buyer] under this head is too remote within Hadley v. Baxendale.*[827]

1050. The Court of Appeal upheld the judgment. Maugham LJ was quoted to have said:

> *On the question of damages, the word "consequential" had come to mean "not direct".*[828]

1051. Roche LJ agreed that

> *… the damages recovered by the defendants on the counterclaim were not merely "consequential," but resulted directly and naturally from the plaintiffs' breach of contract.*[829]

1052. In ***Saint Line*** (1940) concerned a contract for engines for a ship which turned out to be defective. They buyer repudiated the contract, rejected the engines and claimed in arbitration (i) loss of profit for the time during which the it was deprived of the use of the ship, (ii) expenses "thrown away" for wages, stores etc. (iii) superintendents' fees and (iv) additional costs of a replacement engine (which was uncontroversial). The exclusion clause in the contract in part was similar to that in *Millar's Machinery*, providing for replacement and remediation and adding that the seller's "liability does not extend to any loss or damage direct or indirect caused by the failure

[827] *Millar's Machinery Co Ltd v David Way & Son,* [1935] 40 Com Cas 204, RLA-69, page 209.
[828] *Millar's Machinery v David Way & Son*, RLA-69, page 210.
[829] *Millar's Machinery v David Way & Son*, RLA-69, page 210.

of such defective part or by the detention of ship …". The clause went on with other exclusions and in the end excluded altogether "any indirect or consequential damages or claims whatsoever".

1053. The umpire in the arbitration stated the case to the Kings Bench Division. that point was developed. Atkinson J said:

> *The word "consequential" is not very illuminating, as all damage is in a sense consequential, but there is a definition in the Oxford English Dictionary to which both sides have appealed: "Of the "nature, of a consequence, merely; not direct or immediate; "eventual." It cites the definition of "consequential "damages" from Wharton as: "losses or injuries which "follow an act, but are not direct or immediate upon it." But, apart from that, I have the guidance of the Court of Appeal as to what is meant by "consequential."*[830]

1054. The judge quoted the passage cited above and then continued:

> *In my judgment, the words " indirect or consequential" do not exclude liability for damages which are the direct and natural result of the breaches complained of. […] I do not think "immediate" adds anything to the word "direct" and I do not think "consequential" adds anything to the word "indirect." What the clause does do is to protect the respondents from claims for special damages which would be recoverable only on proof of special circumstances and for damages contributed to by some supervening cause. I am satisfied that it does not protect them from the claims which are made in this case.*[831]

1055. On this basis, the judge admitted all three contentious claims as direct and not touched by the exclusion clause. With respect to loss of profit, the judge held:

> *…it is quite clear that such a claim may very well arise directly and naturally from the breach based on delay. The vessel was a trading vessel and the owners were deprived of the possession and use of*

[830] *Saint Line Ltd v Richardsons, Westgarth & Co Ltd,* [1940] 2 KB 99, RLA-70, page 103.
[831] *Saint Line Ltd v Richardsons, Westgarth & Co Ltd,* RLA-70, page 104.

the vessel for many months, thereby of the obvious opportunity of making profit.[832]

1056. The question then was considered in ***Croudace v. Cawoods*** (1978). In that case the supplier of masonry blocks had limited its liability to the replacement of defective goods and, in addition, provided that it was "not under any circumstances to be held liable for any consequential loss or damage caused or arising from" delay or defects. Justice Parker referred to *Millar's Machinery* and *Saint Line* as the only direct authority. Considering the word "consequential" he stated:

> *… the word "consequential" has no well defined meaning and may have different meanings according to the context in which it is used.*

1057. He noted that there was "no intention to relieve from liability for all loss and damage only for such loss or damage which is properly described as 'consequential'" and asked "what it was which was intended to survive the exclusion". He concluded:

> *It is in my judgment clear that the word "consequential" is, in the present context, used to describe or indicate a type of loss or damage which is in some way less direct or more remote than that loss or damage which is to remain recoverable despite the exclusion. This appears to me to follow from the ordinary use of the words and from the fact that it would be commercial nonsense to give it any other meaning.*[833]

1058. Before the Court of Appeal Lord Justice Megaw also referred to *Millar's Machinery* and observed:

> *That case was decided in the year 1934. It has stood, therefore, now for more than 43 years. So far as I know it has never been adversely commented upon. It is referred to in a number of textbooks, including some of those to which we were referred by Mr. Neill; it is referred to*

[832] *Saint Line Ltd v Richardsons, Westgarth & Co Ltd,* RLA-70, page 104.
[833] *Croudace Construction Ltd v Cawoods Concrete Products Ltd,* [1978] 2 Lloyd's Rep 55, RLA-78, page 58.

in Halsbury's Laws (4th ed.), vol. 12, under the title of "Damages" at par. 1113.

1059. Lord Justice Megaw found the *ratio decidendi* in *Millar's Machinery* "directly applicable to the present case and which is binding on this Court". He added:

> *It is clear that the word "consequential" can be used in various senses. It may be difficult to be sure in some contexts precisely what it does mean. But I think that the meaning given to the word in Millar's case is applicable to the present case. It is binding on us in this case.*

and he concluded:

> *Mr Justice Parker was right to hold that the word "consequential" does not cover any loss which directly and naturally results in the ordinary course of events from late delivery.*[834]

1060. A similar view concerning the authoritative construction of the term "consequential" was expressed by the English Court of Appeal in ***British Sugar*** (1997). Referring to the decisions in *Croudace* and *Millar's Machine*, the court stated:

> *… once a phrase has been authoritatively construed by a court in a very similar context to that which exists in the case in point, it seems to me that a reasonable businessman must more naturally be taken to be having the intention that the phrase should bear the same meaning as construed in the case in point.*[835]

1061. ***Deepak v. ICI*** (1998), related to a contract for the supply of a methanol plant which provided a detailed regulation of indemnities and liabilities, including liquidated damages and a cap on the total aggregate of liability. It also contained a clause which excluded "any liability except as expressly set out in the Contract", adding that "in no event shall Davy by reason of its performance or obligations under this Contract be liable in tort or for

[834] *Croudace Construction Ltd v Cawoods Concrete Products Ltd,* RLA-78, page 62.
[835] *British Sugar plc v NEI Power Projects Ltd,* (unrep, EWCA, 8 October 1997), RLA-46.

loss [of] anticipated profits, catalyst, raw materials and products or products or for indirect and consequential damage".

1062. The plant delivered was defective, an explosion occurred and the plant had to be reconstructed. The Court of Appeal considered *inter alia* the decision of the court below which had held: "the direct loss contemplated was the cost of getting the plant right, not the indirect or consequential losses flowing from getting the plant wrong". The Court of Appeal disagreed and found that it was bound by the decision in *Croudace*:

> *The direct and natural result of the destruction of the plant was that Deepak was left without a methanol plant, the reconstruction of which would cost money and take time, losing for Deepak any methanol production in the meantime. Wasted overheads incurred during the reconstruction of the plant, as well as profits lost during that period, are no more remote as losses than the cost of reconstruction. Lost profits cannot be recovered because they are excluded in terms, not because they are too remote. We consider that this Court is bound by the decision in Croudace where a similar loss was not excluded by a similar exclusion and considered to be direct loss.*[836]

1063. A subsequent decision of the Court of Appeal and a statement of Lord Hoffmann seem to indicate, however, that position concerning the authoritative construction of the terms "consequential" is not as firm as some of the quoted passage above might seem to indicate.

1064. In ***Hotel Services Ltd v. Hilton International Hotel (UK) Ltd*** (2000), the Court of Appeal considered a contract that excluded any liability "for any indirect or consequential loss, damage or liability arising from any defect in or failure of the System or any part thereof or the performance of this Agreement or any breach hereof by the Company or its employees". Sedley LJ identified the "direct or natural consequences" of the defects in the supplies, which thus remained "untouched by an exemption clause which (since all recoverable loss is literally consequential) plainly uses

[836] *Deepak Fertilisers & Petrochemicals Corp v ICI Chemicals & Polymers Ltd,* [1999] 1 Lloyd's Rep 387 (CA), pages 402 and 403, RLA-47.

'consequential' as a synonym of 'indirect'"; but, as the Court observed, "nothing, at least in this area of the law, is so simple".[837]

1065. Sedley LJ went on to discuss at length the positions taken in the courts on consequential damages, including in particular the statements of Atkinson J in *Saint Line* and the differing views by McGregor whose book he described as "the leading textbook on damages" who introduced the distinction between "normal" and "consequential". The Court quoted McGregor's definition of "normal" damages as "those which every claimant in a like situation will suffer" and distinguished them from "consequential losses" which are "anything beyond this normal measure, such as profits lost or expenses incurred through the breach, and are recoverable if not too remote"; but McGregor accepted a different position with respect to exclusion clauses: "It may be that there is justification for the courts to construe the term consequential loss more narrowly where exclusion clauses are concerned."[838]

1066. Sedley LJ highlighted the difficulties in the use of the term "consequential" in contract practice:

> *One would like to say simply that all consequential losses are recoverable provided they were either objectively or subjectively foreseeable by the parties; but to do this is to restore to the word "consequential" the natural meaning of which commercial and legal usage in exclusion clauses has long since robbed it.*[839]

1067. Sedley LJ emphasised "how difficult it can be to draw a line between [indirect and consequential damage] and damage flowing naturally from a breach". He placed the problems in interpreting exclusion clauses in the context of the two limbs in *Hadley v Baxendale*:

> *This is not a dichotomous but a continuous classification, bringing into the region of recoverability all loss which the parties must in the nature of things or for known reasons have anticipated. It is the framing of exclusion clauses which has made it necessary to divide*

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[837] *Hotel Services Ltd v Hilton Int'l Hotels (UK) Ltd,* (unrep, EWCA, 15 March 2000), RLA-48, paragraphs 4, 8, and 9.
[838] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraphs 9 and 10.
[839] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraph 11.

up its elements in order to keep the contractual effects within acceptable bounds.[840]

1068. With respect to loss of profit, Sedley LJ gave an example of the differences in the situations that must be considered:

> *An example of consequential loss might be injury to the profitability of the hotel itself. But where the contract is one of hire, the "thing itself" is not the equipment but the use of the equipment, and if through breach of contract it becomes unusable and dangerous the natural or immediate loss is, it seems to us, the profit (if any) which it would otherwise be yielding and the cost of neutralising the danger.*[841]

1069. In this discussion the Court of Appeal concluded the review of relevant decisions by commenting the passage in *Deepak v. ICL* quoted above and commented that the reasoning "would be no less potent without its final sentence" in which the Court had stated that it was bound by the decision in *Croudace*. Sedley LJ went on quoting the court below: "… authority dictates that the line between direct and indirect or consequential losses is drawn along the boundary between the first and second limbs of *Hadley v Baxendale*." He commented: "This conclusion has the virtue of practicality; but - as Rix J's judgment itself illustrates - it does not automatically tell one on which side the line a case falls."[842]

1070. The solution to these difficulties, in the words of Sedley LJ, is in an examination of the facts of the specific case:

> *… one has to go back to the language of the clause in its documentary and factual context and try to see what it means.*[843]

and

> *… one has to be continuously alive to differences of surrounding fact.*[844]

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[840] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraph 15.
[841] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraph 13.
[842] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraphs 19 and 20.
[843] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraph 11.
[844] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraph 20.

1071. This line of cases and specifically the *Hotel Services* decision was referred to before the House of Lords in ***Caledonia North Sea Ltd v British Telecommunications Plc.*** (2002) Lord Hoffmann recorded the argument:

> *Mr Currie submitted, on the basis of a number of decisions in the English Court of Appeal, that "indirect or consequential losses" should be construed to mean losses which would have been recoverable, if at all, under the "second rule in Hadley v Baxendale (1854) 9 Ex 341". Indirect or consequential loss, it was said, means loss which does not follow in the natural course of things from the breach of contract, or loss which might reasonably have been supposed to have been within the contemplation of the parties. It is loss which follows from special circumstances such as the links with Texas.*

1072. Having recorded this argument, Lord Hoffmann stated that the issue was not relevant for the decision the House of Lords had to make but he made a point of reserving "the question of whether, in the context of the contracts in the *Hotel Services* and similar cases, the construction adopted by the Court of Appeal was correct".[845]

1073. The Tribunal **concludes from this review of English cases** that, when deciding which losses are recoverable and which losses fall within the ambit of a clause excluding "consequential" losses, categories such as "loss of profit" are not necessarily decisive: loss of profit may be excluded by such clauses (as in the case of *Millar's Machinery*) or it may be treated as direct and recoverable despite the exclusion of consequential loss (as in *Saint Line* and *Hotel Services*). There is authority to construe the term "consequential" as referring to the second limb of *Hadley v Baxendale (*as in *Croudace*). Considering the words of Lord Hoffmann, just quoted, the issue may not be finally settled in English law. In any event, as emphasised especially by Lord Sedley in *Hotel Services*, the wording of the clause and the facts concerning the claimed damage are decisive.

1074. The Claimant argues that "English cases have no application in this case".[846] Under the heading "**comparative law**" the Claimant asserts:

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[845] *Caledonia North Sea Ltd v British Telecommunications plc* [2002] UKHL 4, [2002] 1 Lloyd's Rep 553, paragraphs 99 and 100.
[846] C-PHB, title at page 117.

BAPEX errs in arguing that the loss of production and loss of profits caused by the blowouts are direct, as opposed to consequential damages. BAPEX attempts to draw support from English case law for that proposition. However, English law on what "consequential damages" means is irrelevant as the JVA is governed by Bangladeshi law. Cases from other common law jurisdictions, such as Australia and New Zealand, provide an approach to consequential damages that is more compatible with Bangladeshi law.[847]

1075. The Claimant has relied on a decision from New Zealand and one from Australia of 2009 and 2012, respectively. These decisions criticise some of the English cases referred to above, in particular, for limiting "the meaning of indirect or consequential losses and like expressions, in whatever context they may appear, to losses arising only under the second limb of *Hadley v. Baxendale*"; they consider this position as "unduly restrictive and [failing] to do justice to the language used".[848] Both the New Zealand case and the Australian case on which the Claimant relies refer to and quote from an earlier decision of the Victorian Court of Appeal. It appears therefore preferable to start the examination with that decision

1076. This decision of the Victorian Court of Appeal, ***Environmental Systems v Peerless Holdings*** (2008),[849] dealt with a contract by which Peerless had engaged Environmental Systems (ES) to supply an air treatment system for an industrial installation to replace its existing system. Efforts to make the ES system work as intended failed; eventually the ES system was rejected. Peerless acquired a different system and claimed, *inter alia*, for the costs it had engaged during the attempts to make the ES system work and for the additional energy costs of the replacement system. The supplier relied on a limitation clause that provided: "As a matter of policy, Environmental Systems does not accept liquidated damages or consequential loss."

1077. The judge at first instance had admitted both claims, holding that the expression "consequential loss" referred to losses recoverable only under the second limb of *Hadley v Baxendale*; the losses claimed were not "consequential" within the meaning of that clause. On appeal the decision

[847] C-PHB, paragraph 396.
[848] *Alstom Ltd v Yokogawa Australia*, CLA-55, paragraph 281. Similarly *Oceania Furniture Ltd v Debonaire Products Ltd,* Judgment, (unrep, NZHC, 27 August 2009), CLA-53, paragraph 121.
[849] *Environmental Systems Pty Ltd v Peerless Holdings Pty Ltd,* [2008] VSCA 26.

was reversed. Nettle JA giving the judgment for the Victoria Court of Appeal, considered the argument that "consequential loss" in that contract "means any losses that a business person would understand that term to embrace"; he stated:

> *This question is a vexed one. The judge's view accords with a body of English authority which has been followed in this country on a couple of occasions by judges at first instance. In point of principle, however, the English authority appears to be flawed. As was pointed out in earlier editions of McGregor on Damages, the true distinction is between 'normal loss', which is loss that every plaintiff in a like situation will suffer, and 'consequential losses', which are anything beyond the normal measure, such as profits lost or expenses incurred through breach.*[850]

1078. The Court considered the remedies provided by the English Sale of Goods Act (1893) and the general measure of damages in its sections 50 and 51, *i.e.* the "estimated loss directly and naturally resulting, in the ordinary course of events, from the seller's breach of contract" and distinguished it from that in *Hadley v Baxendale*: "Obviously, that is not the same as the distinction between the first and second rules in *Hadley v Baxendale*, since some 'consequential loss' may well fall within the first rule in Hadley v Baxendale as loss arising 'naturally', ie. according to the usual course of things, from the breach of contract."[851]

1079. Nettle JA referred to the words of Sedley LJ in *Hotel Services* who had, as quoted above, noted that "commercial and legal usage in exclusion clauses has long since robbed" the word "consequential" of its "natural meaning"[852] and to the proposal of McGregor "that the conception of consequential loss should be restored to the natural meaning". He agreed with this proposal[853] and concluded:

> *In my view, ordinary reasonable business persons would naturally conceive of 'consequential loss' in contract as everything beyond the normal measure of damages, such as profits lost or expenses incurred*

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[850] *Environmental Systems v Peerless Holdings*, paragraph 87.
[851] *Environmental Systems v Peerless Holdings* , paragraph 88.
[852] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraph 11.
[853] *Environmental Systems v Peerless Holdings*, paragraph 90, quoting from Harvey McGregor, *McGregor on Damages*, (17th edition), at paragraphs 1-038 and 1-039.

through breach. Despite the construction which has been put on 'consequential losses' by cases such as Millar and Croudace, it would be unrealistic to suppose that the appellant and the respondent employed the expression 'consequential loss' in clause 8.9 of the agreement advisedly in that sense. It is more likely in this context that they intended the expression to have its ordinary and natural meaning. Accordingly, I would construe the expression 'consequential loss' in clause 8.9 as intended to have that meaning. Read in the light of the contract as a whole, and giving due weight to the context in which the clause appears, including the nature and object of the contract, I see no ambiguity which as a matter of principle would warrant a departure from that view. It follows as I see it that, although the judge's approach in this case was in accordance with the English cases, it was not correct to construe 'consequential loss' as limited to the second rule in Hadley v Baxendale.[854]

1080. This decision of the Victoria Court of Appeal was referred to in New Zealand, where the High Court had to consider in ***Oceania Furniture v Debonaire*** (2009)[855] contractual arrangements under which Oceania supplied over a period of several years furniture as ordered by Debonaire. Oceania had to supply the furniture "in a timely fashion and in good order". The contract provided that Oceania's total liability would not exceed the "purchase price of the Goods complained of" and then stated that Oceania was "not liable for any consequential, indirect or special damage or loss of any kind …". Over several years Debonaire ordered and Oceania supplied large numbers of furniture in a reliable manner. Then disruptions occurred and the supplies of Oceania became less reliable. Debonaire claimed damages under specific contracts on which Oceania defaulted. In addition Debonaire asserted that the unreliability of Oceania's supplies affected its business and claimed loss of profit, due to "breakdown of its relationship" with its principal customer, lost sales to existing customers and lost opportunities for other sales. Oceania relied on the exclusion of "consequential damage".

1081. Considering that defence, Clifford J referred to the "English Court of Appeal's approach [which] is that, in the absence of any contrary indication in the contract, the dividing line between 'direct losses' and

[854] *Environmental Systems v Peerless Holdings,* paragraph 93.
[855] *Oceania Furniture Ltd v Debonaire Products Ltd,* CLA-53.

'indirect and consequential losses' will be drawn along the boundary between the first and the second limb of *Hadley v Baxendale – i.e.* it defined indirect and consequential losses as being those losses which fall within the second limb only".[856] Against background he discussed cases in New Zealand and Australia. He noted that there was no binding authority on the meaning of "consequential losses" in this context in New Zealand, where the courts had declined on two occasions to consider the point. He added that the highest courts in England and Australia have not yet considered the issue and referred specifically to the statement of Lord Hoffmann in *Caledonia*, as quoted above.[857]

1082. Clifford J referred to the *Environmental System*s decision and found it preferable "to consider the ordinary commercial meaning of the term 'consequential losses' in the context of the particular contract." Quoting from that decision, Clifford J, found that the "true distinction is between 'normal loss', which is loss that every plaintiff in a like situation will suffer, and 'consequential' losses, which are anything beyond the normal measure, such as profits lost or expenses incurred through breach". In support he quoted the words of Sedley LJ which McGregor had picked up in the proposal to restore "the natural meaning" to the "conception of consequential loss" that had been robbed by "commercial and legal usage in exclusion clauses".[858]

1083. The judge emphasised the "difficulty, over time, of interpreting the concepts of 'direct', 'indirect' and 'consequential losses'" and looked "at those terms within the context of the particular contract entered into by Oceania and Debonaire". He pointed out that Oceania's obligation was to supply those orders placed by Debonaire which it had accepted.[859] The damages which the judge accepted were "limited to the direct profit Debonaire would have received on the orders that Oceania was obliged to supply in a timely fashion but did not supply at all".[860] Other claims for breach of contract were either not proven or were covered by the limitation of liability.

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[856] *Oceania Furniture Ltd v Debonaire Products Ltd,* CLA-53, paragraph 113.
[857] *Oceania Furniture Ltd v Debonaire Products Ltd,* CLA-53, paragraph 120.
[858] *Oceania Furniture Ltd v Debonaire Products Ltd,* CLA-53, paragraphs 121 and 119, quoting from *Environmental Systems*, paragraph 90 and *McGregor on Damages*.
[859] *Oceania Furniture Ltd v Debonaire Products Ltd,* CLA-53, paragraphs 121 – 124.
[860] *Oceania Furniture Ltd v Debonaire Products Ltd,* CLA-53, paragraph 179.

1084. In the Supreme Court of South Australia, the case of ***Alstom v Yokogawa*** (2012),[861] concerned defective supplies by a subcontractor relating to the construction of a power station. The contract provided for liquidated damages and certain performance guarantees, adding that "payment of Liquidated Damages in accordance with this Article 12 shall constitute the sole and exclusive liability of Subcontractor and the sole and exclusive remedy of Contractor for Subcontractor's delay …"; a similar provision applied with respect to failures to achieve the performance guarantees.[862] In addition the contract contained a general clause excluding liability for "any indirect, economic or consequential loss whatsoever".

1085. Justice Bleby observed that this expression in the general exclusion clause is "of very wide import. It is not a term of art. It has no fixed meaning. It must be read as a whole and considered in the light of the other terms of this [contract] and in the light of any relevant background circumstances".[863]

1086. Considering the English authorities, Justice Bleby, pointed out that these authorities had "not been considered by the House of Lords or the UK Supreme Court" and referred to Lord Hoffmann's observation quoted above. With respect to Australian cases, Justice Bleby discussed at length and quoted from *Environmental Systems*, including the passage quoted above distinguishing "normal loss" from "*consequential"* losses, "which are anything beyond the normal measure, such as profits lost or expenses incurred through breach". [864]

1087. He reviewed the line of English cases and concluded:

> *There is no doubt that by a process of evolution those authorities have come to recognise that indirect or consequential loss, in whatever context those words appear, seem to have become aligned to the type of losses covered by the second limb of Hadley v Baxendale. However, in my opinion those cases have failed properly to construe those words in the context in which they appear.*[865]

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[861] *Alstom Ltd v Yokogawa Australia,* CLA-55.
[862] *Alstom Ltd v Yokogawa Australia,* CLA-55, paragraph 241.
[863] *Alstom Ltd v Yokogawa Australia,* CLA-55, paragraph 268.
[864] *Alstom Ltd v Yokogawa Australia,* CLA-55, paragraphs 282, 287.
[865] *Alstom Ltd v Yokogawa Australia,* CLA-55, paragraph 274.

and

> *To limit the meaning of indirect or consequential losses and like expressions, in whatever context they may appear, to losses arising only under the second limb of Hadley v Baxendale is, in my view, unduly restrictive and fails to do justice to the language used. The word "consequential", according to the Shorter Oxford English Dictionary means "following, especially as an effect, immediate or eventual or as a logical inference". That means that, unless qualified by its context, it would normally extend, subject to rules relating to remoteness, to all damages suffered as a consequence of a breach of contract. That is not necessarily the same as loss or damage consequential upon a defect in material where other remedies are also provided.*[866]

1088. Alstom had claimed, on account of breach of contract, liquidated damages as per the subcontract, damages paid by Alstom to the employer and additional costs for performing or reperforming work of Yokogawa. The court admitted the claims for liquidated damages and, based on the limitation of liability provisions, dismissed the other breach of contract claims.[867]

1089. On the basis of *Oceania* and *Alstom*, the Claimant argues that "[o]ther common law jurisdiction, in contrast [to the English decisions], take an approach to consequential damages that is compatible with Bangladesh law"; and, comparing these two cases to the English cases, "that there is no universal legal rule for classifying losses arising from breach of contract as direct or consequential".[868]

1090. The Tribunal notes that the principal basis on which the decisions from Australian and New Zealand disagree with the approach adopted by the English Court of Appeal is what they consider as the "natural meaning" of the term "consequential loss". Quoting the words of Sedley LJ and McGregor's proposal, they recognise that commercial and legal usage has robbed the word "consequential" of that natural meaning, as it can be found in dictionaries. The Australian and New Zealand decisions seek to restore that natural meaning to the word because "ordinary business

[866] *Alstom Ltd v Yokogawa Australia,* CLA-55, paragraph 281.
[867] *Alstom Ltd v Yokogawa Australia,* CLA-55, paragraph 315.
[868] C-PHB, paragraphs 401, 403.

persons" would not conceive the term in the sense in which it is understood by English courts.

1091. Now, the decisions on which the Claimant relies do not explain how they determined what "ordinary business persons" understand by the word "consequential loss" in exclusion clauses. They do not consider the possibility that these business persons could understand the term in the sense of the "commercial and legal usage" that replaced the "natural meaning". Seeking to restore the "natural meaning" to the term thus may well deprive the term of the meaning that it now has in commercial and legal usage, as understood by the English Court of Appeal.

1092. More generally, the Tribunal notes that exclusion of liability for "consequential loss or damage" can be found frequently in international commercial contracts. In the present case, however, the case law discussed by the Parties emanates from courts in England, Australia and New Zealand, while the law applicable to the JVA is the law of Bangladesh and the Parties to the JVA are based in that country and in Canada. The IOCs party to the 2001 PSC, containing a practically identical clause, have their principal base in the USA and the UK. In order to provide assistance for the interpretation of the term "consequential loss" in such international context, a much broader comparative background would have been desirable.

1093. To provide some indication of the range of other meanings that may have to be considered in a definition of "consequential loss or damage", the Tribunal quotes the definitions given in Black's Law Dictionary:

> ***Consequential loss***. *A loss arising from the result of damage rather than from the damage itself. A consequential loss is proximate when the natural and probable effect of the wrongful conduct, under the circumstances, is to set in operation the intervening cause from which the loss directly results. When the loss is not the natural and probable effect of the wrongful conduct, the loss is remote. – Also termed indirect loss; consequential injury …*

> ***Consequential damages***. *Losses that do not flow directly and immediately from an injurious act but that result indirectly from the act. …*[869]

1094. The Tribunal concludes from this diversity of meanings attributed to the term "consequential loss", that there is no accepted meaning which can be directly applied to the interpretation of Article 27.2 of the JVA. Indeed, in *Croudace*, the English Court of Appeal stated "the word 'consequential' has no well defined meaning …"; when considering the broad exclusion clause including the term "consequential loss", the Supreme Court of Western Australia found that "It is not a term of art. It has no fixed meaning".

1095. The different meanings attributed to the exclusion "consequential loss" have in common that there is some form of "direct loss" that is not excluded and some remote loss that is certainly excluded. As Sedley LJ said in *Hotel Services* about the two limbs in Hadley v Baxendale: "this is not a dichotomous but a continuous classification, bringing into the region of recoverability all loss which the parties must in the nature of things or for known reasons have anticipated." The exclusion of consequential loss then draws a line somewhere on that continuum.[870]

1096. When considering where the line must be drawn, most of the decisions discussed above emphasised the need to consider the specific exclusion clause in the context of the contract and the loss claimed. In *Hotel Services* the English Court of Appeal advised: "one has to be continuously alive to the differences of surrounding fact"; and the Court of Appeal of Victoria emphasised the need of "giving due weight to the context in which the clause appears, including the nature and object of the contract".

1097. The Claimant concludes its review of English, Australian and New Zealand cases by stating:

> *… there is no universal legal rule for classifying losses arising from breach of contract as direct or consequential. The classification will depend on the nature of the contract and the exact wording of the exclusion clause.*[871]

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[869] *Black's Law Dictionnary*, (8th edition, 2007).
[870] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraph 15.
[871] C-PHB, paragraph 403.

1098. The Tribunal agrees. While the interpretation of the expression "consequential loss or damage", as given by the courts discussed above, are of assistance in indicating the range within which the specific provision in Article 27.2 of the JVA can be situated, there is no "established meaning" on which the Tribunal may rely when applying that provision in the present case. The clause must be considered specifically in the context of the JVA.

10.3.3 "Consequential loss or damage" in Article 27.2 of the JVA

1099. The JVA is a contract quite different from those which have been considered in the cases discussed above, which concerned primarily contracts of sale, supply and installation of industrial equipment, charter of ships and similar contracts providing the supply of goods or services against payment. As the Claimant pointed out, the "JVA is not a contract for the sale or purchase of gas. It is a contract for the conduct of petroleum operations".[872] The term Petroleum Operations is defined in the JVA as "all the operations of Development and Production and all other operations, pertaining to Petroleum as provided for in this JVA".[873]

1100. In the JVA the two parties combine their efforts for a common object, defined in Article 2.1:

> *This is a Joint Venture Agreement, the object of which is the Development and Production of Petroleum from the Marginal/Abandoned gas fields Chattak and Feni as specified in Article 3 at Operator's sole risk and expense. All actions taken and operations conducted shall be in consideration to the requirement and applicability of such operations for a Marginal/Abandoned field.*

1101. As pointed out by the Claimant, paragraph 5 of the JVA Preamble highlights some specificities of this development:

> *Development of Marginal/Abandoned gas fields require certain unique approach to cost control, technology application, economic and risk structure as compared to the development of a discovered gas field, which has not been produced.*

[872] C-PHB, paragraph 387.
[873] JVA, Article 1.47, Exhibit C-1.

1102. In this context the Claimant stated that the "oil-and-gas business is an inherently dangerous one. Natural gas is both valuable and highly flammable."[874] For the Claimant this "inherently dangerous" nature of petroleum operations is the reason for the exclusion clause in Article 27.2 of the JVA.[875]

1103. The Claimant argues that the "parties anticipated the possibility of an incident that could cause damage to persons or to property. At the same time, the parties recognised" the "unique approach" required in case of marginal/abandoned gas fields, as stated in paragraph 5 of the JVA Preamble.[876] In the opinion of the Claimant, the "JVA reflects the Parties' agreement on a comprehensive liability-limitation regime to balance the risk of an incident against the need to control costs and manage a marginal field. Article 27.2 set out a narrow exception".[877] This regime, in the eyes of the Claimant consisted in the indemnities and the exclusion clause in the first and second sentence of Article 27.2.

1104. The Respondents emphasise the precautions which an operator must take to face such risks,[878] an aspect that has been discussed above in Section 8. They also argue that the JVA has two indemnity clauses Articles 20 (entitled "Indemnities") and 27 and contest that this provides a "comprehensive liability limitation regime".[879] They highlight, however, the exclusions of liability and indemnities provided in Article 20.1 and 20.2 of the JVA. The Respondents explain that such exclusions and indemnities are "typical for oil and gas joint operating agreements" and are "commonly known as 'knock for knock'".[880] Article 20.1 of the JVA provides that

> *… BAPEX shall forego all claims against Operator for, and shall indemnify Operator against any and all liability in respect of any of the following insofar as caused by or arising in the course of performance or purported performance of the Agreement (whether or not involving the negligent act or omission of Operator, its directors or other officers, employees or agents) namely*

[874] C-PHB, paragraph 7.
[875] C-PHB, paragraph 387.
[876] C-PHB, paragraph 7.
[877] C-PHB, paragraph 8.
[878] *E.g.* R-PHB, section II.D.
[879] R-PHB, paragraphs 235 *et seq.*, 241 *et seq.*
[880] R-PHB, paragraph 237.

(a) any death, injury or illness of any employee of BAPEX,

(b) any physical loss or damage to BAPEX facilities (and any loss including consequential losses associated with or arising from such loss or damage), or

(c) any death, injury or illness of any third party, or damage to the property of any third party, occurring on or as a result of an accident involving any of the BAPEX facilities and shall indemnify Operator against any and all costs, damages or expenses whatsoever incurred by Operator in respect of any claims, demands, proceedings or causes of action arising from such death, injury, illness, loss or damage.

1105. Article 20.2 of the JVA provides for the same exclusion of liability and indemnity by Niko in favour of BAPEX. Articles 20.3 and 20.4 preserve claims under any other provision of the JVA and exclude "Wilful Misconduct" from the effect of the agreed "knock for knock".

1106. Article 20.1 of the JVA is not directly relevant, as no physical injury claims and no claims for physical loss or damage to BAPEX facilities have been raised in these arbitrations. The Tribunal noted, however, the broad scope of exclusion of liability and indemnity which the clause provided and which the Respondents consider as typical for the kind of joint operating agreement in the oil and gas industry. Moreover, and specifically for the issue now considered by the Tribunal, the use of the term "consequential losses" in the clause deserves to be noted. From the context in which it is used, the Tribunal concludes that "consequential losses" were understood by the Parties as a type of loss that is "associated with or arising from" physical loss or damage to BAPEX's facilities.

1107. As to Article 27.2 of the JVA and specifically the exclusion clause in its second sentence, the Respondents argue that it "excludes only indirect, consequential lost profits and lost production, not direct or foreseeable losses".[881] The Tribunal notes that, indeed, this sentence does not exclude liability for any "loss or damage"; the exclusion is qualified by the term "consequential". As the examination of court cases from different countries and the underlying contract practice discussed above have shown, the

[881] R-PHB, page 108, title 2.

exclusion of "consequential" loss or damage normally assumes that some damage, generally described as "direct", remains compensable. Complete exclusion of any liability would appear quite unusual. It would render superfluous the provision in Article 20.1 of the JVA by which BAPEX foregoes "all claims" of the described categories.

1108. The **Tribunal concludes** that the exclusion of liability by Article 27.2 of the JVA therefore is not complete; some category of loss or damage remains compensable.

1109. Article 27.2 JVA does not specify this category of loss or damage that remains compensable. The cases discussed above provided different indications, varying from "normal loss, which is loss that every plaintiff in a like situation will suffer", "direct and natural result" of the breach to "any loss which directly and naturally results in the ordinary course of events" from the breach. The users of these terms may see differences in them; but they are not well explained. For the present purposes, the Tribunal will simply use the term direct loss or damage for that part of the loss or damage that remains compensable when consequential loss or damage has been excluded.

1110. The Parties approach the issue from the other end and consider what type of loss or damage has been excluded.

1111. The Respondents rely on English law and assert that "'consequential' is considered equivalent to the word 'indirect'" and that the two terms as interchangeable.[882] Indeed, the Tribunal notes that in the cases quoted, as in contract practice generally, the two terms not infrequently are used together without distinction. This can be observed in several of the English cases, *e.g.* in *Saint Line, Deepak* and *Hotel Services*. In Australia, the Court in *Alstom* referred to "the meaning of indirect or consequential losses and like expressions".[883] In *Hotel Services*, Sedley LJ, discussing indirect loss, stated "we would regard consequential loss, where the two are bundled together, as synonymous with it".[884]

1112. The Claimant argued that the drafters of the exclusion clause were not guided by the distinction in *Hadley v Baxendale.* It referred to the

[882] R-PHB, paragraph 248, also paragraph 249.
[883] *Alstom Ltd. v. Yokogawa Australia,* CLA-55, paragraph 281.
[884] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraph 16.

witnesses from BAPEX, Petrobangla and Niko who had appeared before the Tribunal and stated that they gave "the Tribunal a chance to understand the corporate personality of these companies". According to the Claimant, the drafters of Article 27.2 did not have "in mind a 19th century English case when they agreed to Article 27.2" nor "late 20th century English cases that decided to interpret contractual provisions as necessarily reflecting that 19th century English case". Those who adopted the clause, on the side of Niko and BAPEX, were "oil men and administrators, not lawyers". The Claimant concluded:

> *… when the parties used the term "consequential damages" in Article 27.2, they did not have in mind indirect damages under the second limb of Hadley v Baxendale. Rather, the parties intended to exclude specific types of damages, including lost production and damages from pollution, that may be the consequence of a contractual breach.*[885]

1113. The Claimant also argued that the exclusion of "consequential loss or damage" in Article 27.2 JVA is different from the exclusion of "remote and indirect" damage because such damage is already excluded by section 73 of the Contract Act.

> *If "consequential" damages were to mean "indirect" damages, as BAPEX now contends, a specific clause excluding liability for indirect damages in the JVA would serve no purpose - those damages were already excluded under the Contract Act. BAPEX's interpretation cannot be sustained as it would deprive Article 27.2, second sentence, of the JVA of any effect. Such a result would be contrary to one of the basic tenets of contract construction, i.e. that a clause should be given effect.*[886]

1114. Concerning the first of these arguments, the Tribunal sees no need to determine whether the drafters of Article 27.2 had in mind the first limb of *Hadley v Baxendale*, both of these limbs or any of the 20th century English decisions. It considers, as noted above, that the exclusion of loss or damage in Article 27.2 was qualified by the word "consequential", thus reserving that some loss or damage remained compensable, despite the

[885] HT 2016.02.22, pages 306 - 307.
[886] C-PHB, paragraph 400; also HT 2016.02.22, page 309.

exclusion. The Claimant provides no indication as to how the loss or damage remaining to be compensated is any different from the loss or damage that is compensable under section 73, first paragraph, of the Contract Act, patterned on the two limbs of *Hadley v Baxendale*. The Tribunal thus has no basis for distinguishing the loss or damage that remains compensable under Article 27.2 from that which is compensable under section 73, first paragraph.

1115. Concerning the second argument of the Claimant, the Tribunal notes that there is no reference in Article 27.2 of the JVA to section 73 of the Contract Act. As the law applicable to the JVA is the law of Bangladesh, the drafters may have considered the Bangladesh Contract Act and its section 73; but, as explained above, Article 27.2 of the JVA has a different origin. It is practically identical with Article 10.1.21 in the 2001 PSC concluded by the Government and Petrobangla with three IOCs and BAPEX. That PSC is governed by the law of Bangladesh, but the Joint Operating Agreement, signed the same day as the PSC, is governed by the laws of England. It may well be that drafters of the exclusion clause in that PSC wanted to provide a limitation of liability without considering the otherwise applicable law and used language they considered appropriate for that effect. The resulting redundancy is nothing unusual in international contracts.

1116. Moreover, if the drafters of the exclusion clause in the JVA wanted to provide an exclusion of liability beyond the limits in section 73 of the Contract Act, one would have expected that they provided some indications about how to distinguish that extended exclusion for "consequential loss or damage" in Article 27.1 of the JVA and Article 10.1.21 of the 2001 PSC from the "remote and indirect loss or damage" exclude by section 73 of the Contract Act.

1117. No such criteria for the distinction between "consequential" and "remote and indirect" have been provided in Article 27.1 of the JVA. The Parties to these arbitrations have not provided such criteria. The analysis of the cases to which the Parties referred were not of assistance in distinguishing these two terms from each other; it rather suggested that in international contract practice no clear distinction is made between "indirect" and "consequential".

1118. In these circumstances, the Tribunal has no basis for distinguishing the "consequential loss or damage", as excluded by Article 27.2 of the JVA from "remote and indirect loss or damage" in section 73 of the Contract Act, second paragraph. Subject to any explanations that may be provided by the Parties in their argument on quantum, the Tribunal thus will have to treat the two expressions as synonymous.

10.3.3 The exclusion of lost profits and lost production

1119. The Parties disagree about the scope of the exclusion of lost profit and lost production in Article 27.2 of the JVA,

1120. **The Claimant** relies on the express mention of "lost profits or lost production" and "damage resulting from pollution". It considers these categories of loss or damage as examples of what constitutes consequential loss or damage; liability for any such loss, according to the Claimant, is therefore excluded by Article 27.2: "Niko cannot be liable under the JVA for lost gas or damages to the environment".[887] It continues by asserting:

> *The only liability for the blowouts asserted against Niko is for gas that is alleged to have been lost and unavailable to be produced, and for damages resulting from alleged pollution. This is what the Government and Petrobangla claim in the Money Suit. Under the plain terms of Article 27.2, "[u]nder no circumstances" can any such claim be asserted. Niko cannot be held liable as concerns the only claims asserted.*[888]

1121. At the February 2016 Hearing the Claimant's argument was expressed differently. In the statement quoted above, the Claimant interpreted Article 27.2 of the JVA as the exclusion of specific categories of loss or damage, rather than the exclusion of consequential loss or damage with lost production and lost profit as examples:

> *… when the parties used the term "consequential damages" in Article 27.2, they did not have in mind indirect damages under the second limb of Hadley v Baxendale. Rather, the parties intended to exclude specific types of damages, including lost production and damages*

[887] C-PHB, paragraph 383.
[888] C-PHB, paragraph 384.

from pollution, that may be the consequence of a contractual breach.[889]

1122. **The Respondents** rely on the context in which lost profits and lost production are excluded, and specifically on the words "including but not limited to". They argue that the types of losses specified are examples of the consequential loss or damage that is excluded. They treat "consequential" as synonymous with "indirect" and assert that only indirect loss or damage is excluded by Article 27.2 of the JVA. Therefore, so the Respondents' argument, lost profit and lost production that is not indirect is not excluded:

> *… even where "consequential loss" in an exclusion clause references particular heads of loss, this does not exclude direct losses within those categories.*[890]

1123. The Respondents rely on two recent English cases dealing with contract clauses, ***Markerstudy Insurance v Endsleigh Insurance*** (2010) and ***Polypearl v E.On Energy Solutions*** (2014) where the exclusion of "indirect or consequential loss" was accompanied by a list of specific examples.[891] They summarise the relevant part of *Polypearl*:

> *The Court found that the words following "include" – loss of profit, loss of business etc. – were subordinate to the term "any indirect or consequential loss". This was because reference to "lost profits" and the other heads of loss operated merely an explanation of "any consequential loss"; they were not an attempt to exclude direct losses under these heads by pigeonholing them into the indirect, consequential loss category. The Court further noted that an exclusion clause would have to be clear "to rebut the presumption that a party was abandoning the remedies it was entitled to by law" and "[t]he word 'include' was not normally appropriate for such a construction."*[892]

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[889] HT 2016.02.22, page 307.
[890] R-PHB, paragraph 249.
[891] *Markerstudy Insurance Co. Ltd. and Others v. Endsleigh Insurance Services Ltd*, [2010] EWHC 281 (Comm), RLA-60, and *Polypearl Ltd. v. E.On Energy Solutions Ltd.*, [2014] EWHC 3045 (QB), RLA-66.
[892] R-PHB, paragraph 253, quoting from *Polypearl v. E.On*, RLA-66.

1124. The Respondents conclude from the cases relied on:

> *In clauses of the type used in the JVA, the examples are not intended to put direct lost profits or other direct losses into the meaning of "consequential." Rather, they are construed as giving examples of the kinds of indirect loss that are excluded. The examples do not convert direct lost profits, or other enumerated types of losses, into indirect losses.*[893]

1125. **The Tribunal** notes that the Claimant treats loss of production as equivalent to "lost gas".[894] The Claimant also asserted that "there is no dispute between the parties that the liability implicated by the two blowouts falls into the categories of lost production and pollution".[895] While lost gas would seem to be necessarily also lost for production, the reverse seems less evident to the Tribunal: gas may have become unavailable for production without being lost. As the question does not appear to be decisive for the issues to be decided here, the Tribunal leaves the question undecided for now and considers the Parties' argument here on the assumption that lost production means lost gas.

1126. In the previous section, the Tribunal concluded that liability for direct loss or damage was not excluded by Article 27.2 of the JVA. The difference between the Parties concerns the questions whether (i) liability for lost production, lost profit and damage from pollution is excluded as such and independently of their characterisation as "consequential" and (ii) to the extent to which this is not the case, whether conceptually lost profit, lost production and pollution can be direct.

1127. The answer to the **first question (exclusion of lost profit and lost production irrespective of their characterisation)** seems to be straight forward with respect to **damage from pollution**: in this respect Article 27.2 of the JVA excludes "other consequential loss or damage resulting from pollution". The words are clear: the clause excludes liability only to the extent to which it is "consequential loss"; direct loss or damage resulting from pollution is not excluded.

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[893] R-PHB, paragraph 251.
[894] *E.g.* in C-PHB, paragraph 383: "'lost production', *i.e.* lost gas".
[895] HT 2016.02.21, page 103.

1128. With respect to **lost profits and lost production**, the answer to the first question depends on the **meaning of the word "including"**. As the Claimant rightly points out, the term indicates that lost profit and lost production are presented as examples of "consequential loss or damage".

1129. The Respondents conclude that such losses are excluded only insofar as they are "consequential loss or damage":

> *… because the primary conclusion here is to consequential damages and if the lost production is not consequential it does not fall within the exclusion. It is only indicating that lost production is an example of possible consequential losses.*[896]

1130. **The Tribunal** considered that what is excluded is consequential loss or damage; lost profits and lost production are examples of the general category "consequential loss or damage". To the extent to which lost profits and lost production are *not* consequential, they are outside the category of excluded losses. It is therefore grammatically incorrect and incorrect in substance for the Claimant to read the exclusion clause in the sense that "Niko cannot be liable under the JVA for lost gas or damage to the environment".[897]

1131. The wording of the exclusion in Article 27.2 of the JVA may be usefully compared to the exclusion clause in the *Deepak* case which applied to liability "for loss [of] profits, catalysts, raw materials and products or products or for indirect and consequential damage". In that clause, loss of profits and other types of losses were excluded not as examples of consequential damage but in their own right, "excluded in terms".[898]

1132. Similarly, in ***Fujitsu v IBM*** (2014) on which the Respondents rely, the clause excluded liability "for loss of profit, revenue, business, goodwill, indirect of consequential loss or damage". Fujitsu argued that all these categories had to be construed as "aiming at indirect or consequential, not direct, losses". The "basic exclusion [should therefore be limited] to indirect and consequential loss". Carr J, rejected the argument. He referred to the

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[896] HT 2016.02.21, page 234.
[897] C-PHB, paragraph 383.
[898] *Deepak v ICI Chemicals & Polymers*, RLA-047, page 402; for a more extensive quotation see above section 10.3.2.

"fact that losses of profit can be direct or indirect [as] well-known" and did not agree "that loss of revenue, business or goodwill is necessarily indicative of indirect loss".[899] The different categories of losses in the clause considered were at the same level. As the Respondents state, the court did not accept to treat loss of profit as "a subset" of indirect or consequential loss.[900]

1133. In Article 27.2 of the JVA, lost profit and lost production are examples for consequential loss or damage and thus not on the same level. In *Markerstudy* the following exclusion clause applied:

> *Neither party shall be liable to the other for any indirect or consequential loss (including but not limited to loss of goodwill, loss of business, loss of anticipated profits or savings and all other pure economic loss) arising out of or in connection with this Agreement.*[901]

1134. Steel J, concluded:

> *The use of the phrase "including but not limited to" is a strong pointer that the specified heads of loss are but examples of the excluded indirect loss".*[902]

1135. In *Polypearl*, on which the Respondents also rely, the relevant passage of the exclusion clauses was very similar to that in *Markerstudy* and read as follows:

> *Neither party will be liable to the other for any indirect or consequential loss, (both of which include, without limitation, pure economic loss, loss of profit, loss of business, depletion of goodwill and like loss) howsoever caused …*[903]

1136. E-On agreed to purchase from Polypearl certain quantities of product but, in breach of the contract, purchased less than agreed. Polypearl claimed for the loss of profit on the shortfall. The respondent in that case argued that all loss of profit was meant while the claimant contended that the

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[899] *Fujitsu Services Ltd v IBM United Kingdom Ltd,* [2014] EWHC 752 (TCC), RLA-103, paragraphs 16, 72, 76, 77.
[900] R-PHB, paragraph 259, FN342.
[901] *Markerstudy Insurance v. Endsleigh Insurance,* RLA-60, paragraph 9.
[902] *Markerstudy Insurance v. Endsleigh Insurance,* RLA-60, paragraph 17.
[903] *Polypearl v. E.On,* RLA-66, paragraph 21.

exclusion clause referred only to indirect loss of profit claims. Behrens J concluded that the respondent's construction meant that "a claim for direct loss of profit [be deemed] to be a claim for indirect loss of profit. The word 'include' is not normally appropriate for such a construction". The judge held that the words in parenthesis, including "loss of profit", were "an explanation [of the phrase 'indirect or consequential'] and not an attempt to place a direct loss in the indirect category". In other words, "loss of profit" was "subordinate to the phrase 'indirect or consequential loss'".[904]

1137. In the opinion of the Tribunal, the situation is no different in the present case: "lost profit and lost production" are examples or, in the words of Behrens J, "explanations" of "consequential loss or damage". As such, lost profit and lost production are subordinate to consequential loss or damage and the limits of their exclusion are drawn accordingly. As stated by the Respondents, the use of the words "lost profit and lost production" in Article 27.2 of the JVA does "not convert direct lost profits, or other enumerated types of losses, into indirect losses".[905]

1138. **The Tribunal concludes** that Article 27.2 of the JVA, second sentence, does not exclude liability for any lost profit and lost production; it excludes liability for such losses only insofar as they are consequential and not direct.

1139. When addressing the second question the Tribunal must consider whether conceptually **lost profit, lost production and pollution can be direct**.

1140. With respect to **lost profit**, the discussion above has shown that a number of English cases have treated loss of profit, depending on the circumstances, as direct loss. As Behrens J said in *Polypearl*, "as a matter of general law, a claim for loss of profit may be either a direct or an indirect loss".[906] In *Hotel Services* before the Court of Appeal, Sedley LJ gave contracts of hire as an example:

> *… where the contract is one of hire, the "thing itself" is not the equipment but the use of the equipment, and if through breach of*

[904] *Polypearl v. E.On*, RLA-66, paragraph 68.
[905] R-PHB, paragraph 251.
[906] *Polypearl v. E.On*, RLA-66, paragraph 64.

contract it becomes unusable and dangerous the natural or immediate loss is, it seems to us, the profit (if any) which it would otherwise be yielding and the cost of neutralising the danger.[907]

1141. In a case where the buyer purchases the goods for reselling them, the profit that would have been made from the resale, normally would appear as a direct loss; and frequently the only loss. Inversely in the case of a breach of an obligation to purchase, as in *Polypearl*, "the most obvious (and likely) loss from the breach" is loss of profit.[908]

1142. **The Tribunal concludes** that, depending on the circumstances, loss of profit may be direct and thus not excluded by Article 27.2 of the JVA.

1143. With respect to **pollution**, the last words of Article 27.2 of the JVA provide the answer: they exclude liability for "other consequential loss or damage resulting from pollution". Excluding consequential loss resulting from pollution, suggests that there is other loss that does not fall in the category of "consequential", and that other loss resulting from pollution is not excluded; otherwise one would simply exclude loss resulting from pollution.

1144. **The Tribunal concludes** that direct loss or damage from pollution is not excluded.

1145. In view of these conclusions, the Tribunal may not, as the Claimant requests, dismiss without further examination all claims for lost gas and for damage resulting from pollution. The Tribunal has to determine whether the claims made are for direct loss or damage or are excluded as consequential by Article 27.2 of the JVA or as remote and indirect by Section 73 of the Contract Act.

1146. The Tribunal notes that the damage claimed in the Money Suit, to which the Claimant refers, has been identified there by reference to reports in four schedules, identifying different gas and environmental losses.[909] The reports of the Lost Gas Committees, which have been produced in these

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[907] *Hotel Services Ltd v Hilton Int'l Hotels,* RLA-48, paragraph 13.
[908] *Polypearl v. E.On*, RLA-66, paragraph 64.
[909] Complaint, *People's Republic of Bangladesh v. NIKO Resources (Bangladesh) Ltd.*, Money Suit No. 224/2008 (2d Court of Joint District Judge) (Bangl.), Exhibit C-6, paragraph 65 and the attached Schedules.

proceedings, also distinguish different categories of losses.[910] In addition, Dr Adams presented at the November 2015 Hearing the loss of the future viability of the Chattak field which the Respondents considered as a question to be treated as part of quantification of damages.[911]

1147. It appears from these indications that the claims made differ in nature and in their relation to their claimed origin in the Chattak 2 blowout. The question whether the losses claimed are direct or consequential, remote or indirect thus will have to be considered distinctly with respect to each of the claims. The Tribunal will do so when it will address in detail the specific claims presented and quantified in the second phase of the proceedings on the Compensation Declaration.

1148. At this stage and in view of its findings in the present decision the Tribunal addresses an argument by which the Claimant seemed to treat all damage resulting from the blowouts as remote: in the context of the second blowout, the Claimant argues that blowouts are rare events "in the oil and gas business" and blowouts of relief wells are even more rare. It concludes that any "damages associated with the relief well operations […] are simply too remote to be recoverable".[912] Presumably, the argument with respect to the first blowout would be similar.

1149. In the view of the Tribunal, however, the relevant question is not whether blowouts, as they occurred in the present case, are ordinary in the course of things in the oil and gas industry. Section 73 of the Contract Act does not refer to ordinary events in the context of the contract performance in general but to loss or damage caused in the usual course of things "from such breach".

1150. The breach of Niko's obligations as Operator under the JVA, as determined in the present decision, was the immediate cause of the first blowout. This blowout was driven by gas escaping from the reservoir with the effect described. The gas that escaped during this blowout was lost. It is therefore clear without the need for further argument and evidence that the gas that escaped from the Chattak 2 Well as part of the first blowout

[910] Report of the Committee for Estimating Gas Losses Caused by Blowout in Chattak-2, Exhibit R-2, Section 5, with the general description, followed by the detailed description and analysis of the first three categories; and Report of the Committee for Estimating Gas Losses Caused by Chattak 2A Relief Well Blowout, Annex R-4, Section 4 and titles of Sections 4.1 and 4.2.
[911] HT 2016.02.21, pages 152 – 154 and on HT 2016.02.22, page 391.
[912] HT 2016.02.21, pages 90 – 91.

and the corresponding loss of production are direct losses caused by Niko's breaches for which the Claimant is liable. The exclusion of Article 27.2 of the JVA does not apply to them.

1151. With respect to any other loss of gas and production as well as any other loss or damage for which Niko is held liable, the Tribunal expects that, in their submissions during damages phase of these arbitrations, the Parties will address specifically whether each of the losses claimed falls in an excluded category or not.

10.4 The application of the limitation of liability to the Government and Petrobangla

1152. The declaration sought by the Claimant concerns also and, for a long period in the arbitration, exclusively the claims made by the Government and Petrobangla in the Money Suit. Arguing that its liability must be determined under the JVA and relying on the exclusion clause in that agreement, the Claimant asserts that these claims are expressly excluded by the second sentence in Article 27.2.

1153. The Respondents argues that the exclusion clause operates only between BAPEX and Niko but does not apply to claims by the Government and Petrobangla. The argument is based on the wording "Under no circumstances shall a Party be liable to the other Party …": the clause speaks only of liability by "a Party" to "the other Party". The term Party is defined in Article 1.45 of the JVA as referring to BAPEX and the Operator; the Government and Petrobangla are not mentioned. The Respondents argue:

> *The second sentence of Article 27.2 does not – and indeed cannot, by virtue of the notion of privity of contract – restrict the legal rights of third parties to the JVA, such as the Government. By using the term "Party," the sentence expressly excludes the "Government" (also a defined term in the JVA) and all other third-parties from its coverage. To the extent the Tribunal decides any damages owed by Niko to the Government or Petrobangla, the second sentence of Article 27.2 does not apply to them.*[913]

[913] R-PHB, paragraph 242.

1154. The Tribunal has discussed above in Section 6.3 the effect of the Government's and Petrobangla's assignment of rights to BAPEX and their approval of the JVA. It concluded that Niko's liability for the two blowouts in the Chattak field must be determined under the JVA and its dispute resolution provision. This conclusion applies to all aspects of Niko's liability. There is no justification for excluding from the determination of Niko's liability under the JVA the specific provision concerning the limitation of this liability.

1155. In Section 6.3 the Tribunal also concluded that, having assigned their rights to BAPEX and having approved the JVA, the Government and Petrobangla may not seek different remedies in different fora concerning Niko's obligations and liability. As the Article 27.2 of the JVA provides that the excluded liability shall apply "under no circumstances", the exclusion applies to any possible legal basis invoked and extends to claims in tort.

1156. Niko's liability is determined under the JVA and in ICSID arbitration between BAPEX and Niko with binding effect on the assignors, the Government and Petrobangla. It is in the logic of the underlying assignment that the exclusion of liability is by one Party to the JVA to "the other Party" of the JVA, without there being a need to mention also the Government and Petrobangla.

1157. This understanding is confirmed when one considers the 2001 PSC with other investors concluded prior to the JVA,[914] in which the Government and Petrobangla have accepted, as parties to the agreement, the very same limitation of liability which BAPEX as their assignee accepted in the JVA. It would not be justified to deprive the limitation of liability in the JVA of its effect on the Government and Petrobangla, simply because in that agreement they did not act in their own names but delegated their role to BAPEX.

1158. **The Tribunal concludes** that the words in the exclusion clause in the JVA which refer to liability "to the other Party" do not restrict the scope of that clause. Niko's liability must be determined under the JVA including the exclusion clause of that agreement. The Government and Petrobangla as assignors are bound by this determination within the limits resulting from the exclusion clause.

[914] Production Sharing Contract for Bangladesh Block 9, Exhibit C-10.

11. CONCLUSION AND DECISION

1159. In view of the considerations set out above, the Tribunal concludes and decides

(i) Niko's liability as Operator for the 2005 blowouts in the Chattak field must be determined exclusively under the JVA between Niko and BAPEX by the present Tribunal;

(ii) The Tribunal's decision on Niko's liability for the two 2005 blowouts in the Chattak field is binding on the Government and Petrobangla as the assignors to BAPEX.

(iii) No standards under the law of Bangladesh relevant to Niko's liability for the two blowouts have been identified that are more stringent for the conduct of the Operator than those in the JVA;

(iv) The first blowout at Chattak 2 was caused by Niko's breaches of its obligations as Operator under the JVA;

(v) The second blowout at Chattak 2A was not caused by any breach of obligation on the part of Niko;

(vi) Niko must compensate BAPEX for direct loss and damage caused by the first blowout,

(vii) The compensation owed by Niko to BAPEX includes the gas that escaped from the Chattak 2 Well as part of the first blowout; the identification of other loss and damage that Niko must compensate and the quantum of such compensation are reserved for the next phase of these proceedings; so are the decisions on the claims for interest and for the costs of the proceedings.

[signed]

Professor Campbell A. McLachlan QC
Arbitrator

[signed]

Professor Jan Paulsson
Arbitrator

[signed]

Mr Michael E. Schneider
President of the Arbitral Tribunals