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COMPENSATION COMMISSION
GOVERNING COUNCIL

REPORT AND RECOMMENDATIONS MADE BY THE PANEL OF COMMISSIONERS CONCERNING THE FOURTH INSTALMENT OF "E1" CLAIMS

GE.00-63566

CONTENTS

List of claimants

Name	Defined
Arabian Oil Company	"AOC"
Saudi Arabian Oil Company	"Saudi Aramco"
Kuwait Petroleum Corporation	"KPC"

List of currencies

Name	Defined
Kuwait dinar	KD
Saudi Arabian riyal	SRl
United States dollar	US$

Abbreviations

Name	Defined
Partitioned Neutral Zone	"PNZ"
Organisation of Petroleum Exporting Countries	"OPEC"
Government Selling Price	"GSP"
Saudi Arabian Marketing and Refining Company	"SAMAREC"
Production and sales loss claim	"PSL claim"
Fluid loss claim	"FL claim"
Barrels per day	"bpd"
Kuwait Natural Gas	"KNG"
Kuwaiti Ministry of Electricity and Water	"MEW"
Kuwait Oil Company	"KOC"
Kuwait National Petroleum Corporation	"KNPC"

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Introduction

1. This is the fifth report to the Governing Council of the United Nations Compensation Commission (the "Commission") by the Panel of Commissioners (the "Panel") appointed to review energy sector claims submitted by corporations, other private legal entities and public-sector enterprises (category "E1" claims) pursuant to article 38(e) of the Provisional Rules for Claims Procedure[1] (the "Rules").

2. This report contains the determinations and recommendations of the Panel with respect to the fourth instalment of E1 claims, comprising four claims submitted to the Panel by the Executive Secretary of the Commission pursuant to article 32 of the Rules (the "fourth instalment"), which was presented to the Panel on 31 March 1999.

3. The fourth instalment claims were filed by oil and gas companies operating in the State of Kuwait ("Kuwait") and the Kingdom of Saudi Arabia ("Saudi Arabia"). The claimants in this instalment assert losses arising from the disruption of their businesses and the destruction of oil and gas by fires and spills resulting from the well blow-outs that occurred at the end of the conflict.

4. The claims included in this report are listed in the following table. With one exception, the claim amounts shown in this table are the total of all amounts claimed in all filings made with the claim. The claim of Arabian Oil Company has been divided into two claims. The elements of the original claim relating to crude oil production losses remain in this instalment under the original claim number, 4000959. The other elements of the claim have been given a new claim number, 4005977, and that new claim has been assigned to the eighth instalment of E1 claims.

Table 1. The fourth instalment of E1 claims

Claimant	Claim number	Claim amount (US$)	Submitting country
Arabian Oil Company	4000959	562,670,412	Japan
Saudi Arabian Oil Company	4002637	749,375,858	Saudi Arabia
Kuwait Petroleum Corporation	4003197	14,973,000,000	Kuwait
	4004439	6,640,516,049	
Total		22,925,562,319	

5. This report considers the claims net of any claims for interest or claim preparation costs, as these issues are dealt with separately.

6. To estimate the effects of the invasion and occupation on their business, and thus, to measure their losses, certain claimants compare what they term “no-invasion” projections of performance with their actual performance during and following the invasion and occupation. As used by the claimants, as well as by the Panel in this report, the use of the term “no-invasion” to describe a figure means that the figure described is an estimate of what that figure would have been if Iraq had not invaded and occupied Kuwait in 1990/91. In this report, the Panel has also rounded figures to the nearest whole dollar amount, except in the case of certain claim amounts, which are reported as they appear in the statements of claim.

I. PROCEDURAL HISTORY

7. The role and functions of panels of Commissioners operating within the framework of the Commission and the nature and purpose of the proceedings conducted by the panels are both discussed by this Panel in the Report and Recommendations made by the Panel of Commissioners concerning the Second Instalment of “E1” Claims (S/AC.26/1999/10) (the “E1 Second Instalment Report”), paras. 3-4.

8. In its review of the claims, the Panel has employed the full range of investigative procedures available to it under the Rules. For some claims, the Panel has also been assisted by the responses of the claimants to article 34 notifications, interrogatories and requests for documents. The Government of the Republic of Iraq (“Iraq”) has also filed replies to the claims, which include specific comments on and analyses of the claimed losses as well as legal argument on the compensability of particular loss elements.

9. The secretariat of the Commission (the “secretariat”) commenced a detailed preliminary assessment of the fourth instalment claims in January 1999. As a result of this assessment, a number of formal deficiencies in the claims were identified, as were a number of areas where further documentation or information were required from the claimants. Accordingly, notifications with respect to these deficiencies were issued to each of the claimants in the fourth instalment pursuant to article 34 of the Rules (the “article 34 notifications”).

10. On 31 March 1999, the Panel issued its first procedural orders initiating its review of the claims. In view of the complexity of the issues raised, the volume of documentation underlying the claims and the amount of compensation sought by the claimants, the Panel classified each of the claims as “unusually large or complex” claims within the meaning of article 38(d) of the Rules.

11. The Panel also instructed the secretariat to transmit to Iraq the documents filed by the claimants with the claims and invited Iraq to submit its replies to the claims, together with any documentation Iraq might wish to rely on in the present proceedings.

12. Because of the complexity of the claims, the Panel engaged consultants with expertise in accounting, petroleum engineering, and petroleum economics to assist it in its review and evaluation of those claim elements that were found to be compensable.

13. After receiving responses to the article 34 notifications, the Panel directed on-site inspection missions to two of the claimants to review

documents and other evidence and to interview witnesses involved in the claims. During these on-site inspections, the claimants produced dozens of witnesses for interview and many thousands of documents for review.

14. This initial work yielded specific legal recommendations and questions and identified areas of the claims for which further information or evidence was required. To address this need, the Panel, assisted by the secretariat and the expert consultants, prepared questions and formal requests for additional evidence for the claimants. Such questions and requests (collectively referred to herein as "interrogatories") typically sought clarification of statements in the claim or additional documentation regarding the claimed losses.

15. Iraq filed responses to each of the fourth instalment claims. In its responses, Iraq addressed most of the individual claim elements submitted by the claimants. Iraq generally provided argument and, in some instances, evidence to support its positions.

16. The Panel issued procedural orders dated 21 May 1999 to Kuwait Petroleum Corporation ("KPC"), in which the Panel invited the claimant to respond by specified dates to the interrogatories annexed to the procedural orders. By procedural orders dated 29 July 1999 and 14 September 1999, the Panel issued further interrogatories to KPC, which responded with narrative answers and produced documents and other evidence.

17. Throughout the process, the claimants also responded to a number of requests from the secretariat for clarification or completion of its responses to interrogatories. Iraq was also invited to submit its comments on the interrogatories submitted to the claimants.

18. After reviewing the claims, the evidence submitted with the claims, the claimants' responses to the article 34 notifications, interrogatories and informal requests, the Panel directed the secretariat and its expert consultants to prepare a preliminary report for each of the fourth instalment claims found by the Panel to contain compensable losses. In these reports, the expert consultants outlined their opinion on the appropriate valuation of compensable claim elements. The Panel reviewed these preliminary reports and provided further instructions to the expert consultants as necessary. The expert consultants then prepared final reports that assisted the Panel in performing its work and making the recommendations contained in this report.

19. Due to the extraordinary size and complexity of the claims of KPC, the Panel determined that it could be helpful to conduct oral proceedings on certain limited issues presented by those claims. Accordingly, pursuant to a procedural order, the Panel convened an oral proceeding for

14 December 1999 and invited the claimant and the representatives of Kuwait and Iraq to attend and participate.

20. At the appointed time, the claimant and representatives of both Kuwait and Iraq appeared for the oral proceeding. The Panel appreciates the informative presentation on the identified issues by the claimant.

21. The Panel notes with some disappointment, however, that Iraq chose not to address the Panel on the issues presented by the claims, as specifically requested by the Panel, but rather chose to address its comments solely to matters over which the Panel has no control and not to address the substance of the claims. The Panel, therefore, terminated the oral proceedings following Iraq’s presentation.

II. LEGAL FRAMEWORK

A. Applicable law and criteria

22. The law to be applied by the Panel is set forth in article 31 of the Rules, which provides as follows:

> "In considering the claims, Commissioners will apply Security Council resolution 687 (1991) and other relevant Security Council resolutions, the criteria established by the Governing Council for particular categories of claims, and any pertinent decisions of the Governing Council. In addition, where necessary, Commissioners shall apply other relevant rules of international law."

B. Liability of Iraq

23. According to paragraph 16 of Security Council resolution 687 (1991), "Iraq, without prejudice to the debts and obligations of Iraq arising prior to 2 August 1990, which will be addressed through the normal mechanisms, is liable under international law for any direct loss, damage, ... or injury to foreign Governments, nationals and corporations, as a result of Iraq's unlawful invasion and occupation of Kuwait."

24. The Panel notes that the issue of Iraq's liability for losses falling within the Commission's jurisdiction has been resolved by the Security Council and is not subject to review by the Panel. A complete discussion of the liability of Iraq as it relates to resolution of the claims and the Governing Council's guidance on what constitutes a direct loss may be found at E1 Second Instalment Report, paras. 18-29.

C. Evidentiary requirements

25. Article 35(1) of the Rules provides general guidance on the submission of evidence by a claimant:

> "Each claimant is responsible for submitting documents and other evidence which demonstrate satisfactorily that a particular claim or group of claims is eligible for compensation pursuant to Security Council resolution 687 (1991)."

26. A complete discussion of the Panel's application of this standard to the evidence submitted with the claims may be found at E1 Second Instalment Report, paras. 30-32.

III. CLAIM OF ARABIAN OIL COMPANY

27. Arabian Oil Company Ltd ("AOC") is a corporation registered under the Commercial Code in Japan. In 1957 and in 1958, AOC entered into two separate concession agreements with Saudi Arabia and Kuwait.[2] Pursuant to these agreements, AOC received the exclusive right and responsibility for petroleum exploration, development and production in the offshore area of the Partitioned Neutral Zone ("offshore PNZ") between Saudi Arabia and Kuwait.[3]

28. Pursuant to a 1974 Participation Agreement and a 1981 Memorandum of Understanding, Saudi Arabia and Kuwait became joint venture partners in the offshore PNZ operations of AOC by acquiring an equity interest in AOC's assets and operations. As of 2 August 1990, AOC held a 40 per cent equity interest in the joint venture, and Saudi Arabia and Kuwait each held a 30 per cent equity interest as AOC's joint venture partners. AOC submits this claim on behalf of itself and its joint venture partners, Saudi Arabia and Kuwait.

29. AOC was able to continue production and shipment of crude oil and refined oil products from 2 August 1990 through 16 January 1991. AOC claims, however, that as a result of Iraq's unlawful invasion and occupation of Kuwait, sales of crude oil and products were reduced from the average sales levels for the five years prior to the invasion and occupation. Further, AOC claims that, as a result of military operations by Iraqi forces, AOC had to cease production in the offshore PNZ from 17 January 1991 to 1 June 1991. On behalf of itself and its joint venture partners, Saudi Arabia and Kuwait, AOC claims a loss of revenues in the amount of US$ 562,670,412.43.

30. In support of this claim, AOC submitted certain documentary evidence, including audited financial statements, management accounts, trial balances, ledgers, sales invoices, production data, contracts and correspondence. At the Panel's direction, the secretariat and its expert consultants interviewed certain AOC personnel. As part of these interviews, AOC prepared and submitted additional documents and other evidence.

A. Nature of AOC activities

31. AOC explores for, produces, processes and markets crude oil and oil products in the offshore PNZ. AOC's activities are centred on the Khafji offshore oil field and on refining and loading facilities at Al-Khafji, approximately 20 km south of the Saudi Arabia-Kuwait border.

32. AOC claims that its production level is limited by production quotas established by the Organisation of Petroleum Exporting Countries (“OPEC”). AOC states that Saudi Arabia and Kuwait determine the level of the production quota of the joint venture in the offshore PNZ every month based on OPEC production quotas or the requirements of both governments. AOC claims that Saudi Arabia usually notifies AOC of these production quotas by letter.

33. As AOC’s joint venture partners, Saudi Arabia and Kuwait each contribute 30 per cent of the costs and expenses arising from the oil operations and each is entitled to 30 per cent of the crude oil produced. Saudi Arabia also contributes to the crude oil processing costs of AOC. AOC receives the remaining 40 per cent of the crude oil and bears 40 per cent of the costs and expenses.

34. Based on various agreements, AOC usually buys back each joint venture partner’s share of crude oil and, therefore, is the entity that sells or disposes of 100 per cent of the crude oil produced from the offshore PNZ. This crude oil is known as Khafji and Hout crude oil. AOC also sells all of the offshore PNZ crude oil processed into refined oil products at the Al-Khafji refinery.

35. AOC states that Saudi Arabia and Kuwait set the Government Selling Price (“GSP”) for crude oil, and Saudi Arabia sets the GSP for refined oil products. Saudi Arabia and Kuwait notify AOC of the GSP on a monthly basis by letter. GSP is calculated as the arithmetic mean of the monthly average of daily spot prices of Oman and Dubai crude oils as reported in Platt’s Oilgram Price Report[4], plus a price differential for each month set by the governments. AOC claims that it buys back each joint venture partner’s share of crude oil produced at GSP, and that it sells the majority of the crude oil and products from the offshore PNZ at GSP.

36. AOC claims that selling at GSP ensures stable prices for its customers, most of whom are long-term Japanese customers.

37. By selling at GSP, AOC claims that its profits on its 40 per cent share of the oil are equal to the differential between the GSP and its costs. AOC’s joint venture partners realise profits from the difference between their cost contributions and the GSP for each of their 30 per cent share in the joint venture. AOC claims it makes no profit on the oil bought at GSP from its joint venture partners, because it sells this oil at GSP to its customers.

38. Pursuant to the concession agreements, AOC also makes payments of royalty to Saudi Arabia and Kuwait based on its share of production in the offshore PNZ and payments of taxes based on its share of revenues. In

addition, during the verification process, the Panel learned that a mechanism, termed a "supplementary make-up payment," is employed to fix AOC's profit at a specified level. Supplementary make-up payments are transferred between AOC and the governments as necessary to ensure a fixed profit for AOC.

B. AOC's claim

39. AOC states its claim as follows:

Table 2. AOC's claim

Claim element	Claim amount (US$)
Loss of sales proceeds from sale of crude oil to Japanese purchasers	279,626,579.78
Loss of sales proceeds from sales of crude oil to non-Japanese purchasers	163,524,357.71
Loss of sales proceeds from sales of refined oil products	122,606,237.61
Deduction from the claim for lost crude oil in settling tank	(3,086,762.67)
Total	562,670,412.43

40. AOC claims that 70 to 80 per cent of its annual sales of crude oil are made to 23 Japanese purchasers. AOC claims that as a result of the invasion and occupation, these sales declined from 2 August 1990 to 1 June 1991 ("claim period"), with the result that AOC suffered a loss of revenues.

41. For each of the claimed loss periods – 2 August 1990 to 16 January 1991 and 17 January to 1 June 1991 - AOC estimates the loss during that period using the average volumes of crude oil sold to Japanese purchasers during the same periods in the five years preceding the loss period. AOC states that, as a result of the invasion and occupation of Kuwait, it was not able to sell 17,625,829 barrels of Khafji crude oil and 3,013,105 barrels of Hout crude oil during these periods.

42. AOC applies the average GSP set by Saudi Arabia and Kuwait during the invasion and occupation to the lost sales volumes to calculate its lost revenues. AOC applies the GSP for Khafji crude of US$ 25.663 and US$ 13.697, and the GSP for Hout crude of US$ 28.082 and US$ 16.427 for the claim period.

43. Based on the above calculations, AOC claims that it lost revenues of US$ 279,626,579.78 as a result of lower sales to Japanese purchasers.

However, AOC subtracts US$ 3,086,762.67 from this amount to account for its claim for loss of crude oil in a settling tank in a separate claim, which will be reviewed by this Panel in a later instalment.[5] AOC therefore claims the total amount of US$ 276,539,817.11 for the loss of sales proceeds from crude oil to Japanese purchasers.

44. AOC claims that 20 to 30 per cent of its annual sales of crude oil are made to non-Japanese purchasers, mainly to Southeast Asian/Oceanic customers. AOC claims that as a result of the invasion and occupation, these sales declined in the claim period, and AOC suffered a loss of revenues.

45. For each of the claimed loss periods – 2 August 1990 through 16 January 1991 and 17 January through 1 June 1991 - AOC estimates the loss during that period using the average volumes of crude oil sold to non-Japanese purchasers during the same periods in the five years preceding the loss period. AOC calculates that it has lost a sales volume of 9,786,989 barrels of Khafji crude and 903,937 barrels of Hout crude.

46. AOC applies the same crude GSP as above to the lost sale volumes to non-Japanese purchasers to calculate lost revenues. AOC therefore claims US$ 163,524,357.71 for the loss of sales proceeds from crude oil to non-Japanese purchasers.

47. AOC claims that approximately 10 per cent of its production of crude oil is refined into naphtha, diesel oil, marine diesel oil and fuel oil (hereinafter collectively referred to as “refined oil products”). AOC claims that, as a result of the invasion and occupation, its production of refined oil products was severely curtailed between 2 August 1990 and 16 January 1991 and ceased completely between 17 January 1991 and 1 June 1991.

48. For each of the claimed loss periods – 2 August 1990 through 16 January 1991 and 17 January through 1 June 1991 - AOC estimates the loss during that period using the average volumes of products sold to customers during the same periods in the five years preceding the loss period. AOC calculates that it lost a sales volume of 5,757,277 barrels of refined oil products. AOC applies the weighted average GSP of US$ 25.746 and US$ 18.793, allegedly set by Saudi Arabia during the claimed loss periods, to the volume of refined oil products not sold to calculate its lost revenues. AOC therefore claims US$ 122,606,237.61 for the loss of sale proceeds from refined oil products on behalf of itself and Saudi Arabia.

49. AOC claims that it did not save any costs during Iraq’s occupation of Kuwait and therefore makes no deductions from its claim for lost revenues. AOC maintains that most of its costs are fixed, and therefore it continued to incur these costs throughout the claim period. AOC does not make a

deduction for the cost of buying back oil from Saudi Arabia and Kuwait at GSP because it is also claiming for lost revenues on behalf of these two governments who have equity interests in the joint venture in the offshore PNZ.

C. Verification and analysis

50. At the outset, the Panel finds that AOC and its joint venture partners suffered a loss following the decline in production of crude oil and refined oil products in the offshore PNZ as a result of Iraq's invasion and occupation of Kuwait.

51. The Panel notes that AOC calculates the joint venture's losses based on volumes of oil not produced and sold, and that it employs the actual market prices following Iraq's invasion and occupation of Kuwait to value such losses.

52. The Panel reviewed the evidence submitted by AOC to verify the joint venture's volumes, prices and sales revenues for the calendar years 1985 to 1991. The Panel's consultants sampled the data submitted and their underlying records, and the Panel is satisfied that the evidence submitted by AOC is reliable and accurate.

53. AOC makes two assumptions in calculating the claim amount. First, had it not been for Iraq's invasion and occupation of Kuwait, the joint venture would have produced and sold volumes of crude oil and refined oil products equal to the average volumes produced and sold in the five years prior to 2 August 1990. Second, the joint venture would have sold these volumes at the GSPs that prevailed during Iraq's occupation of Kuwait.

54. The Panel notes that the joint venture's monthly production prior to 2 August 1990 fluctuated considerably. However, the Panel finds that AOC's assumption that the joint venture would have produced and sold volumes equal to the average volumes of five years prior to 2 August 1990 is reasonable because this period is sufficient to overcome the effect of the fluctuations in production.

55. Based on AOC's production and sales data, the Panel finds that, in the absence of Iraq's occupation of Kuwait, the joint venture would have produced and sold 80,186,397 barrels. The Panel also finds that the joint venture actually produced and sold only 43,099,260 barrels during this period. Thus, the joint venture's production and sales declined by 37,087,137 barrels as a direct result of Iraq's occupation of Kuwait.

56. The Panel concludes that use of the GSPs that prevailed during Iraq's occupation of Kuwait to value the unsold crude oil and refined oil products results in an overstatement of the loss. The Panel reaches this conclusion

because oil prices after 2 August 1990, which had a direct effect on the GSPs, increased drastically as a result of Iraq’s invasion and occupation of Kuwait and the fears of shortages that ensued. The Panel finds that the joint venture should not benefit from Iraq’s invasion and occupation of Kuwait. Instead, the Panel finds that the claimant should be returned to the position in which it would have been if Iraq’s invasion and occupation of Kuwait had not occurred. Therefore, the Panel finds that the claim should be adjusted to reflect the joint venture’s real loss.

57. To do so, the Panel first instructed its consultants to estimate the GSPs that would have prevailed during the loss period if Iraq had not invaded and occupied Kuwait. The Panel’s consultants then adjusted the no-invasion GSPs for the premiums and discounts to market prices at which AOC historically sold its crude oil and refined oil products, and applied them to the no-invasion volumes in order to estimate the joint venture’s lost revenue. From AOC’s sales records, it appears that the prices of certain products like diesel and fuel remained constant prior to and after Iraq’s invasion and occupation, and therefore, actual prices of these products have been used in this calculation.

58. Based on the above calculation and a review of the joint venture documents, related agreements and AOC’s accounting records, the Panel finds that the joint venture would have earned no-invasion revenues of US$ 1,086,278,276 from the sale of 80,186,397 barrels of crude oil and refined oil products. From this amount, the Panel deducts actual revenue of US$ 1,058,866,227 that the joint venture earned from the sale of 43,099,260 barrels of crude oil and refined oil products between 2 August 1990 and 16 January 1991. Consequently, the Panel finds that the joint venture lost revenues in the amount of US$ 27,412,049.

59. However, as discussed in para. 38, supra, when there is actual production in the offshore PNZ, the governments receive royalty from AOC in respect of their share of the production.

60. As stated in para. 55, supra, there was a shortfall in production due to Iraq’s occupation of Kuwait. The Panel considers that no royalty would be payable by AOC to the governments on its share of oil not lifted, because there is no corresponding loss.[6] Therefore, the Panel deducts the royalty amount from the claim.

61. The Panel calculates that AOC’s share of the 37,087,137 barrels of oil not lifted is 40 per cent, or 14,834,855 barrels. AOC pays royalty to Saudi Arabia and Kuwait at the rate of 20 per cent on its share of production valued at the tax reference price specified in the concession agreement. After taking into account the no-invasion GSPs, the Panel considers that the value of royalty on oil not lifted is US$ 2,358,026.

Therefore, the Panel deducts royalty payments on oil not lifted of US$ 2,358,026 from the lost revenue amount of US$ 27,412,049. After this deduction, the base amount recommended as compensation to the joint venture is US$ 25,054,023.

62. As discussed in para. 38, supra, the governments receive tax from AOC's share of revenues in the joint venture. Supplementary make-up payments are transferred between the governments and AOC to ensure AOC receives a consistent level of profit from the joint venture. Based on the evidence and the concession agreements, the Panel believes that any income received by AOC is subject to taxes and supplementary make-up payments. Therefore, consistent with its previous finding in its second instalment report, the Panel does not deduct taxes and supplementary make-up payments from the compensation amount.[7]

63. Further, the Panel notes that the crude oil that was not produced by the joint venture during the claim period could arguably be produced and sold in the future. However, given the expected reservoir life for the offshore PNZ, at present levels of production, the sales of the oil not produced will not occur until decades into the future. Thus, the present value of such future sales is immaterial, and therefore, the Panel does not deduct the value of oil not produced from the claim amount.

64. AOC states that all of the joint venture's costs are fixed and that these costs continued to be incurred from 2 August 1990 to 1 June 1991. Based on a review of AOC's accounts, its underlying financial and accounting records and other evidence, the Panel concludes that AOC and its joint venture partners did not benefit from any cost savings due to Iraq's invasion and occupation of Kuwait.

65. Finally, the Panel makes an adjustment for AOC's deduction for lost crude oil in a settling tank, as discussed in para. 43, supra. The Panel deducts US$ 3,086,763 from the compensation amount of US$ 25,054,023. Based on the foregoing calculations, the Panel finds that AOC's total lost revenue in the offshore PNZ is US$ 21,967,260.

Table 3. Panel's findings: lost revenue in the offshore PNZ

Claim element	No-invasion revenue (US$)	Actual revenue (US$)	Total AOC lost revenue in the PNZ (US$)
Loss of sales proceeds from sale of crude oil and refined oil products	1,086,278,276	(1,058,866,227)	27,412,049
Deduction of royalty value on oil not lifted			(2,358,026)
Sub-total			25,054,023
Deduction from the claim for lost crude oil in a settling tank			(3,086,763)
Total	1,086,278,276	(1,058,866,227)	21,967,260

66. Accordingly, the Panel recommends compensation in the amount of US$ 21,967,260 for AOC and its joint venture partners as shown in the following table.

Table 4. AOC claim: Panel's recommended compensation

Claim element	Claim amount (US$)	Panel's adjustments (US$)	Panel's recommendation (US$)
Loss of sales proceeds from sale of crude oil and refined oil products	562,670,412.43	(540,703,152.43)	21,967,260
Total	562,670,412.43	(540,703,152.43)	21,967,260

IV. CLAIM OF SAUDI ARABIAN OIL COMPANY

A. Facts and contentions

67. Saudi Arabian Oil Company ("Saudi Aramco") files this claim on its own behalf, and in its capacity as a successor in interest to Saudi Arabian Marketing and Refining Company ("SAMAREC").

68. Saudi Aramco was established by Royal Decree on 13 November 1988 as an integrated oil company wholly owned by the Kingdom of Saudi Arabia ("Saudi Arabia"). SAMAREC was established as a "company under formation" on 1 January 1989 to integrate the oil refining and petroleum products marketing operations of Saudi Arabia. On 14 June 1993, Saudi Arabia cancelled the formation of SAMAREC and transferred its operations to Saudi Aramco.

69. Saudi Aramco alleges that as a result of Iraq's unlawful invasion and occupation of Kuwait, SAMAREC was required by the Council of Ministers of Saudi Arabia to supply fuel oil and other refined petroleum products to the Saudi Arabian and other military forces (hereinafter referred to as "Allied Coalition Forces") for "the enhanced defence of Saudi Arabia." Saudi Aramco defines enhanced defence as "defence efforts above and beyond normal Saudi defence levels prior to the invasion." Saudi Aramco claims that Saudi Arabia required enhanced defence operations from 2 August 1990 to 31 January 1992. Saudi Aramco seeks compensation in the amount of US$ 749,375,858 for losses incurred as a result of supporting the enhanced defence operations throughout this period.

70. Saudi Aramco asserts that its claim excludes all costs relating to ordinary Saudi Arabian military operations and all offensive operations. The claim comprises the following elements.

Table 5. Saudi Aramco's claim

Claim element	Claim amount (US$)
Fuel oil and other products	660,817,356
Operating expense	
Manpower	4,198,422
Hauling	20,781,113
Vessel chartering	36,451,860
Utility and energy charges	6,600
Repair and maintenance	236,430
Handling	6,210,920
Communications	1,388
Advertising	40,019
Rental	1,984,314
Consumable supplies	4,250,959
Temporary facilities	1,004,021
Insurance expenses	13,322,377
Other costs	42,722
Professional fees	27,357
Subtotal Operating expense	88,558,502
Total	749,375,858

71. The claim amount is calculated as the number of litres of fuel oil and products supplied, multiplied by their respective "international market prices," plus the increased operating costs SAMAREC incurred in producing, transporting and managing these increased volumes.

72. Prior to 2 August 1990, SAMAREC supplied all petroleum products to the military forces of Saudi Arabia. These deliveries would be invoiced to the respective Saudi Arabian military units by one of SAMAREC's three distribution centres (Eastern Region, Central Region and Western Region). However, following Iraq's invasion of Kuwait and the decision to supply petroleum products to the Allied Coalition Forces, all deliveries of products were allegedly recorded and advised to the Ministry of Defence and Aviation of Saudi Arabia by SAMAREC's Corporate Headquarters. This procedure was followed from 1 August 1990 through 1 February 1992.

73. Saudi Aramco claims that by a letter from the Minister of Petroleum and Mineral Resources of Saudi Arabia to the President Designate of SAMAREC, dated 8 August 1990, SAMAREC was directed "to take all the decisions and measures that [are deemed] appropriate with regard to securing the supplies to all regions of the Kingdom." Saudi Aramco asserts that the 8 August letter was the direction to SAMAREC to deliver the fuel oil and products that are the subject of this claim. Saudi Aramco claims

that immediately following this letter, SAMAREC established an Emergency Committee to fulfil its tasks “to provide fuel and other oil products required for the enhanced defence of Saudi Arabia.”

74. The Emergency Committee allegedly built inventories of the required products as quickly as possible to ensure that they could be delivered to the Saudi Arabian and other military forces. SAMAREC built inventories of the required products by, inter alia, increasing refinery throughput, modifying refineries for certain products, importing products to augment domestic production, acquiring additional storage and equipping other refineries to deliver the products.

75. Saudi Aramco argues that the cost of the supplies of fuel oil and refined oil products comprising the present claim are compensable because they were used for defence purposes necessitated by Iraq’s invasion and occupation of Kuwait.

76. Operation Desert Shield commenced on or about 7 August 1990, when the first of the Allied Coalition Forces began arriving in Dhahran with the consent of Saudi Arabia, and ended on 8 November 1990, when Operation Desert Storm commenced. Saudi Aramco deems Operation Desert Storm an offensive operation, as it was designed to drive the Iraqi forces from Kuwait by military force and, therefore, does not claim any compensation for deliveries towards that operation.

77. Saudi Aramco seeks to demonstrate that, after 8 November 1990, the claim is limited to extraordinary expenses for what the claimant terms “defensive purposes” by referring as a benchmark to the volumes of products supplied to the Allied Coalition Forces during the early months of the invasion of Kuwait by Iraqi forces. Saudi Aramco asserts that in the months of August, September and October of 1990, the volumes of products, 549,923,000 litres in total, supplied to the Allied Coalition Forces were for purely defensive purposes. Saudi Aramco calculates the average of these volumes to be 183,307,000 litres per month. From all the volumes claimed, Saudi Aramco subtracts the average monthly volumes ordinarily delivered to the Saudi Arabian military prior to the invasion, which are asserted to be 83,779,000 litres per month.

78. Saudi Aramco distinguishes three periods in which SAMAREC had to supply products to the Allied Coalition Forces. For the months of August through October 1990, Saudi Aramco asserts that the actual volumes of products delivered were for defensive purposes and, therefore, the costs of providing these products are compensable. From November 1990 through March 1991, Saudi Aramco claims that the volumes supplied to the Allied Coalition Forces increased significantly in the preparation for the Gulf War, i.e. for offensive operations. Saudi Aramco asserts that, out of the oil and

products delivered during this period, a volume corresponding to the average volume delivered during the previous months (183,307,000 litres x five months) was for defensive purposes, and therefore is compensable. From April 1991 through January 1992, Saudi Aramco alleges that as the continued defence of Saudi Arabia was required, it should be compensated for costs incurred for defensive purposes based on the lower of 1) actual volumes delivered during these months or 2) the average of the volume delivered during the months of August through October 1990. The total volume of products for which Saudi Aramco claims compensation is 2,941,854,000 litres.

79. Saudi Aramco values the claim amount by multiplying the total volume by the international sales prices of the various products at the time they were delivered. Generally, the international sales prices are prices published by Platt’s Oilgram News, an internationally recognised publisher of oil prices. The value claimed for the products is SRl 2,474,261,000 or US$ 660,817,356.

80. Saudi Aramco also seeks compensation for the costs of accumulating, storing and delivering fuel and other oil products in the amount of US$ 88,558,502. Saudi Aramco claims that SAMAREC incurred additional operating expenses because it had to meet the requirements of the Saudi Arabian and Allied Coalition Forces as a result of the unlawful invasion and occupation of Kuwait. These additional operating expenses arose from having to increase production, imports, inventory, shipping and deliveries.

81. Saudi Aramco asserts that it has not been paid for the volumes that SAMAREC supplied to the Saudi Arabian and Allied Coalition Forces. Saudi Aramco states that in accordance with a general understanding among the governments principally involved in the Gulf War coalition and in the proceedings of the UNCC, no claim will be made for any loss incurred as part of Saudi Arabia’s participation in and support of the Operation Desert Storm. Saudi Aramco outlines various payments made to it relating to the invasion and occupation of Kuwait. However, it asserts that these payments were not related to the supply of fuel and oil products for defensive purposes.

82. Saudi Aramco states that the Allied Coalition Forces initially paid a total of SRl 583,863,000 to SAMAREC for the fuel and products supplied to them by SAMAREC from August 1990 to November 1990. Saudi Aramco claims that these payments were reimbursed to the Allied Coalition Forces effective November 1990 based on the understanding that Saudi Arabia would provide the fuel and products at no cost. Saudi Aramco further states that from 27 January 1991 to 30 March 1991, SAMAREC received payments totalling SRl 1,600,000,000 from the Ministry of Defence and Aviation of Saudi Arabia and the Ministry of Finance of Saudi Arabia. Saudi Aramco claims that

these payments financed purchases of products outside of Saudi Arabia intended for solely offensive military operations in Operation Desert Storm.

B. Analysis and recommendation

83. The Panel's first task is to determine whether the Saudi Aramco claim is one for which compensation may be granted. The Security Council in resolution 687 (1991) states that the Commission will consider only those claims against Iraq for losses that are the direct result of Iraq's invasion and occupation of Kuwait. In more specific terms, Governing Council decision 7, paragraph 21 states that any direct loss, damage, or injury to corporations and other entities is compensable including any loss suffered as a result of:

> "(a) Military operations or threat of military action by either side during the period 2 August 1990 to 2 March 1991;"

84. The Governing Council further narrowed the scope of compensable losses in decision 19 by excluding military costs for the Allied Coalition Forces, providing that:

> "the costs of the Allied Coalition Forces, including those of military operations against Iraq are not eligible for compensation."

85. Saudi Aramco claims that it incurred losses when, at the order of Saudi Arabia, SAMAREC supplied fuel oil and refined oil products for both the Saudi Arabian and Allied Coalition Forces without being paid for such supplies. Accordingly, the Panel must determine whether Saudi Aramco's losses constitute costs of Allied Coalition Forces including those of military operations against Iraq.

86. The Panel notes that Saudi Arabia was a member of the Allied Coalition Forces during the relevant times and that the losses alleged by Saudi Aramco result from Saudi Arabia's and other forces' activities as members of the Allied Coalition Forces. The Panel finds therefore, that the costs incurred by Saudi Aramco regardless of whether they were for offensive or defensive operations, were costs of the Allied Coalition Forces, including those of military operations against Iraq and are specifically declared non-compensable by Governing Council decision 19.

87. Accordingly, the Panel need not decide whether there exists a causal relationship between Iraq's invasion and occupation of Kuwait and Saudi Aramco's fulfilment of an order by the Saudi Arabian Minister of Petroleum and Mineral Resources.

88. Because the Panel finds that the Saudi Aramco claim is not a compensable claim, it recommends that no compensation be awarded for this claim.

V. CLAIMS OF KUWAIT PETROLEUM CORPORATION

A. Introduction and preliminary findings

89. Kuwait Petroleum Corporation ("KPC") is entrusted by Kuwait with "realising the economic value" of Kuwait's hydrocarbon resources, including the marketing and sale of Kuwait's petroleum and petroleum products.

90. KPC alleges that on 2-3 August 1990, Iraqi military forces took control of Kuwait's oil industry, including the production, processing, refining, transportation, storage and export facilities owned by Kuwait, KPC, and related Kuwaiti oil sector companies.[8]

91. KPC further alleges that, prior to the liberation of Kuwait, Iraqi forces deliberately sabotaged Kuwait's wells and facilities, burning and destroying crude oil and oil products, and releasing crude oil into the Kuwait desert and the waters offshore Kuwait. Because of the damage done to the wells and related oil-producing facilities, KPC maintains that full production of both oil and oil products was not restored to pre-invasion rates until June 1994.

92. KPC makes two claims for losses alleged to result from the damage to its oil producing and processing facilities. First, KPC claims that between 2 August 1990 and the date on which it resumed production at pre-invasion rates it produced 839 million fewer barrels of crude oil than it would have in a no-invasion scenario. KPC requests compensation in the amount of US$ 14,973 million for the net sales revenue it claims KPC and Kuwait would have earned on this lost production. KPC terms this claim, UNCC claim number 4003197, the "production and sales loss" (or "PSL") claim.

93. Second, KPC alleges that the well fires and oil spills resulted in the loss of 1,256 million barrels of reservoir fluids, including crude oil and associated natural gas.[9] KPC seeks compensation in the amount of US$ 6,640,516,049 for the 417 million barrels of lost fluids that are not accounted for in the PSL claim. KPC terms this claim, UNCC claim number 4004439, the "fluid loss" (or "FL") claim.

94. The Panel considers these two claims separately in the following two parts of this report; however, because key elements of each claim are related, the Panel has cross-referenced the discussions where appropriate to avoid unnecessary duplication.

95. KPC files these claims on behalf of itself and Kuwait. The Panel has previously found that consolidated claims such as those presented here are appropriate. See WBC Report, paras. 55-61.

96. KPC alleges that its losses result from two causes: first, Iraq's physical control of Kuwait's oil fields and oil-producing facilities during the period of the invasion and occupation; and, second, the well blow-outs, well fires and oil spills, which KPC alleges were caused by the Iraqi military.

97. In its replies to KPC's claims, Iraq does not seriously challenge KPC's assertion that Iraqi agents physically controlled Kuwait's oil fields and facilities from 2 August 1990 until the liberation of Kuwait, although it does contest KPC's allegations of the effects of that control.

98. In addition, Iraq contends that the damage to Kuwait's oil fields and facilities and any subsequent losses are the result of bombing and other military activities by the Allied Coalition Forces and, therefore, that it is not responsible for this damage.

99. The Panel has previously found, however, that the damage to Kuwait's oil fields and facilities, including the damage alleged by KPC to have caused the claimed losses, did occur and was a direct result of Iraq's unlawful invasion and occupation of Kuwait. See Report and Recommendation Made By the Panel of Commissioners Appointed To Review the Well Blowout Control Claim (S/AC.26/1996/5/Annex) (the "WBC Report"), paras. 85-86.

100. The Panel finds, therefore, that any losses produced by these two causes are a direct result of Iraq's unlawful invasion and occupation of Kuwait and are, to the extent that they are proven by KPC, compensable.

B. The production and sales loss claim

101. The Panel's analysis of the production and sales loss claim is presented below in six sections. Because the structure of this claim is quite complex, the first section summarises the claim and sets forth the background facts and contentions that underlie the remaining discussion. The second and third sections summarise the evidence submitted by the claimant or gathered by the Panel, and Iraq's replies to the claim. In the fourth section, the Panel analyses the legal issues arising out of the claim and records its findings on compensability. The fifth section presents the Panel's findings on its factual verification and valuation of the compensable elements of the claim. The Panel states its recommended compensation in the last section.

1. Facts and contentions

102. KPC alleges that, as a result of Iraq's unlawful invasion and occupation, Kuwait suffered losses of crude oil production and sales revenues due to its "inability to use the oilfields and refineries to produce and sell oil and gas during the period of the illegal occupation; and thereafter the inability to use such property or to use it fully, because of the physical damage inflicted on the oilfields and refineries" by Iraq during its occupation of Kuwait.

103. KPC seeks compensation in the amount of US$ 14,973 million for sales revenues lost as a result of these alleged production and sales losses. The PSL claim is summarised as follows:

Table 6. KPC's production and sales loss claim

Claim element	Claim amount (US$)
Lost revenues	
Crude oil sales loss	3,555,000,000
Refined oil products sales loss	11,900,000,000
Processed gas products sales loss	860,000,000
Refining margin loss	1,032,000,000
Total lost revenue	17,347,000,000
Cost savings	
Cost of sales	(98,000,000)
Production costs	(235,000,000)
Processing fees	(2,022,000,000)
General, marketing and administrative costs	(19,000,000)
Total cost savings	(2,374,000,000)
Total claim amount	14,973,000,000

(a) Structure of the claim

104. As noted in Table 6, *supra*, KPC asserts that it experienced four types of sales revenue losses as a result of the decline in production and processing capabilities.

105. KPC asserts that the occupation of Kuwait and the damage to its oil fields and oil producing facilities prevented it from producing crude oil at expected rates during a production loss period. KPC asserts that this period lasted from 2 August 1990, the date when Iraq took possession of the oil fields and facilities, until December 1992, the month when KPC resumed crude oil production at pre-invasion rates. The lost production could have been sold, KPC alleges, as both crude oil and refined oil products during

the period 2 August 1990 through 30 November 1992. Kuwait requests compensation for its alleged crude oil sales loss in the amount of US$ 3,555 million and for its alleged refined oil products sales loss in the amount of US$ 11,900 million.

106. In addition, KPC asserts that, due to the damage to Kuwait's refineries, even after it resumed crude oil production at pre-invasion rates, it continued to incur losses for a further period of time, during which it was unable to refine crude oil at pre-invasion rates. KPC asserts that, as a result, it experienced a refining margin loss during the period from 1 December 1992 through 30 June 1994.

107. Finally, KPC asserts that its inability to extract and process the associated natural gas resulted in a processed gas products loss during the period from 2 August 1990 through 31 July 1993.

108. To calculate the loss amounts, KPC first estimates the sales revenue it would have earned during the relevant loss period had the invasion and occupation not occurred. To do this, KPC estimates the volume of crude oil, refined oil products and processed gas products that it would have produced and sold during the relevant loss periods.

109. KPC next projects the prices at which the lost sales would have occurred. In order to do so, it employs four different types of prices. As discussed in greater detail below, KPC employed certain "no-invasion" prices (the "no-invasion prices") to value losses that occurred from 2 August 1990 through 31 January 1991. Losses occurring between 1 February 1991 and 31 December 1993 are valued with two types of prices. KPC employs actual sales prices (the "actual sales prices") to value losses incurred during periods in which it was able to sell reduced quantities of crude oil, refined oil products or processed gas products. Losses incurred during periods in which no actual sales occurred are valued with market prices (the "actual market prices"). Finally, because the PSL claim was filed in early 1994, KPC employs projected market prices (the "projected market prices") to value those refining margin losses that it expected would occur from 1 January 1994 through 30 June 1994.

110. KPC claims that Iraq's invasion and occupation of Kuwait caused the market prices of crude oil, gas and refined oil products to increase significantly from their pre-invasion levels. As a result, abnormally high oil prices prevailed between 2 August 1990 and February 1991.

111. Because the price increases would not have occurred if Iraq had not invaded Kuwait, KPC states that use of the higher actual market prices to value the revenues lost between 2 August 1990 and February 1991 would result in an overstatement of its losses. Therefore, KPC employs the no-

invasion prices, which it claims represent the market prices that would have prevailed if Iraq had not invaded Kuwait, to calculate the part of its lost revenues that occurred during the period 2 August 1990 to February 1991.

112. KPC retained the services of a firm of consultants with expertise in the field of petroleum economics (the “KPC price consultants”) to estimate the no-invasion prices.

113. In a report attached to KPC’s claim, the KPC price consultants state that Iraq’s invasion of Kuwait and the United Nations trade embargo caused the withdrawal of Iraq and Kuwait from the international oil market, which resulted in a decrease in production and refining. This caused fears of supply shortages and a dramatic, if temporary, increase in oil prices.

114. In response to these events, certain OPEC members with spare production capacity increased their production of crude oil and its products. This caused oil prices to return, in February 1991, to the levels which, the KPC price consultants opine, would have obtained if the invasion had not occurred.

115. Therefore, the KPC price consultants assert that Iraq’s invasion and occupation of Kuwait caused abnormally high prices for crude oil and its products from 2 August 1990 through 31 January 1991 (the “price increase period”).

116. Having determined the period during which oil prices varied from their normal levels, the KPC price consultants estimated the no-invasion prices. In the case of Kuwait Export Blend, the crude oil sold by KPC, they opine that the approximate average price during July 1990, US$ 13.90 per barrel, would have, assuming a smooth price transition, prevailed until February 1991. No-invasion prices for refined oil products and processed gas products are calculated with reference to the crude oil no-invasion prices, demand and supply data with respect to the relevant products and data concerning their refining and transportation costs.

117. As stated at para. 109, supra, KPC employs actual sales prices and actual market prices to value losses that occurred from 1 February 1991 through 31 December 1993 and projected market prices in the case of losses that occurred in 1994.

118. KPC then adjusts all prices other than the actual sales prices for certain historical price differentials (the “price differentials”) between market prices and prices charged to KPC’s customers before employing them to calculate its lost revenue. These adjustments are required because KPC usually sells crude oil, refined oil products and processed gas products at

a premium or discount to their market prices. As stated at para. 109, supra, KPC employs actual prices charged to purchasers to calculate revenues lost during periods for which sales were made and data are available.

119. KPC also estimates the quantity of crude oil that would have been refined into refined oil products during the period from 1 December 1992 through 30 June 1994 if Kuwait's refining facilities had not been damaged.

120. KPC uses these production volume estimates and the relevant prices to calculate the revenue it would have earned from the sale of each product but for Iraq's invasion and occupation of Kuwait.

121. KPC resumed limited production as early as November 1991. Therefore, it produced, processed and sold approximately 332 million barrels of crude oil during the remaining production loss period. From the no-invasion revenue estimate, KPC subtracts the actual sales revenues earned on the sales of crude oil, refined oil products and processed gas products that were produced from these 332 million barrels.

122. KPC finally makes deductions for costs savings realised. KPC considers only the following categories of costs to determine KPC's cost savings: KPC cost of sales, KOC production costs, KNPC processing fees and KPC general, marketing and administrative costs. In the KPC accountants' report, the accountants identify each cost category, provide a general breakdown of each such category, and identify where cost savings are made. The KPC accountants estimate the no-invasion costs for each category of cost and compare them to the actual costs incurred to arrive at the amount of each cost saving.

123. Because KPC is claiming on behalf of itself and Kuwait (through Kuwait's Ministry of Oil), KPC ignores the cost of purchasing crude oil and gas from the Ministry of Oil. The effect of this action is discussed at para. 244, infra.

124. Further, KPC makes no deductions for the value of the crude oil and gas not produced, because it alleges that the 839 million barrels of crude oil at issue in this claim were destroyed as a result of the invasion and occupation of Kuwait.

(b) Lost revenues

(i) Crude oil and refined oil products sales loss

125. As the first step, KPC estimates the amount of crude oil and refined oil products that it would have produced from 2 August 1990 through 30

November 1992, as KPC claims it was able to return to pre-invasion daily production rates in December 1992.[10]

126. Kuwait is a member of the Organisation of Petroleum Exporting Countries ("OPEC"), which from time to time establishes a crude oil production ceiling for its members. An individual member's share of the OPEC production ceiling is often referred to as its "quota." At the time of the invasion, Kuwait's OPEC crude oil production quota was 1.5 million barrels per day ("bpd"). Arguing that the quota represents Kuwait's minimum production in a no-invasion scenario, KPC estimates that Kuwait could have produced a base amount of at least 1.5 million bpd of crude oil from 2 August 1990 through 30 November 1992 (852 days), amounting to 1,278 million barrels of total no-invasion production.

127. As discussed in Chapter III, supra, AOC produces crude oil in the offshore PNZ under concessions from Kuwait and Saudi Arabia. Fifty per cent of AOC's production is attributed to Kuwait's OPEC quota. Thus, to determine KPC's no-invasion production, KPC subtracts 107 million barrels, which it alleges is one-half of AOC's production in the offshore PNZ, from the base production amount of 1,278 million barrels, and arrives at a total no-invasion production for KPC of 1,171 million barrels through 30 November 1992. KPC estimates AOC's production by adding AOC's actual production during the loss period to AOC's claimed production and sales loss during AOC's claimed loss period.

128. KPC estimates that 706 million of the 1,171 million barrels of total no-invasion production would have been processed and sold as refined oil products. KPC asserts that the remaining 465 million barrels would have been sold as crude oil.

129. KPC requests compensation in the amount of US$ 3,555 million for the crude oil sales that it would have made from 2 August 1990 through 30 November 1992. KPC calculates this amount as US$ 7,005 million in no-invasion revenue less US$ 3,450 million in actual revenue earned during the loss period.

130. KPC requests compensation in the amount of US$ 11,900 million for the refined oil product sales that it would have made from 2 August 1990 through 30 November 1992. KPC calculates this amount as US$ 14,399 million in no-invasion revenue less US$ 2,499 million in actual revenue earned during the loss period.

(ii) Processed gas products sales loss

131. In addition to the crude oil and refined oil products, KPC alleges that it would have extracted the associated natural gas from the crude oil

it would have produced in a no-invasion scenario, processed this gas, and sold it as processed gas products. KPC asserts that it was unable to extract gas products from its crude oil production at pre-invasion levels due to damage to its processing facilities. KPC's claim involves three processed gas products that it was unable to produce and sell at pre-invasion rates from 2 August 1990 through April 1993 (propane), June 1993 (lean gas) and July 1993 (butane).

132. KPC requests compensation in the amount of US$ 860 million for lost sales of processed gas products.

(iii) Refining margin loss

133. As noted, even after crude oil production resumed fully by 1 December 1992, KPC asserts that the damage to Kuwait's oil processing and refining facilities continued to cause losses, because it remained unable to refine oil at pre-invasion rates. Because the profit margin on crude oil is smaller than the profit margin on refined oil products, KPC claims that its reduced refining capacity resulted in a refining margin loss of US$ 1,032 million, incurred during the period from 1 December 1992 through 30 June 1994.

(c) Cost savings

134. KPC presents four cost saving elements in its claim: cost of sales, production costs, processing fees and general, marketing and administrative costs. KPC claims that the majority of its cost savings resulted from not having to pay production costs to Kuwait Oil Company ("KOC") and processing fees to Kuwait National Petroleum Corporation ("KNPC") during the loss period. KPC discusses both of these cost savings separately from its cost of sales. Note that KPC uses the term "cost of sales" in the claim specifically to refer to the cost of oil purchased from Kuwait, the processing fees for overseas refineries, the cost of oil and gas purchased from third parties and the cost of freight and insurance.

(i) Cost of sales

135. In an element it labels "cost of sales," KPC asserts that it realised savings solely on the processing fees that would have been paid to overseas refineries. These fees include refining fees, freight, insurance and other marine costs with respect to crude oil that would have been sent to overseas refineries for refining. The KPC accountants' report filed with the PSL statement of claim explains why there are no other cost savings under this category of cost and proposes a deduction of US$ 98 million from the claim to account for saved processing fees for overseas refineries.

(ii) Production costs

136. In an element it labels “production costs,” KPC states that it realised savings on KOC production costs of US$ 235 million, and deducts this amount from its total claim amount. KPC limits the period of production cost savings based on the dates that production of crude oil and gas were restored to no-invasion rates, in December 1992 and July 1993, respectively. KPC makes certain adjustments on depreciation and car leasing costs to arrive at the amount of production cost savings.

(iii) Processing fees

137. In an element it labels “processing fees,” KPC states that it realised savings on KNPC processing fees of US$ 2,022 million. KPC deducts this amount from the total lost revenue amount. KPC relies on the calculations in a report made by another consultant hired by KNPC (“the KNPC Report”). The KNPC Report is a report submitted with a claim by KNPC to the UNCC for lost profits.[11] KPC assumes that the calculations are correct and makes cost savings deductions based on KNPC’s calculations.

(iv) General, marketing and administration costs

138. KPC states that it made savings on marketing, general and administrative costs of US$ 19 million. KPC deducts this amount from the total lost revenue amount. KPC provides a breakdown of these costs and adjusts these costs for depreciation, exceptional costs and inflation. There are no deductions for salaries, as KPC claims that it continued to pay these salaries at the normal rate during Iraq’s occupation of Kuwait.

2. Evidence presented in support of the claim

139. KPC initially submitted a number of statements and evidence in support of its claim, including the following:

(a) A statement of claim.

(b) Audited financial statements for the years 1989 through 1992.

(c) A report prepared by KPC’s accountants (the “KPC accountants’ report”) identifying and quantifying the loss.

(d) A report prepared by the KPC price consultants, setting forth projected no-invasion prices for the crude oil, refined oil products and processed gas products sold by KPC.

(e) The supporting calculations prepared for the KPC accountants’ report, contained in several appendices to that report.

(f) A statement by OPEC in a press release regarding Kuwait's quota.

(g) Various witnesses' statements regarding factual elements of the claim and authenticating certain accounting documents.

140. KPC's initial submission contains, however, almost no underlying financial, accounting or other documents. In fact, KPC specifically states that the documents submitted with the claim are "by no means" all of the supporting evidence.

141. The Panel, aided by the secretariat and the Panel's expert consultants, undertook an investigation of the evidence. This investigation lasted over one year and involved dozens of interviews, numerous formal questions and requests for documents, the review of voluminous documentary evidence, several on-site inspections, and a formal oral proceeding.

142. As a result of this investigation, the Panel has determined that a number of claim elements are fully supported by underlying financial and accounting records or other evidence. Where a claim element is not supported by such evidence, the Panel has disallowed the element in whole or in part.

3. Iraq's responses

143. The Panel was assisted by some of the responses to the PSL claim filed by the Government of Iraq. These responses can be grouped into four categories, as discussed in the following paragraphs.

144. First, a few of Iraq's written submissions, and all of its oral presentation, concerned such matters as the Commission's authority to process claims and award compensation, and the propriety of the Rules and the Commission's procedures. It is the Panel's view that the majority of these matters should be addressed to either the Governing Council or the Security Council, and not to a Panel of Commissioners. The remaining procedural objections have been adequately addressed in the Panel's previous reports.

145. Second, Iraq challenges certain factual assertions in the claim. Iraq challenges the authority of KPC to claim on behalf of Kuwait. It argues that the well blow-outs were not caused by Iraqi actions and, therefore, that Iraq cannot be held responsible for the damages caused thereby. Iraq further argues that the revenue losses caused by the invasion and occupation are indirect and not compensable. Iraq maintains that Kuwait was negligent in its management of repairs, thus prolonging

unnecessarily the loss periods in the claim. These objections have been considered and rejected previously by the Panel in the second instalment of E1 claims. See E1 Second Instalment Report, paras. 94-99.

146. Third, Iraq generally challenges the quantity and quality of the evidence presented by KPC in support of its claim. Iraq urges the Panel to request underlying financial and accounting documents and other evidence and to require verification of reports prepared for the claimant by its consultants. In particular, Iraq requests that the Panel verify the key production data in the claim. In this report, the Panel notes the considerable amount of supporting evidence that it has required the claimant to produce and which the claimant has, in fact, produced.

147. Fourth, Iraq raises certain objections particular to the PSL claim.

(a) Iraq argues that Kuwait benefited from an increase in its OPEC quota after the liberation and, therefore, that Kuwait’s increased revenues should be offset against the claim. Although it does not so state, it appears that Iraq contends that the increased OPEC quota was possible as the result of restrictions on Iraq’s oil exports imposed by Security Council resolution 661.

(b) Iraq also argues that KPC has failed to disclose certain revenues that it received during the loss period. For example, Iraq asserts that Kuwait’s overseas subsidiaries profited from the general increase in petroleum prices that immediately followed the invasion. Iraq requests that these revenues be offset against the claim amount.

(c) Although it agrees that no-invasion prices should be used, Iraq maintains that KPC’s no-invasion prices employed to value any losses related to the sale of crude oil and oil products are too high.

148. Iraq’s legal arguments and factual contentions will be considered below in the Panel’s legal and factual analysis of the claim.

4. Compensability and measurement of losses

(a) Compensability

149. KPC argues that its claimed losses result “from the inability to use the oilfields and refineries to produce and sell oil and gas during the period of the illegal occupation; and thereafter the inability to use such property or to use it fully, because of the physical damage inflicted on the oilfields and refineries” by Iraqi forces. KPC also contends that the loss of revenue from production and sales of oil “was an inevitable consequence of Iraq’s actions ... in sabotaging the wellheads in all of the producing oilfields in Kuwait and setting the oilfields ablaze.”

150. KPC maintains that these lost revenues are direct losses – and thus compensable – pursuant to Governing Council decision 7, paragraph 21, which states that compensable losses include losses resulting from:

> (i) Military operations or threat of military action by either side during the period 2 August 1990 to 2 March 1991; ... [and]
>
> (ii) Actions by officials, employees or agents of the Government of Iraq or its controlled entities during that period in connection with the invasion and occupation.

151. The Panel finds that KPC has correctly stated the relevant rules regarding compensability of the losses alleged in the PSL claim.

152. Applying these rules, the Panel has previously found that the damage to Kuwait’s oilfields and related facilities, which is the sole alleged cause of the losses in the PSL claim, was the direct result of Iraq’s invasion and occupation of Kuwait. See WBC Report, paras. 85-86.

153. The Panel now finds that KPC’s capacity to produce and sell oil was, as KPC alleges, drastically reduced for a certain period and that this reduced capacity was the direct result of the invasion and occupation of Kuwait and the subsequent well blow-outs and damage to Kuwait’s oilfields and related facilities.

154. Therefore, the Panel finds that, to the extent that the losses alleged by KPC are proved by the evidence, they are compensable under Security Council resolution 687 and Governing Council decision 7. The proper standard of compensation is discussed at paras. 160-166, infra.

(b) Evidence

155. KPC submits in support of the PSL claim a number of reports prepared by its accountants and its price consultants. KPC relies heavily on these reports and projections in stating the quantum of its claim. Iraq has

challenged this reliance, asserting that the consultants were hired by KPC and, therefore, cannot be relied on to produce an independent verification of the claim.

156. Article 35(1) of the Rules provides general guidance on the submission of evidence by a claimant:

> "Each claimant is responsible for submitting documents and other evidence which demonstrate satisfactorily that a particular claim or group of claims is eligible for compensation pursuant to Security Council resolution 687 (1991). Each panel will determine the admissibility, relevance, materiality and weight of any documents and other evidence submitted."

157. Article 35(3) states the standard of evidence required for corporate, government and international organization claims, noting that such claims "must be supported by documentary and other appropriate evidence sufficient to demonstrate the circumstances and amount of the claimed loss."

158. The Panel has previously found that article 35(3) does not impose any formal requirements on the type of evidence presented by claimants, but rather directs the Panel to consider whether such evidence is appropriate. See E1 Second Instalment report, para. 97.

159. Based on this finding, therefore, the Panel finds that KPC may submit and rely on its consultants' reports. The evidentiary value of the consultants' reports, however, depends on whether the reports are shown to be based on underlying financial and accounting records or other evidence that establish the circumstances and amount of the claimed loss. And, as noted throughout this report, the Panel has uniformly required that evidence in support of each element of the claim be produced.

(c) Measurement of lost profits

160. KPC asserts that the proper standard of compensation for the losses resulting from the interruption of its oil production is the projected lost profits from the production and sales of oil that it estimates it would have made in the claimed loss period.

161. The Panel has previously determined that the Governing Council has limited the compensation available in business interruption claims before the Commission. The Governing Council states in decision 9, paragraph 19 that:

> "The method of valuation should ... be one that focuses on past performance rather than on forecasts and projections in the future.

Compensation should be provided if the loss can be ascertained with reasonable certainty based on prior earnings or profits."

162. The approach advocated by KPC is one of estimating lost revenues based on an historical level of production and on historical production and processing costs. The Panel finds that KPC's use of historical production and cost figures is consistent with Governing Council decision 9.

163. As the Panel is considering the entire Kuwaiti oil sector as one enterprise, the internal transfer price paid between the various entities or operations is irrelevant.

164. Because oil prices were temporarily driven higher as a result of the invasion, KPC acknowledges that use of actual prices during the loss period might over-compensate it. KPC's claim is calculated, therefore, using prices for crude oil, refined oil products and processed gas products, which KPC alleges would have prevailed in a no-invasion scenario.

165. The Panel finds that it is reasonable to use projected prices in order to avoid over-compensation, if such prices are based on relevant and reasonably ascertainable historical data, such as demand and supply trends for the loss period. KPC's no-invasion prices are discussed at paras. 179-190, infra.

166. The Panel therefore finds that the methods employed by the claimant in the PSL claim to calculate the revenues lost by KPC and Kuwait are acceptable to the extent that such methods are properly employed using accurate historical information.

(d) Extraordinary profits

(i) Additional production after liberation

167. The United Nations trade embargo that was imposed pursuant to Security Council resolution 661 (1990) as a result of Iraq's invasion and occupation of Kuwait severely restricted Iraq's ability to export crude oil, gas and refined oil products. As stated at para. 114, supra, the decrease in supply of Iraqi and Kuwaiti oil was offset, beginning soon after Iraq's invasion of Kuwait, by increases in production on the part of certain other OPEC members with spare production capacity.

168. In its reply to the PSL claim, Iraq argues that, after its liberation, Kuwait was among the countries which, due to Iraq’s absence from the market, were able to produce more crude oil than they would have if the invasion had not occurred. As a result, KPC earned extraordinary profits that exceeded the losses claimed by KPC in the PSL claim. Therefore, Iraq claims, KPC should receive no compensation with respect to the PSL claim.

169. The Panel notes that the objective of any award of compensation with respect to KPC’s claim is to place the claimant in the same position in which it would have been if its oil sector sales had not decreased as a result of Iraq’s invasion and occupation of Kuwait.

170. If Iraq’s absence from the crude oil market, which resulted from its invasion and occupation of Kuwait, allowed KPC to earn extraordinary profits from the production of crude oil, the Panel finds that it should consider whether such profits should be offset against its claim.[12] Therefore, it is necessary for the Panel to determine whether KPC produced and sold more crude oil in the years that followed Kuwait’s liberation than it would have in a no-invasion scenario and, if so, whether Iraq’s invasion and occupation of Kuwait was a direct cause of such increase.

171. In order to consider this and certain related issues, the Panel retained the services of a firm of petroleum economics consultants with an international reputation. With the assistance of such consultants, the Panel reviewed data with respect to crude oil production, production capacity, and world demand prior to and after Iraq’s occupation of Kuwait. These data show that Kuwait’s production of crude oil increased from 1.8 million bpd in 1989 to 2.03 million bpd in 1994.

172. However, the production data reviewed by the Panel also show that Kuwait’s average share of actual OPEC crude oil production between 1991 and 1998 did not exceed its average share of actual OPEC production either during the year that preceded Iraq’s invasion of Kuwait or during the five calendar years that preceded the invasion. Moreover, the Panel finds that, because its pre-invasion production capacity exceeded its post-liberation production, Kuwait’s share of production would not have been likely to decrease in a no-invasion scenario.

173. The Panel finds, therefore, that there is no evidence which indicates that the increase in absolute terms of Kuwait’s production was a direct result of Iraq’s absence from the market or of Iraq’s invasion and occupation of Kuwait. Accordingly, the Panel finds that there is no need to make a deduction for extraordinary profits from KPC’s claim.

(ii) Profits from foreign operations

174. Iraq also alleges that KPC profited from the increase in oil prices that resulted from Iraq's invasion of Kuwait through its overseas operations. Iraq asserts that this profit should be set off against KPC's claims so that KPC does not benefit from the occupation of Kuwait.

175. KPC maintains that all revenues from the production and sale of crude oil that it earned during the loss period have been deducted from the PSL claim. KPC transferred certain operations from Kuwait to its London branch office during Iraq's occupation of Kuwait. However, KPC asserts that neither its London branch nor any of its overseas subsidiaries earned extraordinary profits as a result of the increase in oil prices.

176. The Panel requested and reviewed relevant accounting information with respect to both KPC's overseas subsidiaries and KPC's operations abroad.

177. The Panel finds that there is no evidence that KPC earned any profits from its existing stocks of crude oil resulting from the petroleum price increase during Iraq's occupation of Kuwait or from any other source through its overseas subsidiaries. Further, the Panel finds that KPC's overseas operations during the occupation consisted of collecting debts that arose prior to the Iraqi invasion.

178. Accordingly, the Panel finds that there is no evidence that KPC did not disclose profits earned outside Kuwait as a result of the increase in oil prices.

(e) No-invasion prices

179. As described at paras. 108-118, supra, KPC employs no-invasion prices, adjusted for relevant price differentials, to value part of its claimed revenue losses. The no-invasion prices are oil prices that, in KPC's opinion, would have prevailed from 2 August 1990 through 31 January 1991 if Iraq's invasion and occupation of Kuwait, and the fears of supply shortages that followed it, had not occurred. KPC claims that, due to increases in oil production, the effect of the Gulf war conflict on oil prices ended in February 1991. Therefore, KPC employs no-invasion prices to value losses that occurred during the price increase period and, for the subsequent periods, uses adjusted actual or projected market prices or, when available, prices actually charged by KPC to purchasers.

180. KPC states that, assuming a smooth price transition, the price of Kuwait Export Blend would have been approximately US$ 13.90 per barrel during the price increase period. This price approximates the actual

average market price of Kuwait Export Blend during July 1990, the month that preceded Iraq's invasion of Kuwait.

181. No-invasion prices for refined oil products and processed gas products were calculated with reference to the crude oil no-invasion price, demand and supply data with respect to the relevant oil and gas products, and data concerning their refining and transportation costs.

182. In its reply to the PSL claim, Iraq contends that, because of an oversupply of crude oil prior to the invasion of Kuwait and the tendency of certain OPEC members to exceed their OPEC production quota allocations, oil prices would have fallen after the date of Iraq's invasion of Kuwait. Iraq claims that the prices employed by KPC overstate the prices that would have prevailed if the invasion and occupation of Kuwait had not occurred.

183. As noted at para. 166, supra, the Panel believes that KPC's claimed loss should be measured with reference to the profits that it would have earned from its production and sales operations if Iraq had not invaded Kuwait. Therefore, the Panel finds that the prices to be employed to calculate KPC's losses should approximate with the greatest possible degree of accuracy those that would have prevailed on world markets if the invasion of Kuwait had not occurred.

184. Based on its review of market data for the relevant period, the Panel finds that the invasion and occupation of Kuwait caused a temporary rise in oil prices. In addition, the Panel finds that KPC correctly stated that, due to increases in production by OPEC members with spare production and refining capacity, such prices returned to the levels that would have prevailed if the invasion had not occurred in early February 1991. Therefore, the Panel agrees that projected no-invasion prices should be employed to value losses that occurred during the price increase period.

185. Accordingly, the Panel has considered, with the assistance of its petroleum economics consultants, whether the no-invasion prices overstate the prices that would have prevailed during the price increase period if the invasion had not occurred.

186. In considering crude oil prices, the Panel reviewed certain price forecasts prepared prior to Iraq's invasion of Kuwait; demand and supply trends; production and transportation costs; and other relevant data with respect to the period over which KPC's claimed losses were incurred. In addition, the Panel instructed the secretariat and its petroleum economics consultants to interview KPC's petroleum economics consultants and review the latter's working papers concerning the estimation of no-invasion prices. The Panel has reviewed the results of this exercise.

187. Based on this review, the Panel finds that, even if Iraq had not invaded Kuwait, world demand for oil would most likely have increased after 2 August 1990. This development would have resulted in an increase in oil prices unless it had been accompanied by a sufficiently large increase in the supply of oil. Based on the data it has reviewed, the Panel concludes that, while in a no-invasion scenario the supply of crude oil would have increased in response to the rise in demand, it would not have done so by an amount sufficient to cause crude oil prices to fall below their pre-invasion levels. Therefore, the Panel finds that KPC has not overstated the crude oil prices that would have prevailed if the invasion had not occurred.

188. In the case of refined oil products and processed gas products, the Panel believes that KPC has employed an appropriate methodology to determine the no-invasion prices for refined oil products and processed gas products.

189. In addition, the Panel has reviewed relevant market data with respect to refined oil products and processed gas products during the loss period. As in the case of crude oil, the Panel concludes, based on this review, that if Iraq had not invaded Kuwait, demand for the relevant refined oil products and processed gas products would likely have increased during the loss period. During the same period the supply of the relevant oil and gas products also would have increased, although not by an amount sufficient to decrease prices to levels lower than the relevant no-invasion prices provided by KPC.

190. The Panel therefore concludes that the use of KPC’s no-invasion prices to value losses that occurred during the price increase period does not lead to an overstatement of such losses. In addition, the Panel finds that KPC has correctly stated the actual market prices that prevailed after the price increase period, and that these can be employed to value losses occurring during subsequent periods when no relevant actual sales data are available.

5. Factual analysis of the claim

191. The Panel divides its analysis of the claim into two sections: first, a review of the claimed losses of sales revenues and second, a review of the cost savings that the claimant proposes to deduct from the lost revenue amounts to reach the claim amount.

192. In the discussion on lost revenues, for each of the four claimed sales loss elements of the PSL claim, the Panel presents the results of its inquiries into the volume of the loss and the valuation of that loss. For each sales loss element, the Panel first discusses how the claimant defines

the loss period and estimates the lost production volume that it claims to have experienced over that loss period. The Panel then considers the claimant's valuation of the claimed sales loss. The Panel's findings regarding the claimed sales losses in the PSL claim are presented in Tables 8, 10 and 12, at the end of the section on loss of sales revenues.

193. In a separate section, the Panel then presents its findings on the cost savings experienced by the claimant. These findings are presented in Table 14, at the end of the cost savings section.

(a) Lost revenues

194. As shown in Table 6, KPC claims that it lost four types of sales revenues as a result of its inability to produce, process and refine crude oil. KPC alleges a loss of sales of crude oil during the period 2 August 1990 through 30 November 1992. KPC also alleges a loss of sales of refined oil products during the same period. Because of the factual relationship between these two loss elements, they are discussed in one section. In addition, KPC alleges a loss of sales of the processed gas products that would have been extracted from its crude oil during the period 2 August 1990 through 31 July 1993. KPC also alleges that its inability to refine the crude oil production extended beyond the resumption of crude oil production thus causing a loss of refinery margins during the period 1 December 1992 through 30 June 1994. The Panel presents the results of its verification of each of these claimed losses below.

(i) Crude oil and refined oil products sales loss

195. KPC's basic allegations regarding the volume of production lost are summarised at paras. 125-128, supra.

Table 7. Claimed lost revenue from sales of crude oil and refined oil products

Claim element		Claim amount (US$)
Crude oil sales loss		
No-invasion revenue		7,005,000,000
Actual revenue		(3,450,000,000)
Sub-total for crude oil sales loss (see Table 6)		3,555,000,000
Refined oil products sales loss		
No-invasion revenue from product:*		
Refined in Kuwait	14,131,874,331	
Refined outside Kuwait	267,125,669	14,399,000,000
Actual revenue from product:		
Refined in Kuwait	(2,499,000,000)	
Refined outside Kuwait	0	(2,499,000,000)
Sub-total for refined oil sales loss (see Table 6)		11,900,000,000
Total crude and refined oil sales claim		15,455,000,000

*KPC does not separate in the claim the revenue amounts earned on crude oil refined in Kuwait from that refined outside Kuwait. Because these figures are relevant to the Panel's analysis, the Panel has used the KPC accountants' report to determine these figures.

a. Volume of crude oil not produced

196. In verifying the volumes of KPC's lost crude oil production, the Panel first reviewed KPC's pre-invasion production data and OPEC documentation, and found that Kuwait would have produced, at a minimum, 1.5 million bpd, equivalent to 1,278 million barrels of production over the 852 days from 2 August 1990 through 30 November 1992.

197. KPC subtracts 107 million barrels from the 1,278 million barrel figure to account for AOC's estimated total no-invasion production, resulting in 1.171 million barrels. The Panel reviewed AOC's production data in the offshore PNZ and AOC's claim documents. Based on this evidence, the Panel finds that KPC has understated AOC's no-invasion production by approximately 4 million barrels.[13] After this adjustment, the Panel finds that AOC's share of Kuwait's production quota would have been 111 million barrels had the invasion not occurred.

198. After adjusting KPC's calculations to allow for its understatement of AOC's production, the Panel finds that KPC would have produced at least 1,167 million barrels of crude oil during the loss period if the invasion had not occurred. Note that this overstatement of its claim requires two adjustments to account for the lower volume of crude oil and the lower volume of associated natural gas that would have been extracted from this

crude oil. These adjustments are discussed more fully at paras. 214 and 233, infra.

199. In its claim, KPC argues that it actually produced 332 million barrels of crude oil during the production loss period. Based on a review of KPC's actual production data, the Panel finds that KPC's actual production during the loss period was in fact 332 million barrels. Deducting these 332 million barrels from the 1,167 million barrels mentioned in paragraph 198 above, the Panel finds that KPC lost crude oil production of at least 835 million barrels from 2 August 1990 through 30 November 1992.

b. Sales mix between crude oil and refined oil products

200. From the no-invasion production of 1,171 million barrels, KPC asserts that it would have sold 465 million barrels as crude oil and 706 million barrels as refined oil products. The refined oil products volume estimate is composed of 659 million barrels that KPC alleges would have been refined at refineries in Kuwait and 47 million barrels that it alleges would have been refined outside Kuwait.

201. KPC uses historical data to project this sales mix. KPC assumes in its calculations that it would have fully utilised its refining capacity for two reasons. First, KPC obtains higher prices for refined oil products, and second, KPC's refinery costs are mainly fixed, i.e. they do not vary with the amount of oil refined.

202. Based on a review of the evidence submitted, the Panel finds that the proportion of crude oil and refined oil products sold by KPC is largely dependent on KPC's refining capacity.

203. The Panel reviewed KPC refinery schedules that indicate the frequency of shutdowns and throughput of all the refineries in Kuwait prior to and after the invasion. Based on this evidence, the Panel concludes that KPC has correctly estimated the volumes of refined oil products that it would have refined in Kuwait in a no-invasion scenario. Accordingly, the Panel finds that KPC would have refined 659 million barrels of crude oil in Kuwait during the loss period.

204. KPC claims that 47 million barrels of crude oil would have been refined in overseas refineries during the loss period. Although there is some evidence that KPC made arrangements to refine oil in overseas refineries, despite repeated requests for further information, KPC could prove neither the actual volume of crude oil that was sent for refining overseas nor where it was refined prior to the invasion. The Panel finds therefore that KPC has not provided evidence sufficient to prove this

element of the claim. After the Panel completed its review process, KPC submitted further documents that it asserts relate to this element of the claim. Because these documents were submitted after the Panel's work was completed, the Panel has not considered them.

205. Therefore, of the 706 million barrels that KPC alleges would have been sold as refined oil products, in the valuation section of the report, the Panel will value only 659 million barrels as refined oil products. The compensation for the remaining 47 million barrels of this claim element will be based on the price of crude oil rather than on the higher refined oil products price claimed by KPC. The Panel will accomplish this by deducting the net refining margin claimed for the 47 million barrels from the refined oil products claim amount.

206. For the sales of crude oil claim element, the Panel finds that the total proven amount is approximately 461 million barrels, instead of 465 million barrels. This figure is the remainder after the 706 million barrel refined oil products element and a 4 million barrel error made by KPC in estimating AOC's no-invasion production are deducted from the 1,171 million barrels of claimed total KPC production.

c. Valuation of crude oil and refined oil products sales loss

207. KPC's basic allegations regarding the valuation of the crude oil and refined oil products sales losses are summarised at paras. 125-130, supra.

i. Sales of crude oil

208. KPC claims that it would have earned US$ 7,005 million in no-invasion revenue from sales of crude oil from 2 August 1990 through 30 November 1992 on 465 million barrels of crude oil production.

209. The Panel finds that the loss period used by KPC to estimate its lost crude oil sales revenue does not overstate the length of time during which KPC could not earn crude oil sales revenue at pre-invasion levels.

210. As discussed at para. 109, supra, KPC employs three categories of prices to estimate the lost crude oil revenues. In the case of losses occurring during the price increase period, KPC employs no-invasion prices adjusted for relevant price differentials. In the case of losses occurring after the price increase period, KPC employs actual market prices adjusted for relevant price differentials when no actual sales data were available. Losses occurring during periods when KPC was able to sell crude oil were valued at actual sales prices.

211. The Panel has already found, at para. 190, supra, that KPC's no-invasion and actual market prices are not overstated. In addition, the Panel finds that the actual sales prices employed correspond to the prices at which KPC made the relevant actual crude oil sales.

212. KPC calculates the above price differentials based on its actual sales of crude oil during the six months ended 30 June 1990. From a review of KPC's sales contracts, the Panel finds that the price differentials employed by KPC do not lead to an overstatement of KPC's lost sales revenue.

213. KPC deducts US$ 3,450 million in crude oil revenue that it claims it earned from 2 August 1990 through 30 November 1992. Based on KPC's accounts and their underlying documents, the Panel has verified that this deduction accurately reflects the actual revenue earned by KPC on crude oil sales during this period.

214. In addition, as noted above, KPC's 4 million barrel overstatement in the volume of crude oil not produced requires an adjustment to the crude oil sales loss element. The Panel therefore makes a further deduction of US$ 51,402,955 to account for the overstatement, which is calculated by applying the verified crude oil prices to the overstated volume.

215. Accordingly, the Panel recommends compensation of US$ 3,503,597,045 for the crude oil sales loss claim element.

ii. Sales of refined oil products

216. KPC claims that it would have earned US$ 14,399 million in no-invasion revenue from the sales of refined oil products from 2 August 1990 through 30 November 1992. KPC claims that it would have earned this no-invasion revenue from 706 million barrels of refined oil products.

217. The Panel finds that the loss period used by KPC to estimate its lost refined oil product sales revenue does not overstate the length of time during which KPC could not earn refined oil product sales revenue at pre-invasion levels.

218. As discussed at para. 109, supra, KPC employs three categories of prices to estimate the lost refined oil product revenue. In the case of losses occurring during the price increase period, KPC employs no-invasion prices adjusted for relevant price differentials. In the case of losses occurring after the price increase period, KPC employs actual market prices adjusted for relevant price differentials when no actual sales data were available. Losses occurring during periods when KPC was able to sell refined oil products were valued at actual sales prices. Because there are

different types of refined oil products with different prices, KPC calculates the weighted average of the prices of each refined product according to the sales proportion of each refined product during the year ended 30 June 1990 and the different markets in which they were sold.

219. The Panel has already found, at para. 190, supra, that KPC's no-invasion and market prices are not overstated. In addition, the Panel finds that the actual sales prices correspond to the prices at which KPC made relevant actual refined oil products sales.

220. KPC calculates the above price differentials based on its actual sales of refined oil products during the six months ended 30 June 1990. From a review of KPC's sales contracts, the Panel finds that the price differentials employed by KPC do not lead to an overstatement of KPC's lost sales revenue. The Panel also reviewed KPC's sales data, which show the historical sales proportion of each refined product. The Panel is satisfied that KPC's estimate of the sales proportion does not overstate KPC's lost sales revenue.

221. KPC deducts actual revenue of US$ 2,499 million that it claims it earned from the actual sales of refined oil products from 2 August 1990 to 30 November 1992, inclusive. The Panel has verified that this deduction accurately reflects the actual revenue earned by KPC on refined oil product sales during this period.

222. As noted, however, the Panel finds that only 659 million barrels of the 706 million barrels alleged in this claim element would have been sold as refined oil products; the remaining 47 million barrels would have been sold as crude oil. Therefore, the Panel makes a further deduction of US$ 267,125,669 million to account for the 47 million barrels, which the Panel finds should be priced at crude oil prices instead of refined oil product prices. This deduction is calculated by applying the difference between the relevant refined oil product and crude oil prices to the 47 million barrel volume. Accordingly, the Panel recommends compensation in the amount of US$ 11,632,874,331 for the refined oil products sales loss claim element.

223. Based on its foregoing findings in paras. 215 and 222, supra, the Panel finds that KPC's lost revenue from sales of crude oil and refined oil products is US$ 15,136,471,376.

Table 8. Panel's findings on lost revenue from sales of crude oil and refined oil products

Claim element	Claim amount (US$)	Panel's adjustments (US$)	Panel's recommendation (US$)
Crude oil sales loss			
No-invasion revenue from sales	7,005,000,000	(51,402,955)	6,953,597,045
Actual revenue from sales	(3,450,000,000)		(3,450,000,000)
Sub-total	3,555,000,000	(51,402,955)	3,503,597,045
Refined oil products sales loss			
No-invasion revenue from sales:			
Refined in Kuwait	14,131,874,331		14,131,874,331
Refined outside Kuwait	267,125,669	(267,125,669)	0
Actual revenue from sales:			
Refined in Kuwait	(2,499,000,000)		(2,499,000,000)
Refined outside Kuwait	0		0
Sub-total	11,900,000,000	(267,125,669)	11,632,874,331
Total	15,455,000,000	(318,528,624)	15,136,471,376

(ii) Processed gas products sales loss

Table 9. Claimed lost revenue from sales of processed gas products

Claim element	Claim amount (US$)
Processed gas products sales loss:	
No-invasion revenue from sale of processed gas products	1,216,000,000
Actual revenue from sale of processed gas products	(356,000,000)
Total of processed gas sales loss claim	860,000,000

224. As discussed in paras. 107 and 131, supra, KPC produces associated gas products from its crude oil production. KPC estimates the volume of processed gas products that could have been produced and sold from crude oil based on KPC’s budget for the year ended June 1994. According to the KPC accountants’ report, the KPC budget is based on historical records of gas production. The 1994 budget is used because it is based on a crude oil production rate of approximately 1.5 million bpd, the base amount used to calculate KPC’s total lost production. KPC adjusts the gas production figures in the claim using a constant gas to oil ratio based on the 1994 budget, to estimate the volumes of propane and butane that it could have produced and sold if the invasion had not occurred. The KPC accountants’ report sets out the production figures for propane and butane extracted from the 1994 budget.

225. However, KPC’s sole purchaser of lean gas is the Kuwaiti Ministry of Electricity and Water (“MEW”). Therefore, KPC uses the level of deliveries of lean gas to MEW in the year ended 30 June 1990 to project a no-invasion volume of lean gas that would have been sold. Because MEW is the sole purchaser of KPC’s lean gas, the Panel finds that KPC has historically produced more lean gas than it could sell.

226. Based on the evidence, the Panel finds that the ratios and volumes used by KPC to ascertain the volumes of processed gas products produced from crude oil do not overstate the lost sales revenues.

227. KPC claims that it would have earned US$ 1,216 million in no-invasion revenue from the sales of propane, butane, and lean gas from 2 August 1990 through July 1993. The loss period for processed gas products is longer than the loss period for crude oil because the processing of associated natural gas was not restored until April 1993 (propane), June 1993 (lean gas), and July 1993 (butane).

228. The Panel finds that the loss period used by KPC to estimate its lost processed gas product sales revenue does not overstate the length of time

during which KPC could not earn processed gas product sales revenue at pre-invasion levels.

229. As discussed at para. 109, supra, KPC employs three categories of prices to estimate the lost propane and butane revenues. In the case of losses occurring during the price increase period, KPC employs no-invasion prices adjusted for relevant price differentials. In the case of losses occurring after the price increase period, KPC employs actual market prices adjusted for relevant price differentials when no actual sales data were available. Losses occurring during periods when KPC was able to sell processed gas products were valued at actual sales prices. With respect to lean gas, KPC employs two categories of prices. When there were no actual sales data available, KPC employs the prices at which it sold lean gas during the six months ended 30 June 1990; these prices are equal to the prices of lean gas it achieved when sales resumed after the end of Iraq’s occupation of Kuwait.

230. The Panel has already found, at para. 190, supra, that KPC’s no-invasion and actual market prices for propane and butane are not overstated. In addition, the Panel finds that the actual sales prices employed correspond to the prices at which KPC made relevant actual sales. With respect to lean gas, the Panel also finds that the prices used by KPC reflect the actual sales prices it achieved when the sales of lean gas resumed.

231. KPC calculates the above price differentials based on its actual sales of processed gas products during the six months ended 30 June 1990. From a review of KPC’s sales contracts, the Panel finds that the price differentials employed by KPC do not lead to an overstatement of KPC’s lost sales revenue.

232. KPC deducts US$ 356 million in processed gas product revenue that it claims it earned from 2 August 1990 through July 1993. Based on KPC’s gas production reports, which contained sales data, the Panel has verified that the deduction accurately reflects the actual revenue earned by KPC on the sales of processed gas products during this period.

233. In addition, the Panel makes a deduction of US$ 2,146,888 to account for the reduced volume of gas, discussed at paras. 197-198, supra. This deduction is calculated by applying the verified processed gas products prices to the volume of gas that would have been extracted from the 4 million barrels of crude oil.

234. The Panel recommends compensation in the amount of US$ 857,853,112 for lost sales revenues on processed gas products.

Table 10. Panel’s findings on lost revenue from sales of processed gas products

Claim element	Claim amount (US$)	Panel's adjustments (US$)	Panel's recommendation (US$)
Processed gas products sales loss:			
No-invasion revenue from sale of processed gas products	1,216,000,000	(2,146,888)	1,213,853,112
Actual revenue from sale of processed gas products	(356,000,000)		(356,000,000)
Total	860,000,000	(2,146,888)	857,853,112

(iii) Refining margin loss

Table 11. Claimed refining margin loss

Claim element	Claim amount (US$)
Refining margin loss:	
No-invasion revenue from refining margin	2,523,000,000
Actual revenue from refining margin	(1,491,000,000)
Total loss from refining margin	1,032,000,000

235. In addition to the sales of crude oil and refined oil products lost during the period from 2 August 1990 through 30 November 1992, KPC claims that if it had been able to refine crude oil at pre-invasion levels, it would thereafter have earned US$ 2,523 million in additional refining margins on its production of crude oil from 1 December 1992 through 30 June 1994.

236. The Panel finds that the loss period used by KPC to estimate its lost refining margin does not overstate the length of time during which KPC could not earn refining margin at pre-invasion levels.

237. To estimate the refining margin loss, KPC employs three categories of prices. KPC employs actual market prices adjusted for relevant price differentials to value losses occurring during periods with respect to which no actual sales data are available. In the case of losses occurring during periods when KPC was able to sell refined oil products, the refined product margin was calculated using actual sales prices. In estimating the refining margin losses occurring in 1994, KPC employs projected market prices adjusted for relevant price differentials.

238. The Panel has already found, at para. 190, supra, that KPC’s actual market prices are not overstated. In addition, the Panel finds that the projected market prices do not overstate the prices at which KPC sold refined oil products in 1994 and that the actual sales prices used correspond to the prices at which KPC sold refined oil products during the relevant period.

239. KPC calculates the above price differentials based on its actual sales of refined oil products during the six months ended 30 June 1990 and its actual sales during the six months ended 31 December 1993. From a review of KPC’s sales contracts, the Panel finds that the price differentials employed by KPC do not lead to an overstatement of KPC’s lost sales revenue.

240. KPC calculates the actual refining margin it earned from 1 December 1992 through 31 December 1993 based on its actual sales data and accounting records. KPC estimates the refining margins that it would have earned from 1 January through 30 June 1994 as it did not have available actual data for this period. To do this, KPC applies a linear increase to the volume of crude oil refined from the level in December 1993 to its pre-invasion level on 30 June 1994 and uses the adjusted prices described above. KPC deducts actual and projected revenue of US$ 1,491 million in refining margin that it claims it earned from 1 December 1992 through 31 December 1993 and that it projects it would have earned from 1 January 1994 through 30 June 1994.

241. Based on KPC’s accounts and their underlying documents, the Panel has verified that the above deduction accurately reflects the actual revenue earned by KPC on the sales of refined oil products during this period.

242. Accordingly, the Panel recommends compensation of US$ 1,032 million for KPC’s refining margin loss.

Table 12. Panel’s findings on refining margin loss

Claim element	Claim amount (US$)	Panel's adjustments (US$)	Panel's recommendation (US$)
Refining margin loss:			
No-invasion revenue from refining margin	2,523,000,000		2,523,000,000
Actual revenue from refining margin	(1,491,000,000)		(1,491,000,000)
Total loss from refining margin	1,032,000,000		1,032,000,000

(b) Cost savings

Table 13. KPC's estimate of cost savings

Claim element	Claim amount (US$)
Cost saving deductions:	
Cost of sales	98,000,000
Production costs	235,000,000
Processing fees	2,022,000,000
General, marketing and administrative costs	19,000,000
Total cost saving deductions:	2,374,000,000

(i) Cost of sales

243. In the claim, KPC alleges that its cost of sales consists of the cost of oil purchased from Kuwait, the processing fees paid to overseas refineries, the cost of oil and gas purchased from third parties, and the freight and insurance costs. KPC deducts US$ 98 million for costs savings on processing fees paid to overseas refineries from its claim.

244. KPC makes no deduction for the cost of oil purchased from Kuwait. Because the PSL claim is presented on behalf of both KPC and Kuwait, the Panel finds that KPC was correct to treat the cost of oil purchased from Kuwait as an internal transfer price and, thus, to make no deduction from the claim. The Panel is aware, however, that Kuwait and its Ministry of Oil might have realised cost savings as a result of the invasion and occupation and that some of these cost savings might relate to the Kuwait government's involvement in oil production and marketing. The Panel notes that there is a Panel of Commissioners assigned to review the claims submitted by Kuwait and its ministries (the "F3 Panel").[14] The E1 Panel has been assured that, in processing these claims, the F3 Panel will consider the cost savings, if any, that might have been realised by Kuwait and its ministries as a result of the invasion and occupation, including any that relate to oil production and marketing. Thus, the Panel will not address in the present report the issue of whether Kuwait and its Ministry of Oil realised any cost savings that relate to its oil production and marketing activities.

245. KPC states that it saved processing fees of US$ 98 million because it did not send any crude oil to be refined overseas. As discussed in paras. 204-205, supra, the Panel has found that KPC did not prove that it would have sent any oil to be refined overseas and, therefore, has disallowed that portion of the claim for lost sales revenues on refined oil products,

as noted in para. 222, supra. Consequently, the Panel also reverses the US$ 98 million deduction.

246. KPC states that it does not deduct cost savings relating to oil and gas purchased from third parties because this claim concerns only the volumes of crude oil and gas that could have been produced in Kuwait by KPC. The Panel finds that this approach is reasonable. Therefore, the Panel finds that there should be no cost saving deductions related to oil and gas purchase from third parties.

247. KPC states that, although it could not export crude oil, refined oil products and processed gas products during the occupation of Kuwait, it enjoyed no savings in freight and insurance costs. Based on a review of KPC's accounts and its underlying records, the Panel is satisfied that the claim is based on prices that already exclude freight and insurance costs. Therefore, the Panel finds that no further deduction for freight and insurance cost savings must be made.

248. Accordingly, the Panel finds that no deduction for costs savings should be made for KPC's costs of sales.

(ii) Production costs

249. KPC states that it enjoyed savings on KOC's production costs of US$ 235 million and deducts this amount from its claim.

250. Included in the calculation of this figure are certain adjustments to take into account actual costs, depreciation, car leasing costs and inflation.

251. The Panel agrees with this approach and, based on a review of KOC's and KPC's accounts and underlying records, finds that KPC's calculations of its production cost savings are reasonable. Therefore, the Panel finds that the amount of US$ 235 million should be deducted from the claim.

(iii) Processing fees

252. KPC states that it made savings on KNPC's processing fees of US$ 2,022 million and deducts this amount from its claim. As discussed in para. 137, supra, the KNPC processing fees are calculated based on KNPC's claim documents and the KNPC report.

253. The Panel's expert consultants reviewed the KNPC report and found that the figures were extracted and calculated accurately from the supporting documents. Accordingly, the Panel finds that the estimated cost savings of processing oil in the KNPC refineries appear reasonable. As

KNPC’s claim has not been verified and is the subject of a claim that will be considered by this Panel later, the Panel finds that any adjustment which arises from the KNPC claim verification that affects KPC’s claim will be made in KNPC’s claim.

254. The Panel therefore finds that the amount of US$ 2,022 million should be deducted from the claim.

(iv) General, marketing, and administrative costs

255. KPC states that it made savings on general, marketing and administrative costs of US$ 19 million and deducts this amount from its claim.

256. The Panel and its expert consultants reviewed KPC’s accounts and underlying records, and conclude that KPC’s calculations and adjustments are reasonable.

257. The Panel finds, therefore, that the amount of US$ 19 million should be deducted from the claim.

(v) Panel’s findings on cost savings

258. Based on the foregoing findings, the Panel finds that KPC has appropriately calculated and deducted the cost savings that it realised as a result of Iraq’s invasion and occupation of Kuwait. Further, based on a review of the evidence, the Panel finds that KPC has not made any other cost savings that should be deducted from its claim.

259. As discussed in para. 124, supra, KPC makes no deduction for the value of the crude oil and gas not produced because all the lost volume claimed was destroyed. The Panel finds that this approach is correct, because the total volume of oil destroyed is higher than the lost volume of 835 million barrels. The Panel’s findings on the verification of the volume of oil destroyed as a result of Iraq’s invasion and occupation of Kuwait can be found at para. 376, infra.

Table 14. Panel’s findings on cost savings

Claim element	Claim amount (US$)	Panel's adjustments (US$)	Panel's recommendation (US$)
Cost saving deductions:			
Cost of sales	98,000,000	(98,000,000)	0
Production costs	235,000,000		235,000,000
Processing fees	2,022,000,000		2,022,000,000
General, marketing and administrative costs	19,000,000		19,000,000
Total cost saving deductions:	2,374,000,000	(98,000,000)	2,276,000,000

6. Conclusion and recommendation

260. The recommendation of the Panel is summarised as follows:

Table 15. Production and sales loss claim: recommended compensation

Claim element	Claim amount (US$)	Panel's adjustments (US$)	Panel's recommendation (US$)
Lost revenues			
Crude and refined oil products sales loss	15,455,000,000	(318,528,624)	15,136,471,376
Processed gas products sales loss	860,000,000	(2,146,888)	857,853,112
Refining margin loss	1,032,000,000		1,032,000,000
Sub-total revenue loss	17,347,000,000	(320,675,512)	17,026,324,488
Cost savings			
Cost of sales	(98,000,000)	98,000,000	0
Production costs	(235,000,000)		(235,000,000)
Processing fees	(2,022,000,000)		(2,022,000,000)
General, marketing and administrative costs	(19,000,000)		(19,000,000)
Sub-total cost savings	(2,374,000,000)	98,000,000	(2,276,000,000)
Total	14,973,000,000	(222,675,512)	14,750,324,488

C. The fluid loss claim

1. Facts and contentions

(a) Summary of claim and claimant's methodology

261. KPC alleges that, prior to the liberation of Kuwait, Iraqi forces deliberately sabotaged KPC's oil wells and oil producing facilities, thereby burning and destroying crude oil and oil products and releasing crude oil onto the surface and into the waters offshore Kuwait.

262. In the fluid loss claim, KPC has attempted to quantify the total losses of hydrocarbon fluids (crude oil and associated natural gas) from Kuwait's reservoirs that occurred as a result of this damage. KPC claims that scientific evidence demonstrates that Kuwait lost approximately 1,255.50 million barrels of reservoir fluids to fires and spills as a result of Iraq's actions. KPC seeks compensation in the amount of US$ 6,640,516,049 for the value of these lost hydrocarbon fluids.

263. KPC asserts that 839 million barrels of the total asserted fluid loss of 1,255.50 million barrels have been accounted for in the PSL, leaving 417 million barrels for which it has previously made no claim.

264. KPC maintains that it is improper to ignore this additional fluid loss if it could have been produced and sold during the claim period. KPC asserts that even though in the PSL claim it assumed production of 1.5 million bpd, it had the capacity to produce and process approximately 2.1 million bpd.

265. KPC argues that it should be permitted to recover the value of the fluids that it could have theoretically produced during this period, regardless of whether they would have exceeded the PSL production levels.

266. KPC claims that it would have produced and sold the 417 million barrels of production only as crude oil and associated natural gas, primarily because it estimates that the markets for refined oil products would have been satisfied by the volumes included in the PSL. KPC specifies that it would have processed and sold the lost associated natural gas as propane, butane, and lean gas.

267. Again, KPC's methodology is relatively straightforward. KPC values the crude oil and processed gas products using the same crude oil and gas prices, including the actual sales prices and adjusted no-invasion and actual market prices that it used in the PSL claim. KPC then subtracts from this figure the revenue it received from the sales of recovered crude – i.e., crude oil that was lying on the surface and which was sold and pumped offshore to tankers shortly after the liberation of Kuwait.

268. KPC’s fluid loss claim is summarised as follows:

Table 16. KPC’s fluid loss claim

Loss element	Claim amount (US$)
Crude Oil	6,282,323,692
Gas	
Propane	155,072,991
Butane	130,603,413
Lean gas	158,460,157
Total value of lost reservoir fluids	6,726,460,253
Proceeds from sales of recovered crude	(85,944,204)
Total	6,640,516,049

269. The various components of the FL claim – volume of lost reservoir fluids, valuation of the lost fluids, and cost savings - are discussed in the following sections.

(b) Volume of lost reservoir fluids

270. KPC alleges that it suffered losses of hydrocarbon fluids from Kuwait’s oil wells as a direct result of Iraq’s detonation of the wells in February 1991.

271. Because the explosions destroyed the metering equipment on the wells, KPC was required to estimate the volume of fluids lost from the reservoirs. To do this, KPC and its consultants employ a technique known as “reservoir simulation”, which uses known data regarding the reservoir to prepare a mathematical model of the reservoir. KPC asserts that simulation permits prediction of the total producible fluids in the reservoir and can be used to predict the effects of certain activities, such as drilling additional wells in a reservoir.

272. Following the liberation of Kuwait, KPC engaged five different firms of petroleum engineers to prepare reservoir simulations of the reservoirs in the fields allegedly damaged by the Iraqi actions. As described more fully at paras. 332-346, infra, these reservoir simulations are mathematical models of the reservoirs. Once created, a simulation model is operated in a predictive mode, with the results compared against production data. Discrepancies result in adjustments to the reservoir properties input into the simulation model until the model closely matches actual production. This is called “history matching.” Once an acceptable history match is achieved, KPC alleges that a simulation model is capable of predicting potential production from a reservoir, including production under blow-out conditions.

273. According to KPC, the calculations described above resulted in a total estimated fluid loss of 1,255.50 million barrels. A more detailed analysis of KPC’s methods and execution of these methods appears in section 5(a), infra.

274. The period of fluid loss is stated as being the time until the fires were extinguished and the last wells were brought under control, which KPC asserts occurred in November 1991. The period over which KPC has valued the claim, however, is 2 August 1990 to 30 June 1993. The reasons for its decision to do so are described at paras. 280-281, infra.

(c) Valuation of lost reservoir fluids

275. As noted, KPC states that 839 million barrels of crude oil are accounted for in the PSL. Specifically, KPC acknowledges that because no deduction was taken from the PSL claim for the value of the crude not produced, KPC cannot also claim compensation for the loss of this crude.

276. Thus, in valuing the FL claim, KPC limits its claim to 417 million barrels (the “claimed FL volume”), which is the 1,255.50 million barrels it claims were lost due to the blow-outs, less the 839 million barrels accounted for in the PSL.

277. In the PSL claim, KPC seeks compensation for the production loss volume of 839 million barrels – i.e., the additional volume of crude oil that it would have produced had Iraq’s invasion and occupation of Kuwait not occurred. The PSL claim calculation is based on the assumption that KPC would have produced at or near its OPEC quota of 1.5 million bpd.

278. In the FL claim, KPC asserts that at 2 August 1990, it had the capacity to produce 2.1 million bpd. Thus, KPC argues that its capacity during the PSL claim loss period (2 August 1990 through 30 November 1992) was 2.1 million bpd multiplied by 852 days, or 1,789.2 million barrels.

279. Based on this capacity, KPC states that it could have produced and sold the entire volume of crude oil lost in the blow-outs during the PSL crude oil loss period (2 August 1990 through 30 November 1992) while producing at a rate of “just under 2 million bpd.”

280. However, KPC points out that, due to the damage inflicted to KOC’s production facilities, it was not able to achieve a daily production level in excess of 1.9 million bpd until July 1993. For this reason, it states, it has valued the fluid loss volume over the period that began on 2 August 1990 and ended on 30 June 1993. It did so by dividing the fluid loss volume by the number of months in the loss period and multiplying each resulting monthly volume by the average no-invasion, actual market or

actual sales price, adjusted for the relevant price differential, that prevailed during the relevant month.

281. In the FL claim, KPC assumes that the volumes of refined oil products accounted for in the PSL claim would have satisfied the markets for its higher-priced refined oil products. Thus, it values all production in excess of Kuwait’s quota of 1.5 million bpd as crude oil and as the processed gas products that could have been extracted from that crude oil. KPC further assumes that the claimed FL volume would have been marketed in volumes over and above the volumes in the PSL claim from August 1990 to the end of June 1993.

282. As in the PSL claim, KPC claims that Iraq’s invasion and occupation of Kuwait caused the market prices of crude oil and gas to increase significantly from their pre-invasion levels. As a result, abnormally high oil prices prevailed during part of the claimed loss period.

283. Because the price increases would not have occurred if Iraq had not invaded Kuwait, KPC states that use of the higher actual market prices to value the fluid loss volume would result in an overstatement of its loss. Therefore, as it did in the PSL claim, where necessary it employs adjusted no-invasion prices to value the crude oil and processed gas products that it claims it would have been able to produce during the price increase period.

(d) Adjustments to claim amount

284. KPC states that, although the PSL volume claim is distinct from the volume at issue in the FL claim, the two claims are closely linked. KPC asserts that the value of the FL claim relates closely to the revenues that would have been earned from ordinary production and marketing of these fluids.

285. Based on this assertion, KPC states that the same cost and price data can be used to value both the PSL and FL claims. However, KPC makes no deduction for saved costs that would have been incurred in the production of the fluid loss volume. KPC asserts that all costs of production are accounted for in the PSL, including the costs that would have been incurred in respect of the fluid loss volume had it been produced at the same time as the production loss volume.

286. In this claim, KPC employs the same crude oil and processed gas prices and price differentials that are used in the PSL claim. See paras. 109 and 119, *supra*.

287. KPC also makes adjustments for the revenues it received from sales of crude recovered from the land surface as part of Kuwait’s oil recovery

programme. To account for these, KPC deducts US$ 85,944,203.54 from its lost revenues.

2. Evidence presented in support of the claim

288. KPC submitted with the FL claim much of the same evidence that was submitted with the PSL claim, including all of the documents listed in para. 139, supra. In addition, KPC submitted various materials related to the WBC claim, copies of most of the other Kuwait Oil Sector claims, and an extensive compendium of legal materials intended to support the claim's legal arguments.

289. As with the PSL claim, KPC's submission contains almost no underlying engineering, financial or accounting evidence that relates directly to the fluid loss measurements or pricing. Again, KPC states that the documents submitted with the claim are "by no means" all of the supporting evidence. Moreover, none of the reservoir simulation studies are included, on the grounds that:

> "The Consultants' Reports contain sensitive and strategic information about Kuwait's oilfields. Due to their confidential nature, copies are not being made available with this statement of claim. Until such time as this [claim] is referred to a Panel of Commissioners, the Consultants' Reports will be retained by the Claimant; but will be made available on a strictly confidential basis to Commissioners at the relevant time."

290. As discussed in para. 141, supra, the Panel required an extensive production of evidence from the claimant, including all of the material identified above. Either the claimant has identified and produced evidence that fully supports the element, or the Panel has disallowed the element in whole or in part.

3. Iraq's responses

291. Iraq assisted the Panel by filing a detailed response to the FL claim. This response evidences significant work by Iraq in all areas of the claim - accounting, engineering and economics – and was valuable to the Panel in evaluating this claim. Iraq's responses can be grouped into four categories, as discussed in the following paragraphs.

292. First, a few of Iraq's written submissions, and all of its oral proceeding presentation, concerned such matters as the Commission's authority to process claims and award compensation and propriety of the Rules and the Commission's procedures. The Panel finds that the majority of these matters are properly addressed to either the Governing Council or the Security Council, and not to a Panel of Commissioners. The remaining

procedural objections raised by Iraq have been adequately addressed in the Panel's previous reports.

293. Second, Iraq raises certain substantive objections to the claim. Iraq argues that the revenue losses caused by the invasion and occupation are indirect and not compensable. In particular, Iraq maintains that Kuwait was negligent in its management of repairs, thus prolonging unnecessarily the loss periods in the claim, and that it stalled the fire control efforts. The Panel previously rejected these objections in the WBC and second instalment reports. See E1 Second Instalment Report, paras. 145-146.

294. Third, Iraq challenges the quality of the evidence presented by KPC in support of the reservoir simulations employed in KPC's claim. Iraq urges the Panel to request underlying financial and accounting records or other evidence, and to require verification of reports prepared for the claimant by its consultants. The Panel found that Iraq's concerns are legitimate and, as described above, has required the claimant to undertake a significant further production of supporting evidence.

295. Fourth, Iraq raises certain objections that are particular to the FL claim.

(a) Iraq's primary challenge is to the use of reservoir simulation, as employed by Kuwait, to measure the fluid loss volume. Iraq raises a number of technical questions regarding the appropriateness of using reservoir simulation to measure flow through the wells over a relatively short period of time. Iraq suggests that alternative methods would better account for the physical constraints on flow imposed by the wells.

(b) Iraq argues that any fluid loss should not be valued as current production, as KPC requests. Iraq maintains that the economic effect of any fluid loss will not be felt until the time when Kuwait's ability to produce crude oil begins to be adversely affected by the fluid loss. Because this event will not occur until the far future, Iraq suggests that any fluid loss volume should be priced as a loss of reserves.

(c) Iraq maintains that, in any event, the no-invasion prices used by KPC to value the claims are too high, because Kuwait's return to the market would have depressed prices.

(d) Iraq also challenges KPC's assertion that Kuwait would have sold the fluid loss volume during the loss period in addition to the production loss volume, as doing so would have depressed prices. Moreover, Iraq contends that KPC could not have sold the fluid loss volume both for logistical and political reasons.

296. Iraq's various contentions will be considered below together with the Panel's verification and analysis of the claim.

4. Legal analysis

(a) Compensability

297. KPC argues that the losses described in the FL claim result from "the dispersal of oil and gas from Kuwait's oil reservoirs during the period of uncontrolled flow resulting from the detonation of well-heads by Iraqi forces in Feburary 1991, until brought progressively under control by November 1991."

298. KPC maintains that these lost reservoir fluids are direct losses – and thus compensable – pursuant to Governing Council decision 7, paragraph 21, which states that compensable losses include losses resulting from:

> (i) Military operations or threat of military action by either side during the period 2 August 1990 to 2 March 1991; [and]
>
> (ii) Actions by officials, employees or agents of the Government of Iraq or its controlled entities during that period in connection with the invasion and occupation.

299. The Panel finds that KPC has correctly stated the relevant rules regarding compensability of the business losses claimed in the FL claim.[15]

300. Applying these rules, the Panel has previously found that the damage to Kuwait's oilfields and related facilities, and the well blow-outs caused thereby, were the direct result of Iraq's invasion and occupation of Kuwait. See WBC Report, paras. 86-87. Because the losses alleged in the FL claim are the product of the well blow-outs, they are, to the extent proved by evidence, compensable under Security Council resolution 687 and Governing Council decision 7.

(b) Evidence

301. KPC submits in support of the FL claim a number of reports prepared by several petroleum engineering consultants. One of the stated purposes of these reports is to measure the amount of reservoir fluids lost to the well blow-outs. As previously described, the petroleum engineering consultants employ an estimation technique referred to as "reservoir simulation" to estimate the amount of reservoir fluids expelled from each of the affected reservoirs during the well blow-outs.

302. KPC contends that "[b]ecause destruction of the gauges at the well-heads meant actual and contemporaneous figures are not available, measurement of the fluids lost has had to be undertaken by simulating each reservoir according to its known condition immediately prior to the Iraqi invasion on 2 August 1990, and calculating the consequences of blowing-up the well-heads."

303. During these proceedings, KPC has argued that, in the absence of actual measurements, the most reliable method of measuring the lost reservoir fluids is reservoir simulation.

304. KPC relies on these simulations to estimate the total quantity of reservoir fluids lost to the well blow-outs. Iraq has challenged the use of simulations, asserting that the simulations have been improperly performed or have overstated the loss. The Panel views this challenge not as an objection to the use of simulations, but rather to the execution of the simulations. That challenge is addressed hereafter in the section on the verification of KPC's claim.

305. The standard of evidence is set forth at paras. 156-159, supra. As discussed, the Panel may consider any evidence "appropriate ... to demonstrate the circumstances and amount of the claimed loss". As described more fully hereafter, the Panel finds that, in the absence of actual measurements of reservoir fluid flow, estimates of reservoir fluid loss produced through reservoir simulation may be used as evidence of fluid loss, to the extent that such simulations are produced using generally accepted scientific methods and correct data.

306. KPC also relies on the reports from its accountants and projections of oil prices prepared by its price consultants that were presented with its PSL claim. For the reasons discussed at paras. 158-159, supra, the Panel finds that it is appropriate to use these reports in the FL claim.

(c) Principle of compensation

307. KPC argues that, under international law, the guiding principle of compensation is as stated in the Chorzow Factory case, that the "reparation must, as far as possible, wipe out all consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed."[16]

308. KPC asserts that the proper standard of compensation for the losses of reservoir fluids is to treat the fluids lost as losses of tangible assets. KPC contends that, under the principle stated above, such losses should be valued "at the cost of replacing that asset as at the date of its loss."

309. KPC maintains that if it had the capacity to produce and market those lost fluids, then the lost fluids should be valued at their “net market value.”

310. Thus, KPC asserts that any FL volume should be valued as if it had been produced and sold during the claimed loss period, provided that the total PSL and FL volumes are less than KPC’s capacity during that period. KPC acknowledges, however, that its ability to sell certain refined oil products would have been fully utilized by the PSL volume. Therefore, KPC proposes to value the FL volume solely as crude oil and certain processed gas products.

311. Iraq argues that, at most, any lost reservoir fluids should be treated as a loss of reserves and priced accordingly. Although it does not state an estimated loss figure calculated using this method, Iraq contends that the loss would be much less than the amount claimed by KPC.

312. Iraq argues that the problem with KPC’s approach is that, due to the enormous size of Kuwait’s reservoirs, the effects of the fluid loss would not begin to be felt by Kuwait until many decades in the future, when production from Kuwait’s reservoirs would begin to decline sooner than they would have otherwise done. The present value of such loss would be much smaller than the loss claimed by KPC.

313. KPC recognizes this problem, but states that under international law, and because of the intentional nature of Iraq’s wrongful conduct, full compensation requires “full value” for the asset taken (or, in this case, destroyed) as at “the date of loss.” This does not, of course, fully address the problem, as the value of a number of barrels of crude oil in the ground at the time of the blow-out would vary significantly based on when that oil was to be produced.

314. The Panel finds that KPC has correctly stated the basic principle governing compensation – that the remedy should attempt to re-establish the situation that would, in all probability, have existed if the act causing the loss had not been committed. However, because the Panel finds that the proven FL volume is so small that it would, in all probability, have been produced during the same period as the PSL volume, the Panel does not need to address KPC’s contention that volumes which would not have been produced should nonetheless still be valued at “net market value” at the date of loss or Iraq’s assertion that any such loss should be valued as a loss of reserves.

315. The Panel finds that the appropriate method of valuing the proven FL volume is to value it as if it had been produced and sold during the period between 2 August 1990 and the date on which Kuwait resumed production of

crude oil at pre-invasion levels. This finding is discussed more fully at paras. 380-393, infra.

5. Factual analysis

(a) Volume of fluid loss

(i) Summary of volumes claimed

316. As described above, KPC's claim is based on an asserted loss of 1,255.50 million barrels of crude oil. This loss of oil is an aggregate of the amounts estimated by five reservoir engineering firms, under contract with KPC, from the United States, Canada, the United Kingdom and France. Each consulting firm assessed separate areas affected by well blow-outs. Although each consulting firm had its own approach to the technical issues, they all based their conclusions on comparable reservoir simulation techniques.

317. The loss of crude oil asserted by KPC, by area, is summarised as follows:

Table 17. Summary of the loss of crude oil asserted by KPC, by area

Field	Consultant	Claimed blow-out volumes (crude oil) (MMbbl)
Greater Burgan	1	940.50
	2	10.01
Main Burgan	3	13.97
Raudhatain	1	26.28
	4	128.86
Sabiriyah	4	65.02
Minagish	2	49.34
Umm Gudair	5	18.85
	2	2.67
Total		1,255.50

NB - some areas contained multiple reservoirs, which were studied by separate consultants, and some consultants studied more than one reservoir.

318. The four largest studies comprise approximately 94 per cent, and the Greater Burgan losses studied by KPC’s Consultant 1 comprise approximately 75 per cent, of the claimed loss of crude oil. These facts were the basis of the development of the Panel’s technical verification programme, which subjected those four studies to detailed scrutiny.

(ii) <u>Panel’s approach to verification</u>

319. In order to assess and verify the engineering techniques employed by KPC and its consultants, the Panel engaged its own expert petroleum engineering consultants with reservoir simulation experience.

320. With the assistance of its petroleum engineering consultants, the Panel developed a comprehensive technical verification programme first to assess the method employed by KPC and its consultants, and then to verify that the method was employed by KPC and its consultants in an acceptable way.

321. The Panel's technical verification programme began with a detailed review of the reports prepared by the five consulting firms retained by KPC. In each case, the consulting firms prepared a summary volume outlining their methodology, and numerous supplementary volumes were prepared detailing the geology and fluid characteristics of the various reservoirs, and the results of the reservoir simulation process.

322. A number of questions arose from the review of the reports prepared by KPC's reservoir engineering consultants. Accordingly, the Panel directed the secretariat and the Panel's petroleum engineering consultants to undertake a comprehensive programme of witness interviews and document inspection. Interviews were conducted with four of the five engineering firms retained by KPC, at which the relevant files were inspected. This programme of interviews and inspections permitted the Panel's petroleum engineering consultants to assess the technical detail underlying the work of KPC's consultants and to examine the relationship between KPC and its consultants.

323. The Panel then instructed its petroleum engineering consultants and the secretariat to undertake a technical inspection of relevant KOC and KPC documents in Kuwait. The objective of this inspection, which was conducted over a two-week period in KOC's document archive in Kuwait, was to examine the work of KPC's reservoir simulation consultants in the context of the engineering work conducted in the past on the relevant reservoirs. In addition, raw historical pressure and production data were obtained in order to permit the Panel's consultants to conduct an independent assessment as a check on the work performed by KPC's consultants.

324. In the course of its review of this claim, the Panel became concerned about the impact of three factors that might have resulted in an overstatement of the volume of oil lost during the well blow-outs. First, the Panel directed that further inquiries be made into the condition of the well-heads on the affected wells. Specifically, the Panel was concerned that a number of well-heads appeared to have been damaged but not destroyed

by explosions at the well-head, and this raised the possibility of constrictions at the well-head which might have reduced the potential flow of oil.

325. Second, the Panel directed further inquiries into the possibility that an unusual amount of water might have been produced, along with hydrocarbons, from the aquifer underlying the reservoirs. This might have occurred as a result of a coning effect during the blow-outs, and might also have resulted in an overstatement of blow-out volumes.

326. Third, the Panel learned that a number of wells experienced a large accumulation of burned oil residue (termed “coke” by KPC) around the well-heads during the blow-out period. The Panel directed further inquiries into the possibility that these accumulations of coke may have had the effect over time of reducing the flow of oil from damaged wells.

327. The Panel also directed its petroleum engineering consultants to devise sensitivity analyses to test the reservoir simulation model developed by the KPC consultant firm responsible for estimating the loss of oil from the Greater Burgan reservoir. These sensitivity analyses were designed to test the impact of changes in certain variable inputs to the reservoir simulation model. At the Panel's request, KPC instructed its responsible consultant firm to run the sensitivity analyses requested by the Panel's petroleum engineering consultants on their computer model, and to report on the results to the Panel.

328. The Panel further instructed its petroleum engineering consultants to perform their own independent analysis of the loss of oil as a result of the well blow-outs, as a means of checking the work undertaken by KPC and its consultants. As the development of independent reservoir simulation models for each of the affected reservoirs was not practical or cost effective, the Panel directed its petroleum engineers to conduct a well-by-well analysis. This approach to the problem, known as a "nodal" or "analytical" study, focussed on the productive potential of the most prolific wells in the largest reservoirs, taking into account external factors such as well-head damage or constriction, water production and reservoir decline rates. A more comprehensive description of this nodal analysis is found below.

329. In conjunction with the sensitivity studies and the nodal analysis work undertaken by the Panel's petroleum engineering consultants, and in order to study the well-head constriction, water coning and coke accumulation issues, the Panel directed a further round of technical inspections and witness interviews. Interviews were conducted with two of the major fire-fighting firms responsible for controlling large numbers of wells. These interviews focused on the condition of the well-heads and the

accumulation of coke. In addition, the secretariat and the Panel's petroleum engineers met again for a working session with the KPC reservoir simulation consultant responsible for the study conducted on the largest single reservoir. This working session was dedicated to the completion of the sensitivity studies described above.

330. In addition, the Panel learned during the course of its verification programme that a major oil company was retained by KOC, after this claim was filed, to adapt the reservoir simulation model developed by KPC’s consultant for the Greater Burgan reservoir to its own software programme. This was done to permit an assessment of various options for future production. Further, the same major oil company then developed an entirely new reservoir simulation model for the same reservoir. The Panel directed that these models be investigated to determine if they might provide further information on the oil lost during the well blow-outs from the Greater Burgan, and several witness interviews were accordingly undertaken for that purpose.

331. In the implementation of its technical verification programme, the Panel has been mindful of Iraq's challenges to the use of reservoir simulation to measure the loss of fluids in uncontrolled circumstances over a short period of time. The Panel is satisfied that the preparatory work and the reservoir simulation models prepared by KPC’s consultants, and the Panel’s own technical verification programme as described above, together constitute the most exhaustive and detailed approach to reservoir studies available to the petroleum industry.

(iii) Reservoir simulation

332. As noted earlier, reservoir simulation is a mathematical modelling technique designed to simulate the reservoir under study, and which can be used to predict reservoir behaviour. One of KPC’s consultants described reservoir simulation as follows:

> “Simulation of oil reservoir performance in this application refers to the construction and operation of a numerical model whose behaviour assumes the appearance of actual reservoir behaviour. In this case the model is simply a set of equations, which subject to certain assumptions, describes the physical processes active in the reservoir. While the model obviously lacks the reality of the reservoir, the behaviour of a calibrated model will approximate that of the reservoir.”

333. The development of a reservoir simulation model relies on all of the data that are known about a reservoir, such as the reservoir structure as mapped by seismic data and subsurface information derived from well logs

and taking into account known oil/water contact points, and the thickness of the oil bearing rock. Other inputs into the model include petro physical data derived from core samples and well logs (such as the permeability and porosity of the rock and water saturation levels), fluid properties and well configurations. Production history is another known quantity that is input into the model.

334. Reservoir simulation models are constructed on the basis of grid blocks, which are three-dimensional spaces governed by equations describing the rock and fluid characteristics for the portion of the reservoir they represent. The model extrapolates the grid blocks from known data points. A reservoir simulation model may contain tens of thousands of grid blocks or more, each describing a unique portion of the reservoir. The grid blocks typically vary in size, with the blocks describing the edges of the reservoir typically being much larger than those blocks describing the centre of the reservoir.

335. Reservoir simulation models take into account the location of all wells that are or have been active in a reservoir. Some wells (particularly in Kuwait) have dual completions, meaning that the well casing is perforated in two oil producing zones permitting the well to produce oil from both zones. Typically, the well will produce from one zone inside a production “string” or tube inside the casing, and from the other zone oil will be produced in the area between the production string and the casing (known as the “annulus”). A “packer” or divider will be placed in the annulus between the producing zones to prevent the sub-surface mingling of oil from separate zones.

336. The models take into account the fact that wells are drilled, may produce for a time, and then may be shut-in or abandoned. Shut-in wells may be brought back on line, or they may be reworked to produce oil from higher zones. All of this information, which is essentially the entire production history of the subject reservoir, is programmed into the model by time-step.

337. Once the basic reservoir simulation model is constructed, the model simulates the production of oil over the productive history of the reservoir. The simulation typically starts with a model of the reservoir prior to any production of oil. A process of history matching then takes place, where the model’s simulated pressure readings over time are compared to actual known pressure data. Variations from the measured pressures lead to adjustments to the model, until a good pressure history match is achieved.

338. History matching adjustments are typically made to the model parameters about which least is known. A common adjustment parameter is

the rock permeability, which is a measure of the ability of a reservoir rock to conduct the flow of fluids. Initial rock permeability is taken from core samples, which inevitably assess very small areas of the actual reservoir under laboratory conditions that differ from conditions in the reservoir and/or calculated values derived from pressure transient tables.

339. Once history matching is complete, and a satisfactory history match obtained, the assumption is that the reservoir simulation model can be used to predict future reservoir behaviour under a number of different circumstances.

340. One of the characteristics of the reservoir simulation modelling approach to determining blow-out volumes is that, theoretically, specific regard does not need to be given to such factors as well-head damage or constriction. Simulation models essentially treat production and pressure as functions of one another. Adjustments are made to the reservoir parameters until prior production history matches with known pressures. It is then assumed that the model accurately describes the reservoir. It follows that pressure drops recorded after the blow-outs should, in the context of a properly described reservoir, equate to an accurate measurement of lost oil by the model even if no specific surface constriction is imposed. This has been advanced by KPC as an argument in favour of the reservoir simulation method for determining blow-out volumes.

341. The Panel notes that reservoir simulation modelling has a number of limitations as a tool for measuring blow-out volumes. The first of these limitations relates to the availability of data. While the Panel and its representatives were provided complete access to KOC’s data archive, some information was simply not available or may be inaccurate. For example, the accurate measurement of water production data did not begin with the commencement of production from the main reservoirs subject to well blow-outs. Data with respect to the production of oil is considered by KOC to be accurate on a field by field basis, but the allocation of that production back to individual wells and individual well completions is considered to be less accurate. Further, pressure test data have not been consistently recorded, and have historically been measured using instruments that may not provide accurate readings.

342. The Panel notes that these data problems are not unusual and have not prevented KPC’s consultants or the Panel and its expert consultants from carrying out their tasks. Nevertheless, the limitations of the available data, and in particular of the pressure data, must be kept in mind when relying on this computer modelling technique.

343. Another limitation of reservoir simulation modelling for measuring well blow-out volumes arises from the purpose for which these models are

typically created. Reservoir simulation is a technique normally used as a reservoir management tool. The predictive aspect of the model can for example be used to test the impact of changes to certain production parameters.

344. So, a model may be used to predict the short and long term impact of increasing the number of wells or well completions in a reservoir. Alternatively, a model may be used to predict future production of oil and water based on present production parameters. This information may, for example, be needed to plan for the construction of water handling facilities in a reservoir experiencing an increase in water production over time. The Panel notes that reservoir simulation modelling for the prediction of uncontrolled production rates over a short period of time is within the capability of the technique, but goes beyond its normal usage.

345. Finally, the Panel has been particularly attentive to the adjustment process used in completing the models. As noted earlier, reservoir simulation models are history matched against measured pressures through a process of adjusting initial model parameters such as permeability. This process of adjusting initial model parameters is necessary but is highly subjective. The Panel accordingly instructed its petroleum engineering consultants to review in detail the adjustments made by KPC’s reservoir simulation consultants.

346. The Panel has carefully considered the capabilities and the limitations of the reservoir simulation modelling technique as outlined above. The Panel concludes that this technique is, to the extent it is used properly, appropriate for the prediction and estimation of the oil blow-out volumes lost in this case. The Panel will, accordingly, consider the volumes estimated by KPC’s reservoir simulation consultants, together with all other available information (such as volumes estimated using the nodal analysis method) in assessing the blow-out volumes suffered in this case.

(iv) Nodal analysis

347. As noted above, nodal analysis is a well-by-well analytical technique focusing on the productive potential of individual wells. Nodal analysis relies on a mathematical description of an individual well with consideration for well bore configuration and reservoir characteristics. In short, nodal analysis is a model of an individual well, while reservoir simulation models an entire reservoir system.

348. Nodal analysis considers the ability of an individual well configuration to produce oil, and it can therefore be said that it is based on “outflow” performance. This contrasts with reservoir simulation models,

which focus on the ability of a reservoir to deliver oil into a well, or "inflow" performance.

349. By focusing on outflow performance, nodal analysis generates what is essentially a maximum production volume per unit of time for each well. In order to replicate real world conditions, and to estimate blow-out volumes, certain limitations must be imposed on the nodal analysis. These limitations include a well's natural rate of decline, increased water production as the aquifer encroaches toward the well, and external well-head constrictions on flow (which might arise from damaged well-heads or the accumulation of coke). The Panel considers that the ability to set adjustment factors to take into account these real world conditions is an advantage of the nodal analysis approach to measuring blow-out volumes.

350. The Panel directed its petroleum engineering consultants to perform their own independent analysis of the loss of oil as a result of the well blow-outs, focusing on the most prolific wells in the largest reservoirs. The Panel directed that this study take into account the real world flow restrictions described above, including decline rates, water production and well-head constrictions on flow.

351. KPC's reservoir simulation consultants also relied to one extent or another on nodal analysis as part of their work. For example, KPC's Consultant 4 prepared a nodal analysis for the two reservoirs they studied. This nodal analysis does not take into account well-head constriction, decline rates or increasing water production, and therefore represents a maximum case blow-out volume only.

352. KPC's Consultant 1 prepared a separate nodal analysis of the volumes of oil lost for its portion of the Greater Burgan, taking into account the production of water, well-head damage and applying a further reduction of 35 per cent to take into account other variables. This report quantified the loss of oil from that reservoir as 708 million barrels of crude oil. This study was also prepared as a prelude to the larger reservoir simulation study.

353. KPC argues that the Panel should rely most on the reservoir simulation study prepared by its Consultant 1 to determine the loss of crude oil from the Greater Burgan. KPC argues that the reservoir simulation model looks at the loss of volume from a reservoir perspective, while eliminating the need to consider back pressure adjustment factors to account for well-head condition.

354. In fact, this argument does underline the basic limitation of nodal analysis for estimating blow-out volumes. As a well-by-well tool, nodal analysis is not capable of considering the impact of a blow-out in a

neighbouring well, whereas production from neighbouring wells in the same reservoir would be considered by a reservoir simulation model.

355. The Panel has carefully considered the capabilities and the limitations of the nodal analysis technique as outlined above. The Panel concludes that nodal analysis is, to the extent it is used properly, appropriate for the prediction and estimation of the oil blow-out volumes lost in this case. Accordingly, the Panel will use the nodal analysis studies prepared by its own petroleum engineering consultants as a point of reference in assessing the reservoir simulation studies prepared by KPC’s consultants.

(v) Basic results of the verification programme

a. Well-head restrictions on flow

356. The Panel has carefully considered the photographic and documentary record with respect to the wells affected by blow-outs. The Panel also directed interviews of KOC and KPC personnel and others in Kuwait, and interviews with the well blow-out fire-fighters responsible for controlling many of the wells. Based on the above, the Panel finds that many of the wells affected by blow-outs were not completely open to the atmosphere. Rather, many wells were damaged and either “seeping” or “gushing” oil, rather than blowing out oil in an unrestricted fashion. Other wells were completely open to the atmosphere, with completely severed well-heads.

357. The Panel also finds that some wells, particularly wells that were seeping or gushing oil, experienced an accumulation of extremely hard coke around the well-heads during the blow-out period. This coke appears to have been partially burned oil and super-heated sand. In some cases, the coke accumulation was many metres high and very thick, and the fires could not be controlled until the accumulation of coke was broken away with heavy equipment. In a number of cases, the removal of the coke accumulation resulted in a visibly larger volume of oil being expelled from the wells.

358. The Panel finds that well-head constrictions caused by well-head damage or the accumulation of coke had the effect of reducing the oil blow-out volumes for some wells. In the case of well-head damage the constriction effect was constant during the blow-out period.[17] In the case of coke accumulation, the constriction effect increased during the course of the blow-out period.

359. Accordingly, the Panel instructed its petroleum engineering consultants to take these constriction effects into account in their nodal analysis studies. Modest adjustments were accordingly incorporated into those studies.[18]

b. KPC Consultant 1/Greater Burgan

360. The Greater Burgan losses estimated by KPC's Consultant 1 as 940.50 million barrels of oil (using reservoir simulation) constitute approximately 75 per cent of the total loss of crude oil claimed.

361. This consultant also prepared a nodal analysis estimating the same loss of crude oil to be 708 million barrels of oil, taking into account well-head damage and water production, and applying a 35 per cent reduction for other factors.

362. During the course of its verification programme, the Panel learned that KPC's Consultant 1 used an assumed limit of atmospheric pressure at the bottom of each well in the construction of its reservoir simulation model (a flowing bottom hole pressure of 14.7 psia). This has been described to the Panel as a physically impossible condition which effectively assumes that the productive region of the reservoir is at the surface of the ground, and which ignores the much higher pressures actually prevailing at the bottom of the wells. The Panel notes that KPC's Consultant 1 prepared a reservoir simulation study for another, smaller reservoir where this assumption was not made. The Panel notes further that none of the other consultants retained by KPC set the flowing bottom hole pressure as atmospheric pressure.

363. The Panel decided to subject the report of KPC's Consultant 1, with respect to the Greater Burgan, to the most intense level of scrutiny of all the reports submitted with this claim. This decision was taken because of the immense scale of the losses estimated in that report, which dealt with the largest reservoir at issue in the claim, because of the large difference between the reservoir simulation and the nodal analysis estimates prepared by that consultant, and because of the assumption of a flowing bottom hole pressure limit of 14.7 psia. The largest portion of the Panel's technical verification programme was therefore focused on the losses described for the Greater Burgan by KPC's Consultant 1.

364. The Panel's own petroleum engineers prepared an independent nodal analysis of a large number of the most prolific wells and completions in the Greater Burgan. This nodal analysis calculated a maximum potential flow rate for each well, which was then adjusted for natural reservoir decline rates and for water production. Further modest adjustments were made for well-head damage and for coke accumulation. The calculated loss of oil using this method was 597.2 million barrels of oil for this portion of the Greater Burgan. The Panel notes that its consultants were unable to replicate the nodal analysis work of KPC's Consultant 1.

365. In addition, a number of sensitivity analyses were requested of KPC's Consultant 1 as part of the Panel's technical verification programme of its reservoir simulation model. These sensitivity analyses were designed to test the impact of changes to key parameters in the model.

366. One of the parameters that was changed was the flowing bottom hole pressure, and a new pressure calculated based on the hydrostatic head of the column of fluid in the well (taking into account individual well depths) was substituted. Another parameter that was changed was the maximum flow potential flow rate input into the model for each well. These rates had to some extent been derived from KPC Consultant 1's nodal analysis study. KPC's Consultant 1, at the Panel's direction, calculated the loss of oil by adjusting both of these parameters in the reservoir simulation model. The result, after adjustment by the Panel's petroleum engineering consultants, was 586.6[19] million barrels of oil for this portion of the Greater Burgan.

367. KPC has argued that this sensitivity analysis should not form the basis of a decision by the Panel. In particular, KPC's Consultant 1 has argued that the various sensitivity analyses were done without subsequent history matching of the underlying model. Nevertheless, the Panel notes that these sensitivity runs were designed to test the impact of correcting for certain deficiencies in the underlying reservoir simulation model, and as such the result of these runs is a useful point of reference for the Panel in determining blow-out volumes. However, the sensitivity runs did provide information with respect to history matching subsequent pressures and found that the analyses compared favourably with the actual pressure measurements on an average field basis.

368. The Panel finds that it cannot accept the findings of KPC's Consultant 1 with respect to the Greater Burgan. The use of a flowing bottom hole pressure of 14.7 psia, coupled with the use of maximum potential flow rate for each well derived from a nodal analysis study that could not be replicated, lead the Panel to this decision.

369. The Panel notes that its petroleum engineering consultants calculated a loss of oil from this portion of the Greater Burgan in the amount of 597.2 million barrels of oil using the nodal analysis method, and that this figure has been effectively confirmed through the sensitivity analysis conducted at the Panel's request and adjusted as noted above. The difference between these two approaches is less than 2 per cent, which the Panel finds to be an acceptable degree of accuracy. The Panel therefore finds that the nodal analysis work of its own petroleum engineering consultants most closely reflects the loss of oil from this portion of the Greater Burgan, and concludes that the total loss due to the well blow-outs for this reservoir was 597.2 million barrels of oil.

c. KPC Consultant 4/Raudhatain and Sabiriyah
KPC Consultant 2/Minagish

370. The Raudhatain losses due to well blow-outs were estimated by KPC's Consultant 4 as 128.86 million barrels of oil, while the same consultant estimated the Sabiriyah losses to be 65.02 million barrels of oil. The Minagish losses were estimated by KPC's Consultant 2 to be 49.34 million barrels of oil. These losses constitute approximately 19 per cent of the claimed loss of crude oil due to well blow-outs.

371. The Panel directed its petroleum engineering consultants to prepare an independent nodal analysis of a large number of the most prolific wells and completions in these reservoirs. As with the nodal analysis work undertaken for the Greater Burgan, the results were adjusted for natural reservoir decline rates and for water production. Further modest adjustments were made for well-head damage and for coke accumulation.

372. For the Raudhatain and Sabiriyah losses estimated by KPC's Consultant 4, the calculated loss of crude oil using this nodal analysis method was within 1 per cent of the claimed amount. For the Minagish losses estimated by KPC's Consultant 2, the calculated loss of crude oil using this nodal analysis method was within 0.5 per cent of the claimed amount. The Panel notes that the nodal analysis work performed by its petroleum engineering consultants effectively confirmed the volumes calculated by these consultants using the reservoir simulation method. The Panel therefore finds that the oil lost due to well blow-outs for these reservoirs is the volume claimed by KPC.

d. The remaining reservoirs

373. The losses claimed for the remaining reservoirs[20] account for less than 6 per cent of the total claimed loss of crude oil due to the well blow-outs.

374. The reservoir engineers responsible for assessing these losses were all interviewed, with one exception. All of the reports were reviewed in detail by the Panel's petroleum engineers. This review included a comparison of model inputs with primary data received from KPC. The Panel requested a number of further documents with respect to several of these reports, and those documents were received. No methodological deficiencies were noted, and the Panel notes that all the studies were prepared using the reservoir simulation modelling techniques described above. Given the relatively small volumes of crude oil claimed in these five studies, and the lack of methodological deficiencies, the Panel did not request independent nodal analysis with respect to these reservoirs.

375. In the end result, and for the reasons described above, the Panel finds that the oil lost due to well blow-outs for these five reservoirs[21] is the volume claimed by KPC.

(vi) Panel's conclusions regarding blow-out volume

376. In conclusion, the Panel finds that the blow-out volume for the portion of the Greater Burgan studied by KPC Consultant 1 is 597.2 million barrels of crude oil. The Panel finds that the blow-out volumes for the remaining reservoirs affected by blow-outs are as claimed by KPC. These blow-out volumes can be summarised as follows:

Table 18. Blow-out volumes

Field	Consultant	Claimed blow-out volumes (crude oil) (MMbbl)	Recommended blow-out volumes (crude oil) (MMbbl)
Greater Burgan	1	940.50	597.20
	2	10.01	10.01
Main Burgan	3	13.97	13.97
Raudhatain	1	26.28	26.28
	4	128.86	128.86
Sabiriyah	4	65.02	65.02
Minagish	2	49.34	49.34
Umm Gudair	5	18.85	18.85
	2	2.67	2.67
Total		1,255.50	912.20

(b) Valuation of the fluid loss

377. As described in Table 18, supra, the Panel has determined that an amount of crude oil equal to 912.2 million barrels of crude oil (the "blow-out volume") was destroyed or lost in blow-outs that occurred as a direct result of Iraq's unlawful invasion of Kuwait. For reasons set forth at para. 199, supra, 835.3 million barrels (the "PSL volume") of the blow-out volume is accounted for by the PSL.[22] The Panel must therefore determine how to value the rest of the oil that was lost in the blow-outs (the "proven FL volume"). The proven FL volume is 76.9 million barrels.

(i) KPC's valuation method and Iraq's objections to it

378. KPC claims that if Iraq had not invaded Kuwait it could have produced the claimed FL volume of 417 million barrels as well as the PSL volume between 2 August 1990 and 30 June 1993 with its pre-invasion production capacity. For this reason it has valued the claimed loss as if it occurred during this period.

379. Iraq does not agree with this approach. In its reply to KPC's claim, Iraq argues that Kuwait did not have the capacity to produce the claimed FL volume as well as the PSL volume during the claimed loss period.

380. In addition, Iraq states that, even if KPC did have the required production and marketing capacity, it would not have produced the claimed FL volume between 2 August 1990 and 30 June 1993 because doing so would have caused a drastic decrease in oil prices and a deterioration of Kuwait's relations with other OPEC members.

381. Because Kuwait would not have produced the claimed FL volume during the claimed loss period, Iraq argues that the claimed loss, if any, should be treated as a loss of reserves. Based on this approach, while the physical loss of the claimed FL volume might have occurred during the blow-outs, the economic impact of the loss will not occur until the absence of the lost volume from Kuwait's reservoirs begins to affect KPC's ability to produce crude oil.

382. Accordingly, Iraq states that the only appropriate way to value the claimed loss is to determine how much income KPC will not earn in the future as a result of losing the claimed FL volume and to discount that loss to its present value at the time of the award. It points out that, due to the abundance of Kuwait's oil reserves, the economic impact of the fluid loss will not be felt for many years. As a result, Iraq claims, the present value of the loss is negligible.

383. For the purpose of this portion of the report, the Panel will refer to KPC's valuation method herein as valuation in the "present" and Iraq's as valuation in the "future".

(ii) The Panel's valuation approach

384. As stated at para. 314, supra, the Panel believes that the objective of any compensation award with respect to the FL claim should be to place KPC in the same position it would have occupied if it had not lost the proven FL volume.

385. The Panel finds that the proven FL volume can be valued in the "present" if, in a no-invasion scenario, KPC would have produced at least an amount of crude oil equal to the entire proven blow-out volume -- including both the PSL volume and the proven FL volume -- during the period when its ability to produce crude oil was impaired as a result of Iraq's invasion and occupation of Kuwait (the "FL loss period") in addition to the amount of crude oil it actually produced during that period.

386. To determine whether this was the case, it is necessary to compare KPC’s actual production of crude after Iraq’s invasion of Kuwait to the best estimate of its production in a no-invasion scenario.

387. In order to do so, the Panel has, with the assistance of its petroleum economics consultants, reviewed data with respect to OPEC quota allocations and crude oil demand and supply prior to and after Iraq’s invasion of Kuwait.

388. The Panel finds that the most accurate way to estimate Kuwait’s production in a no-invasion scenario is by reference to Kuwait’s pre-invasion share of the formal OPEC production ceiling and to actual production by OPEC.

389. Immediately prior to the Iraqi invasion, Kuwait’s OPEC quota allocation was equal to 6.7 per cent of the formal OPEC production ceiling. However, the Panel notes that, at that time, Kuwait and certain other OPEC members with excess production capacity had consistently produced at rates that exceeded their OPEC quota allocations. Kuwait continued to produce above its quota when, after its liberation, it regained the capacity to do so.

390. Due to such overproduction, the Panel considers that it would not be accurate to restrict Kuwait’s projected no-invasion production to 6.7 per cent of the formal OPEC ceiling during the loss period. Instead, the Panel finds that it is correct to assume that Kuwait would have produced at a rate of 6.7 per cent of OPEC’s actual production.[23]

391. The corollary of this finding is that the period during which KPC’s crude oil losses were incurred lasted from the date of Iraq’s invasion of Kuwait until the day when Kuwait was able to return to production of 6.7 per cent of OPEC’s actual production. The Panel finds that Kuwait would have resumed production at this rate approximately on 31 December 1992. This conclusion is based on OPEC’s production after the invasion and on Kuwait’s production after the end of the Iraqi occupation.

392. In the case of OPEC’s production, the Panel notes that OPEC’s crude oil production was briefly brought below its pre-invasion level as a result of Iraq’s invasion of Kuwait and the subsequent absence of those countries from the world oil market; however, the supply of oil returned to normal levels when other OPEC members increased their production to compensate for the shortfall.

393. With respect to the period of abnormal crude oil supply, the Panel has, with the assistance of its petroleum economics consultants, projected

OPEC’s no-invasion production rate. With respect to the period that followed it, the Panel was able to refer to OPEC’s actual production.

394. In the case of Kuwait’s production, the Panel referred to Kuwait’s actual production after the end of the Iraqi occupation, which, as discussed, was below normal levels due to the blow-outs and other damage to Kuwait’s production infrastructure.

395. The Panel finds that, based on a share of 6.7 per cent of OPEC’s actual production, Kuwait would have produced at an average rate of at least 1.587 million barrels per day during the loss period in a no-invasion scenario, approximately 87,000 bpd more than the Kuwaiti production rate that is assumed in the PSL claim. Based on this production rate, Kuwait would have produced a total of at least 1,402 million barrels of crude oil during the loss period. Of this volume – after deduction of AOC’s production – KPC would have produced at least 1,286 million barrels of crude oil. This amount exceeds the sum of the crude oil actually produced by KPC during the FL loss period - which the Panel finds, based on production records provided by KPC, was equal to 373 million barrels - and the proven blow-out volume of 912.2 million barrels.

396. The Panel finds, after reviewing relevant market data, that production of the proven blow-out volume as well as KPC’s actual production during the FL loss period would not have caused a material decrease in oil prices. Therefore, it does not need to further consider Iraq’s contention, stated at para. 295, supra, that Kuwait would not have produced above the level stated in the PSL claim in order to avoid a drop in oil prices and a deterioration of its relations with other OPEC member states.[24]

397. The Panel therefore finds that, if Iraq had not invaded Kuwait, KPC would have produced at least the proven blow-out volume as well as its actual production of crude oil during the FL loss period. It follows that the proven FL volume can be valued in the “present”, employing the no-invasion and actual prices that prevailed during the FL loss period.

(iii) Valuation of proven fluid loss

398. KPC claims that the value of the claimed fluid loss is equal to US$ 6,640,516,049, which comprises US$ 6,282,323,692 for crude oil and US$ 444,136,561 for associated gas products. KPC deducts US$ 85,944,204 from this amount to account for revenue received from the sales of weathered crude retrieved after the blow-outs.

399. As noted, KPC relies on the KPC accountants’ report and the KPC price report to value its fluid losses. KPC applies adjusted prices of crude oil

and processed gas products as presented in these reports to a volume of 417 million barrels of crude oil.

400. As discussed at para. 377, supra, the Panel finds that the proven FL volume is 76.9 million barrels, instead of the 417 million barrels claimed by KPC. The Panel also finds that KPC could have sold this volume as a mix of crude oil, propane and butane during the loss period. In the case of lean gas, the Panel has already found, at para. 225, supra, that the lean gas requirements of the Kuwait MEW, the only purchaser of such product from KPC, had already been filled by the quantity of lean gas accounted for in the PSL claim. Because KPC has not proven that it could have sold further quantities of lean gas to other purchasers, the Panel finds that no compensation can be awarded with respect to lean gas losses claimed in the FL claim.

401. Finding that the proven fluid loss should be valued as a sales mix of crude oil, propane and butane, the Panel values this loss as follows. First, the Panel applies the verified ratios used by KPC in the PSL claim to calculate the volumes of crude oil, propane and butane that KPC could have produced and sold from the proven FL volume.

402. Then, the Panel multiplies the crude oil and the processed gas products volumes by the same verified prices that KPC employs in the PSL claim for the relevant periods, adjusted for the relevant price differentials. The Panel has already found, at para. 190, supra, that these prices do not result in an overstatement of KPC’s claim.

403. Based on the above calculations, the Panel finds that KPC lost sales revenues it would have realised from the proven FL volume as follows: US$ 1,199,335,851 for crude oil, US$ 32,110,479 for propane and US$ 26,678,506 for butane. Thus the Panel finds that KPC’s total lost sales revenue is US$ 1,258,124,836.

404. As discussed at para. 400, supra, the lean gas volume that could have been produced from the proven FL volume would not have been sold during the loss period and, therefore, the Panel recommends no compensation be awarded for this lean gas.

405. The Panel has considered whether KPC enjoyed any cost savings that should be deducted from its claim. Based on its review of relevant evidence, the Panel finds that KPC’s production, processing and other costs with respect to crude oil and processed gas are fixed. As a result, the Panel concludes that these have already been properly allocated to the PSL claim, and that no deduction is necessary in the case of the FL claim.

406. Further, after a review of KPC's accounts and sales data, the Panel finds that KPC has correctly deducted US$ 85,944,204 from its claim to account for sales of weathered crude.

407. Based on the above calculations, the Panel finds that KPC would have earned revenues of US$1,172,180,632 from the proven FL volume.

6. Conclusion and recommendation

408. The Panel recommends compensation in the amount of US$1,172,180,632 for KPC's fluid loss claim. The recommendation of the Panel is summarised as follows.

Table 19. KPC's fluid loss claim: recommended compensation

Loss element	Claim amount (US$)	Panel's adjustments (US$)	Panel's recommendation (US$)
Crude Oil	6,282,323,692	(5,082,987,841)	1,199,335,851
Gas			
Propane	155,072,991	(122,962,512)	32,110,479
Butane	130,603,413	(103,924,907)	26,678,506
Lean gas	158,460,157	(158,460,157)	0
Total value of lost reservoir fluids	6,726,460,253	(5,468,335,417)	1,258,124,836
Proceeds from sales of recovered crude	(85,944,204)		(85,944,204)
Total	6,640,516,049	(5,468,335,417)	1,172,180,632

VI. INCIDENTAL ISSUES

A. Interest

409. All claim figures in the body of this report are net of any individual interest claims advanced by the claimants.

410. In accordance with Governing Council decision 16, "[i]nterest will be awarded from the date the loss occurred until the date of payment, at a rate sufficient to compensate successful claimants for the loss of use of the principal amount of the award." In decision 16, the Governing Council further specified that "[i]nterest will be paid after the principal amount of awards," while postponing a decision on the methods of calculation and payment of interest.[25]

411. The task of the Panel, therefore, is to determine the date from which interest should run for the losses for which compensation is recommended in this instalment.

412. In each claim in this instalment for which compensation is recommended, the claim is based on a loss that occurred more or less regularly over a period of time. In the FL claim, the loss is valued on a similar basis. For this reason, the Panel finds that using the midpoint of the relevant period as the start date for interest on the awards represents the most reasonable date to use in calculating interest.

413. In accordance with these determinations, the following is a summary of the recommendations for compensation of the Panel, along with the date from which interest awards will run:

Table 20. Summary of recommendations by loss type with interest start dates

Name of claimant (and claim)	US$ award amount	Interest start date
Arabian Oil Company	21,967,260	1 January 1991
Kuwait Petroleum Corporation		
Production and sales loss claim	14,750,324,488	16 July 1992
Fluid loss claim	1,172,180,632	17 October 1991

414. The Panel notes that the Government of Kuwait has filed a claim for lost return on investments liquidated during the occupation and subsequent reconstruction period. This claim is assigned to the "F3" Panel. The Panel has been informed that the "F3" Panel will consider whether any offset should be made to the claims of the Government of Kuwait as a result

of the award of interest made herein in connection with the Production and Sales Loss claim of Kuwait Petroleum Corporation.

B. Claim preparation costs

415. All claim figures in the body of this report are net of any claim preparation cost claims advanced by the claimants. In a letter dated 6 May 1998, the Panel was notified by the Executive Secretary of the Commission that the Governing Council intends to resolve the issue of the claim preparation costs at a future date. Accordingly, the Panel takes no action with respect to claims for such costs.

VII. RECOMMENDATIONS

416. The Panel’s recommendations with respect to the fourth instalment of E1 claims is summarised in the following table.

Table 21. Panel’s recommendations: fourth instalment of E1 claims

Claimant	Claim number	Claim amount (US$)	Recommended compensation (US$)
Arabian Oil Company	4000959	562,670,412.43	21,967,260
Saudi Arabian Oil Company	4002637	749,375,858.00	nil
Kuwait Petroleum Corporation			
Production and sales loss	4003197	14,973,000,000.00	14,750,324,488
Fluid loss	4004439	6,640,516,049.00	1,172,180,632
Total		22,925,562,319.43	15,944,472,380

Geneva, 14 April 2000

(Signed) Mr. Allan Philip
Chairman

(Signed) Judge Bola Ajibola
Commissioner

(Signed) Mr. Antoine Antoun
Commissioner

Notes

[1] "Provisional Rules for Claims Procedure" (S/AC.26/1992/10).

[2] Japan Petroleum Trading Company, Ltd. entered into the concession agreement with Saudi Arabia but later assigned all its rights and obligations under the 1957 concession agreement to AOC in an assignment agreement dated 19 February 1958. AOC then entered into a concession agreement with Kuwait in July 1958.

[3] In 1922, a Neutral Zone was established between Saudi Arabia and Kuwait in a 2,000 square mile area between the two States. Subsequently, a treaty established that both States held an undivided interest in the mineral resources in the Neutral Zone and equal rights in the administration of those resources. Both States thereafter granted concessions to foreign companies to operate in the Neutral Zone. On July 1965, a partition treaty between the two States divided the Neutral Zone into two partitioned areas each subjected to the sovereignty of one State. The Neutral Zone then became known as the Partitioned Neutral Zone ("PNZ"). Although the treaty divided the areas in which each State had an interest, it did not alter the sub-surface rights of the party States, which continued to be owned in undivided 50 per cent shares.

[4] An oil price reporting service.

[5] UNCC Claim No.4005977, "E1" Claims, Instalment 8.

[6] See E1 Second Instalment Report, para. 454.

[7] Id.

[8] The Panel has previously discussed the structure of Kuwait's oil industry and KPC's relationship with Kuwait and with the other companies in the Kuwaiti oil sector with which KPC is affiliated. *See* Report and Recommendations Made By The Panel Of Commissioners Concerning the Second Instalment of "E1" Claims (S/AC.26/1999/10) (the "Second Instalment Report") paras. 74-79. In this fourth instalment report, references to "KPC's" facilities, assets or operations include those facilities, assets and operations of the affiliated companies.

[9] The figure of 1,256 million barrels is given in KPC's Statement of Claim. This figure is based on a set of volume figures that sum to 1,255.50. This latter figure is used in the Panel's discussion.

[10] KPC defines the production loss period as the period between 2 August 1990 and December 1992. KPC uses this period because KPC's average daily crude oil production had returned to at least 1,331,000 bpd – i.e., KPC had begun to produce its full available quota balance – in December 1992. KPC asserts that the last month in which its average daily production failed to reach its average daily quota balance was November 1992. Therefore, it uses this month as the last month of the loss period.

[11] Claim of Kuwait National Petroleum Company (UNCC Claim no. 4003070), currently assigned to the eighth instalment of "E1" claims.

[12] See the Panel's discussion of extraordinary profits in "Report and Recommendations made by the Panel of Commissioners concerning the Third Instalment of "E1" Claims" (S/AC.26/1999/13) paras. 468-472.

[13] To simplify certain discussions in the PSL and FL claims, the Panel has rounded the amounts in the volume discussion. In the PSL claim, the amounts are rounded to the nearest million barrels. Thus, the 4 million barrel figure is a rounded figure; the precise amount of the overstatement is 3,676,030 barrels. The calculation of the loss is done, however, using the precise figure.

[14] "Report and Recommendations made by the Panel of Commissioners concerning the First Instalment of "F3" Claims" (S/AC.26/1999/24), paras. 86-87.

[15] KPC also alleges that the fluid loss is a compensable direct loss under paragraph 35 of Governing Council decision 7, which mentions claims for depletion of natural resources in a discussion on the criteria for processing claims. Although decision 7 does not specifically state that depletion of natural resources is compensable, it follows from the inclusion of this type of loss in the discussion of claims processing that the Governing Council contemplated that such losses would be compensable if found to be direct. Because the Panel reaches its recommendation on other grounds, however, it does not make any finding on the proper interpretation of paragraph 35.

[16] Chorzow Factory (1927) PCIJ Series A, No. 17 at 47.

[17] The Panel notes that a well with a constricted well-head might produce less oil initially, but the production of oil might remain relatively constant for long period of time. A well with a completely severed well-head will produce at a higher initial rate, but decline more quickly.

[18] The precise extent and effect of constrictions at of the well-heads is difficult to calculate, but this issue was studied by the Panel's petroleum engineering consultants in detail. In general, the relationship between a percentage restriction in the opening to the surface and the impact on total flow rates is not linear. For example, a 25 per cent restriction in the opening to the surface would, in the subject well-heads, have a modest impact on total flow rates.

[19] This figure has been adjusted to take into account a variation between the reservoir simulation model report prepared by this consultant for KPC's claim, and the base case used as a starting point for the various simulation sensitivity runs. This difference has been attributed by KPC's Consultant 1 to refinements made to the model after the completion of their report. This figure has also been adjusted to take into account controlled production after the liberation of Kuwait but prior to the last of the wells being controlled. This controlled production is estimated to be 42.2 million barrels of oil.

[20] These are the reservoirs covered by the following studies: KPC Consultant 2/Greater Burgan, KPC Consultant 3/Main Burgan, KPC Consultant 1/Raudhatain, KPC Consultant 2/Umm Gudair and KPC Consultant 5/Umm Gudair.

[21] See note 20, supra.

[22] As noted in note 13, supra, the Panel has rounded the amounts in the volume discussions to simplify the discussion. In the FL claim, the Panel has rounded the volume amounts to the nearest 100,000 barrels, instead of the nearest million barrels, as was done in the PSL claim. Thus, the PSL volume figure is shown in the PSL claim as 835 million barrels and in the

FL claim as 835.3. In both cases, however, the precise amounts are used in the calculation of the losses.

[23] The Panel finds that Kuwait’s share of the OPEC ceiling would not have decreased in a no-invasion scenario. Individual shares of the OPEC ceiling do not usually decrease unless a member country does not have the capacity to produce its current or prospective quota allocation. Kuwait’s pre-invasion production capacity was sufficient to keep up with any foreseeable increase in the OPEC ceiling.

[24] The Panel notes that Iraq’s argument was based on the blow-out volume figure claimed by KPC of 1,255.50 million barrels of crude oil. As set forth in Table 18, <u>supra</u>, the proven blow-out volume is 912.2 million barrels of crude oil. The additional production required to produce the proven blow-out volume as well as KPC’s actual production during the FL loss period is, therefore, significantly smaller than that assumed by Iraq in its analysis.

[25] “Awards of Interest” (S/AC.26/1992/16).
