

# Brent Spar Dossier



## CONTENTS

<b>1. Introduction</b>	<b>4</b>
<b>2. The story</b>	<b>5</b>
2.1. Brent Spar Timeline	5
2.2. History of the Brent Spar	8
2.3. The Solution	10
<b>3. Photographic Record</b>	<b>12</b>
3.1. August 1998 - Ready for tow	12
3.2. August 1998 - Brent Spar under tow	12
3.3. November 1998 - Topside ready to be lifted	12
3.4. November 1998 - Onboard Thialf	12
3.5. March 1999 - Ready to lift	12
3.6. March 1999 - Top section cut and lifted	12
3.7. Mid May 1999 - Brent Spar pictured from the air	13
3.8. April - June 1999 - Clean up	13
3.9. Mid June 1999 - All cleaned and stored on barge	13
3.10. Late June 1999 - Oil storage tanks towed	13
3.11. July 1999 - Brent Spar sections installed	13
3.12. August 1999 - Brent Spar complete the quay foundations	13
3.13. Quay Complete	14
<b>4. Feature stories</b>	<b>15</b>
4.1. Brent Spar: Ferry to the future	15
4.2. A new way of doing business	17
4.3. The final chapter for Brent Spar	21
4.3.1. The final chapter for Brent Spar	21
4.3.2. Big, Bigger, Biggest	25
4.3.3. Three Years in The Fjords	26
4.4. Extracts	27
4.5. Game Over	28

## 5. Press releases

29

5.1. 1999 Press releases	29
5.1.1. Shell honours commitment to openness and transparency	30
5.1.2. A symbolic end to deconstruction activities	31
5.1.3. An update on the progress of the Brent Spar project	32
5.1.4. Third update on the progress of the Brent Spar project	34
5.2. 1998 Press releases	37
5.2.1. Re-use solution for the Brent Spar gets underway	38
5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers	39
5.2.3. Second update on the progress of the Brent Spar project	49
5.2.4. Approval given for the decommissioning of Brent Spar	52
5.2.5. An update on the progress of the Brent Spar project	53
5.2.6. Brent Spar moves to a new location	56
5.2.7. Brent Spar report welcomed	57
5.2.8. Shell chooses Wood-GMC solution for Brent Spar	58
5.3. 1997 Press releases	62
5.3.1. Brent Spar disposal solution closer today	63
5.3.2. Brent Spar bidding on CD Rom	66
5.3.3. Spar solution proposals submitted	68
5.3.4. Brent Spar CD ROM wins business communications award	70
5.3.5. Brent Spar Dialogue Seminar held in Copenhagen	71
5.3.6. Deadline for disposal solution bids extended by one month	73
5.3.7. Six leading international contractors find alternative solutions for the Brent Spar	74
5.3.8. Response to the Environment Council report on the Brent Spar	78
5.4. 1996 Press releases	81
5.4.1. Brent Spar Dialogue seminar report published	82
5.4.2. The first Brent Spar Dialogue Seminar	84
5.4.3. Brent Spar Dialogue seminar to be held	86
5.4.4. Publication of the report of the Scientific Group on Decommissioning Offshore Structures	87
5.4.5. Contractors bid for Best Practicable Environmental Option for Brent Spar	90
5.4.6. Shell welcomes contribution to the wider decommissioning debate	94

5.4.7. The environment is not a simple issue with clear rights and wrongs	95
5.4.8. Shell discusses the unprecedented challenges and opportunities presented by Brent Spar	99
5.4.9. Chris Fay meets Peter Melchett	102
5.5. 1995 Press releases	103
5.5.1. Shell welcomes a new study by DNV	104
5.5.2. Shell firmly backs Government initiative	105
5.5.3. Shell welcomes the results of the DNV audit	107
5.5.4. Shell unveils a combined strategy	109
5.5.5. Shell informs of an exploratory meeting with Greenpeace	111
5.5.6. Shell welcomes the letter of apology from Greenpeace	112
5.5.7. Shell invites DNV to conduct an independent inventory on Spar	113
5.5.8. Brent Spar to be temporarily moored in Norway at Erfjord	114
5.5.9. Shell applies for Brent Spar to be temporarily moored at Erfjord	115
5.5.10. Shell puts HeereMac study in context	116
5.5.11. Greenpeace day of action barely occurred	117
5.5.12. Shell refutes Greenpeace allegations	118
5.5.13. Allegations about Smit Engineering report untruthful	119
5.5.14. Chris Fay replies to a letter from Greenpeace	122
5.5.15. Illegal Greenpeace occupants removed from Spar	123
5.5.16. Shell refutes Labour Party environmental claims	125
5.5.17. Deepwater disposal approved	127

# 1. Introduction

## **In 1995, Shell was embroiled in a public dispute over the decommissioning and disposal of the Brent Spar, a redundant oil storage installation in the North Sea.**

Brent Spar was damaging to our reputation: despite the support of independent scientists for our proposals, we did not win public acceptance. We recognised that we needed to change our approach – not just to offshore decommissioning in the UK, but to how we conduct our operations everywhere.

Here you can read the historical archive of the decommissioning of the Brent Spar including press releases and articles published at the time.

## 2.1. Brent Spar Timeline

**June 1976** - Brent Spar installed in Brent Field, a unique design for oil storage and tanker loading. Two of the six tanks were later damaged in operation. Structure also later found to have been stressed during installation making major difficulties in reversing procedure to raise from water.

**September 1991** - Brent Spar ceases operating.

**1991-1993** - Detailed decommissioning studies carried out by Shell and independent external organisations and contractors to assess options. Two compared in detail - horizontal onshore dismantling and deep sea disposal with deep sea emerging with six times lower safety risks, four times less cost and minimal environmental impact.

**February 1994** - Independent Aberdeen University study (AURIS) endorses choice of deep sea disposal. Formal consultations with conservation bodies and fishing interests. Draft Abandonment Plan submitted.

**December 1994** - Shell submits final Abandonment Plan to UK Government Department of Trade and Industry and receives approval.

**February 1995** - UK Government announces approval for deep sea disposal and notifies 13 other contracting parties (12 nations and EC), signatories to the Oslo Convention covering protection of the marine environment. No objections raised within normal time limit. Shell announces deep sea disposal plan.

**30 April 1995** - Greenpeace activists occupy Spar, wrongly alleging Spar is 'a toxic timebomb'; '14,500 tonnes of toxic rubbish'; or contains 'over 100 tonnes of toxic sludge'. Over next months they say Spar will be 'dumped in the North Sea' rather than disposed at a carefully selected site in the deep Atlantic and suggest 'more than 400 oil rigs in the North Sea' might also be 'dumped'. They say Spar contains 5,550 tonnes of oil.

**5 May 1995** - UK Government grants disposal licence to Shell UK.

**9 May 1995** - German Ministry of the Environment protests against disposal plan.

**13 May 1995** - Independent UK scientists begin stating support for deep sea disposal for Brent Spar.

**23 May 1995** - Activists removed from Spar. Greenpeace calls for Shell boycott in Continental Europe.

**8-9 June 1995** - Fourth North Sea Conference at Esbjerg, Denmark. Several European countries now call for onshore disposal for all oil installations. UK and Norway, the countries with the largest, heaviest, and most difficult deep water structures, argue for 'case-by-case'.

**11 June 1995** - Shell UK begins to tow Spar to deep Atlantic disposal site.

**15-17 June 1995** - Public opinion in continental northern Europe strongly opposed. Chancellor Kohl protests to UK Prime Minister John Major at G7 summit.

**14-20 June 1995** - Protesters in Germany threaten to damage 200 Shell service stations. 50 are subsequently damaged, two fire-bombed and one raked with bullets.

**20 June 1995** - Several continental northern European governments now indicate opposition. Shell UK decides to halt disposal plan in view of untenable position caused by European political shifts, increased safety risks from violence and need for more reasoned discussion.

**Late June 1995** - UK scientific debate intensifies, with growing support for Shell approach to environmental decision-making based on reason and sound science.

**26-30 June 1995** - Eleven states call for a moratorium on sea disposal of decommissioned offshore installations at meeting of Oslo and Paris Commissions. Opposed by Britain and Norway.

## 2.1. Brent Spar Timeline

**7 July 1995** - Norway grants permission to moor Spar in Erfjord while Shell reconsiders options.

**12 July 1995** - Shell UK commissions independent Norwegian foundation Det Norske Veritas (DNV) to conduct another audit of Spar's contents and investigate Greenpeace allegations.

**12/18 July 1995** - UK Government makes clear that any new plan for which Shell UK seeks approval must be at least as good or better than deep sea disposal on the Best Practicable Environmental Option (BPEO) criteria.

**26 August 1995** - UK television executives admit to lack of objectivity and balance in coverage of the Spar story, and to using dramatic film footage from Greenpeace which eclipsed the facts.

**5 September 1995** - Greenpeace admits inaccurate claims that Spar contains 5,500 tonnes of oil and apologises to Shell.

**8 September 1995** - After a meeting between Chris Fay, Chairman and Chief Executive of Shell UK and Peter Melchett, Executive Director of Greenpeace UK, Greenpeace says it recognises that Shell UK must work within the legal framework of UK Government policy and the BPEO.

**11 September 1995** - UK scientists reiterate support for rational, science-based environmental decisions at British Association for the Advancement of Science.

**June - October 1995** - Shell receives more than 200 proposals for onshore disposal or re-use of Spar.

**11 October 1995** - Shell Exploration & Production (Shell Expro) outlines new 'Way Forward' to find a solution for Spar disposal or re-use. Notice placed in the Official Journal of the European Communities inviting expressions of interest from major contractors. Their submissions, with the 200 unsolicited proposals, to be analysed to produce a 'Long List' of 20 to 30 organisations then to be asked to meet pre-qualification criteria.

**18 October 1995** - Det Norske Veritas (DNV) present results of their independent audit, endorsing the thoroughness and professional competence with which Shell and its consultants prepared the original Spar inventory. DNV confirm that the amount of oil claimed by Greenpeace to be in the Spar was "grossly overestimated".

**30 November 1995** - DNV further report no PCBs (polychlorinated biphenyls) on Brent Spar.

**22 March 1996** - Shell Expro launch original Brent Spar Website.

**22 May 1996** - 'Scientific Group on Decommissioning Offshore Structures' report published by the Natural Environment Research Council confirming earlier Shell studies that environmental effects of deep sea disposal of Spar would have been very small and localised.

**3 July 1996** - Shell announces 'Long List' - 21 leading contractors from eight nations on the challenge to find the BPEO for Brent Spar. Competitors given four weeks to develop outline concepts.

New structural analysis confirms that reversing Spar's original installation procedure to raise it out of the sea for dismantling would be far from straightforward.

Shell outlines how the new Spar Dialogue will help Shell identify a solution by gathering a wide range of views and values.

**31 July 1996** - 30 outline proposals for Brent Spar disposal submitted by Long List contractors.

**15 August 1996** - Shell publishes Long List outline proposals.

**1 November 1996** - First Brent Spar Dialogue Seminar in London - managed and facilitated for Shell by The Environment Council, an independent charity which helps different interest groups work together to find common ground.

## 2.1. Brent Spar Timeline

**13 January 1997** - Shell announces 'Short List' - six leading international contractors and consortia to develop in detail 11 different ideas for re-using or scrapping Spar.

Short List contractors given four months to complete studies and make detailed commercial bids.

**20 February 1997** - Det Norske Veritas (DNV) commissioned to carry out independent evaluation of proposals to ensure technical, safety and environmental aspects of each bid can be compared on a like-for-like basis.

**11 March 1997** - Brent Spar Dialogue Seminar in Denmark.

**9 April 1997** - Short List contractors' deadline extended by a month to beginning June.

**14-18 April 1997** - Brent Spar and the Way Forward a major feature of the British Pavilion at the Hanover Fair in Germany.

**30 May 1997** - Brent Spar Dialogue Seminar in Rotterdam.

**2 June 1997** - Six Short List contractors submit nine detailed proposals.

**17 June 1997** - Shell publishes CD-ROM of proposals with computer animation, interactive maps and video sequences.

**13 October 1997** - Shell announces Way Forward final stages and DNV publishes independent findings together with contractors' bid prices.

**15-28 October 1997** - More Brent Spar Dialogue seminars in London, Copenhagen, Rotterdam and Hamburg.

**November 1997 - January 1998** - Shell carries out its final BPEO evaluation.

**29 January 1998** - Shell announces its choice of solution for Spar - a "one-off" re-use as a Norwegian Ro/Ro ferry quay.

Decommissioning Plan submitted to UK Government - the first step in gaining approval.

**26 August 1998** - UK Government announces its approval of Shell Exploration and Production's choice of solution.

**25 November 1998** - Spar topsides are successfully removed.

**10 July 1999** - The project is effectively completed when cut and cleaned ring sections of Spar's hull are placed on the seabed at Mekjarvik to form the base of a new quay.

**1 September 1999** - Shell Expro hosts a feedback seminar in London for interested parties and stakeholders providing details of Spar's decommissioning.



## 2.2. History of the Brent Spar

### Initial Decommissioning Ideas

The Brent Spar was taken out of operation in 1991 after some 15 years' service in the Shell/Esso Brent Field in the northern North Sea - the UK's biggest source of oil and gas. A very large floating oil storage and loading buoy, the Spar had stored oil from the Brent 'A' platform and acted as a tanker loading facility for the whole of the Brent Field.

### Deepwater Disposal

With these constraints in view, detailed studies by several independent companies established that deepwater disposal of the Spar at a site in the deep Northern Atlantic was the Best Practicable Environmental Option (BPEO). The UK Government publicly approved this original plan in February 1995, and also informed the European Union and the twelve countries in continental Europe who are signed up to the Oslo Convention for the protection of the marine environment.

The inventory carried out by Shell as part of the original BPEO showed that the Spar was not at all the "toxic time-bomb" subsequently alleged. Its deepwater disposal would have had negligible impact on the marine environment and this was confirmed by independent scientists and oceanographers, and supported in consultations with environmentalists, conservationists and fishermen. The integrity and professionalism of this original inventory was endorsed by the international safety foundation, Det Norske Veritas, who carried out a further independent audit of the Spar's contents for Shell in Norway towards the end of 1995.

Safety considerations are also a vital element in the assessment of a BPEO, and in comparison with deepwater disposal, the safety risks in terms of fatalities during onshore disposal were calculated to be some six times greater.

However, these scientific and risk evaluations were largely swept aside in the exceptional events of the summer of 1995, when outrage against deepwater disposal of the Spar arose in many people from a deeply rooted belief in the principle of "clean seas". Shell abandoned the deepwater disposal plan on 20th June 1995. The UK Government accepted this course of action and helped Shell to obtain a licence from the Norwegian authorities allowing the Spar to be anchored in the deep waters of Erfjord.

### Our Way Forward

At the same time the UK Government made it clear that, until demonstrated otherwise, the BPEO for the Spar would remain deepwater disposal. Shell UK engaged in an open, wide-ranging initiative to find the solution which would match or better deepwater disposal - an initiative which had consultation, dialogue and high profile public examination as central features. The programme was called "Our Way Forward".

Suggestions for the disposal of the Spar were invited. A notice was placed in the Official Journal of the European Communities inviting expressions of interest from major contractors. In the months up to early 1996, we received some 400 letters suggesting many imaginative solutions for the Spar. They ranged from removing the topsides to shore for use as a training facility to creating a fish-ranch within the submerged tanks, or using the Spar's unique dimensions to harness wave power and generate electricity.

Practically underpinning our search for a solution was a unique contracting process put in place in October 1995. Typically a company invites contractors to bid for a specified solution, but in the case of Brent Spar, Shell did not know what the final disposal option would be. The process consequently required contractors to compete to find and develop the best solutions. Shell awarded

## 2.2. History of the Brent Spa

the implementation contract to Wood-GMC. Their plan to re-use the Spar's hull to build a quay in Norway was considered the BPEO. The decision process harnessed not only the expertise of the major contractors with all their different resources, but also the ingenuity of the many entrepreneurs who contacted Shell.

### The Project's End

The Brent Spar project was effectively completed on 10 July 1999 when cut and cleaned ring sections of the buoy's hull were placed on the seabed at Mekjarvik, near Stavanger, in Norway to form the base of a new quay. In all the project took 330,000 man hours (200 man years) to complete. Surprisingly, a large amount of cold water coral - normally found further north and in deeper waters - had built up on the Spar's underside. Costs were much higher than was estimated. Unexpected technical, environmental and safety challenges helped to bring the dismantling project figure to £41 million from an original estimate of £21.5 million. Including the cost of the original aborted deep sea disposal project, the total cost of decommissioning Brent Spar was £60 million. The work was completed without injury to any of the workforce and without impact on the local environment.

If the exceptional events surrounding Brent Spar have achieved a good outcome, we hope it has been to place such difficult environmental choices and the contribution science can make to finding solutions at the forefront of many more minds. We will continue to defend the balanced approach to environmental decisions in the belief that it is in the vital interest of our economies, our societies and the environment. But we will also pay much more attention to listening to and consulting people about the many issues involved and to gaining their confidence and trust.

Brent Spar became not just a North Sea installation, but a unique and defining event. The challenge now is to ensure that it defines a new stage in the regulation of business activity that enjoys the popular support of hearts as well as minds.

## 2.3. The Solution

Shell UK chose an innovative re-use proposal from the British/Norwegian consortium Wood-GMC as its preferred solution for the Brent Spar storage and loading buoy. The Spar's hull was used to build a quay extension at Mekjarvik near Stavanger in Norway. Shell submitted the proposal to the UK Government for approval.

In 1995, Shell U.K. Exploration and Production (Shell Expro) launched a programme called "Our Way Forward". It aimed to establish the optimum solution for the disposal of the Brent Spar and stressed public consultation. Many proposals were received and assessed. The investigation led Shell UK to conclude that Wood-GMC's re-use proposal was the Best Practicable Environmental Option (BPEO) for the decommissioning of the Brent Spar. The decision was based on detailed analyses of the Short List proposals both by Shell and the independent Norwegian foundation Det Norske Veritas (DNV), and took into account the views and values gathered during two years of Brent Spar Dialogue.

### The Proposal

The Stavanger Port Authority was planning a quay extension at Mekjarvik with or without Brent Spar, to provide new Roll-On/Roll-Off ferry facilities from the summer of 1999. It was hoped that using slices of the Spar's hull would save both money and energy that would otherwise have been spent in new steel construction.

Wood-GMC planned to raise the Spar vertically in the water by building a lifting cradle, place it underneath the Spar and connect it by cables to jacks on board heavy barges. Jacking the cables upwards would raise the Spar so that its hull could be cut into 'rings' and slid onto a barge.

After careful cleaning, the rings would be placed in the sea beside the existing quay at Mekjarvik and filled with ballast. The construction of the quay extension was to be completed by placing a concrete slab across the rings. The Spar's topsides, its living and operations module, were to be removed and scrapped onshore at a Norwegian yard.

### Evaluation Process

Shell worked with the BPEO definition established by the UK's Royal Commission on Environmental Pollution (see Notes below), and guidance notes published by the Environment Agency of England and Wales. The process involves first establishing the technically acceptable options, then from these selecting the best from an environmental point of view. The safety aspects are assessed next, then costs. The Shell evaluation was informed throughout by feedback from the Dialogue.

*Technical:* From the Short List, the top options on technical feasibility were the proposals from Wood-GMC, Brown and Root, and AMEC; and deep sea disposal.

*Environment:* The environmental analyses covered energy balance, emissions to air, resource consumption and waste disposal, containment, ecological effects, aesthetic impacts, local societal effects and contractors' environmental management systems.

In the Dialogue, there was widespread agreement that there would be no significant environmental impact from any of the proposals, including deep sea disposal. However, in comparing the small environmental differences, Dialogue participants suggested that two of the more important aspects were a positive energy balance, in which the solution saves more energy than it consumes; and the waste hierarchy, in which re use is preferred to recycling, and recycling preferred to disposal, with the aim of minimising waste.

All the options had a positive energy balance except deep sea disposal. Of the best four technical options, Wood-GMC's had the best energy balance and is highest in the waste hierarchy, with re-use

## 2.3. The Solution

at more than 80%. Its other environmental 'positives' include the best all-round balance of emissions to air amongst the top four technical options. The Wood-GMC proposal was judged the all-round best on the environmental criteria. However, ultimately, figures show that the object of generating a positive energy balance from re-using the Spar ring-sections and recycling the topsides and transition column was not achieved.

*Safety:* Of the best four technical options, the work involved in AMEC's had higher safety risks. All the others had acceptable safety risks, comparable to those in normal offshore construction operations. Wood GMC and deep sea disposal had the lowest potential for loss of life and risks of major accidents.

*Costs:* The costs to be considered must represent the full cost to Shell Expro. These therefore not only included the contractor's bid price (previously published) but also charges such as insurance, inspection and monitoring of the work, costs of the Shell management team and a normal project contingency allowance.

Wood-GMC's published bid price (£21.5 million) rises to a £23-£26 million total cost. Brown and Root's bid price (£48 million) is by far the highest, and rises to a £49-£52 million total cost. The cost of deep sea disposal remains the lowest, but its total cost rises to significantly more than the basic £4.7 million price for towing from Norway and sinking. (Some £5 million of engineering, testing and cleaning was done in 1995.) The total project cost of deep sea disposal was a projected £17-20 million. (In the end the total cost of dismantling Brent Spar via the Wood-GMC plan amounted to far more than had been expected: £41 million.)

### The Best Practicable Environmental Option

The innovative Wood-GMC re-use option emerged from the BPEO evaluation as technically sound, with the best all-round environmental benefits, a good safety profile, and an estimated cost of £23-£26 million. The 'benchmark' option, deep sea disposal, emerged as technically sound, with fewer environmental benefits but no significant environmental impacts, a good safety profile and an estimated cost of £17-£20 million.

Shell concluded there was a high degree of equivalence between the Wood-GMC re-use option and the 'benchmark', deep sea disposal. Both were sound on technical feasibility and safety, and have small differences on environmental benefits and costs. In balancing these two aspects, Shell took note of Dialogue concerns about whether the value of the environmental gains with the re-use option were worth the additional cost of obtaining them.

However in line with the position of the Royal Commission on Environmental Pollution, namely that in determining the BPEO, "financial considerations should not be overriding", Shell concluded that the BPEO for Brent Spar was the Wood-GMC proposal for the re-use of Spar in a quay development project, subject to approval from the UK Government's Department of Trade and Industry.

The BPEO is defined by the Royal Commission on Environmental Pollution as "the option that provides the most benefit or least damage to the environment as a whole, at acceptable cost, in the long term as well as the short term". It requires comparative assessment of technical feasibility, environmental impacts to atmosphere, land and water, risks to health and safety of the workforce, economics and public acceptability.

## 3.1. Photographic Record

### August 1998 - Ready for tow



Brent Spar in Erfjord on 10th August 1998, ready for tow to the selected decommissioning site at Vats, in Yrkjefjord.

### August 1998 - Brent Spar under tow



Brent Spar under tow from Erfjord to the selected decommissioning site at Vats in Yrkjefjord.

### November 1998 - Topside ready to be lifted



Brent Spar topside is ready to be lifted off by heavy lift crane vessel, Thialf, on 25 November 1998.

### November 1998 - Onboard Thialf



Brent Spar topside onboard heavy lift crane vessel, Thialf, on 27th November 1998, which makes an impressive sight so close to shore, near Hjelmeland, some 40 km north east of Stavanger.

### March 1999 - Ready to lift



Brent Spar, on a wet evening, with the gantry crane positioned over and connected to the top of the column, ready to lift the 1000 tonne column section.

### March 1999 - Top section cut and lifted



Brent Spar top column section, has been cut and lifted, and is being moved along the barge H851 to be stored temporarily on the deck of the barge. Moving these large sections along the barge took 36-48 hours.



## 3.1. Photographic Record

**Mid May 1999 - Brent Spar pictured from the air**



Brent Spar sections and barge H851 in Yrkjefjord photographed from the air provide one of the most spectacular pictures of the decommissioning operation at Vats.

**April - June 1999 - Clean up**



Brent Spar oil storage tanks were cleaned using the seawater already in the tanks. The water was pumped to a pressure of approx. 400 bar (6000psi) and high pressure water jets remotely operated were used to clean the tank walls.

**Mid June 1999 - All cleaned and stored on barge**



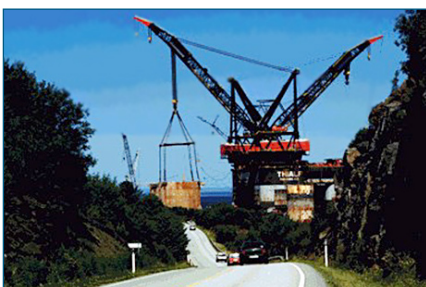
Brent Spar oil storage tank sections now all cleaned and stored on barge H851. The bottom section of the oil storage tanks could float and was not lifted onto the barge H851. It was towed off the cradle using a tug.

**Late June 1999 - Oil storage tanks towed**



Brent Spar oil storage tanks bottom section, which could float and was too heavy to be lifted onto barge H851 with the gantry crane, is towed from Yrkjefjord to Mekjarvik on 23rd June 1999, midsummer day.

**July 1999 - Brent Spar sections installed**



Brent Spar sections are installed at Mekjarvik on the 10th July 1999 at the site of the new quay. The heavy lift crane vessel, Thialf, prepares to install the third of the four sections and is visible from many miles away.

**August 1999 - Brent Spar complete the quay foundations**



Brent Spar sections at Mekjarvik quay location, after installation in July by the heavy lift crane vessel, Thialf. The sections were filled with sand and aggregate during August & September to complete the quay foundations.

## 3.1. Photographic Record

### Quay Complete



Quay at Mekjarvik now completed with Brent Spar foundations.

## 4.1. Brent Spar: Ferry to the future

### Expro has chosen new life for Brent Spar as a roll-on/roll-off ferry quay in Norway...

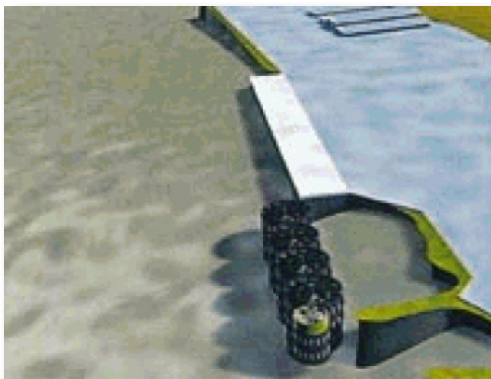
The innovative re-use proposal, from the British-Norwegian consortium Wood-GMC, uses cleaned slices of the Spar's hull to build a new quay extension at Mekjarvik, near Stavanger. It still requires final approval by the British Government, which is the regulatory authority, and also Norwegian approvals.



Expro decided that the Wood-GMC proposal was the Best Practicable Environmental Option (BPEO) for the Spar after making the required balance of the BPEO considerations; technical, environmental, safety and cost; and by absorbing feedback from the pan-European Brent Spar Dialogue seminars.

Expro's managing director Heinz Rothermund said: "Our choice is not deep-sea disposal and not scrap on shore at any cost as some have urged. It is a unique re-use solution for a unique structure. He added: "It is not, and never can be, a precedent for other offshore installations."

Mr Rothermund pointed out that this option had not existed when Expro first considered decommissioning the Spar. Because Norway had now indicated that work could be carried out there, the redundant offshore storage and loading buoy could now be tackled in a calm and sheltered, but deep-water location, enabling safer methods of raising it from the water.



Stavanger Port Authority is planning its new 170-metre quay to operate from the summer of 1999, with or without the Spar, but using slices of the Spar's hull will save money, energy and greenhouse gas emissions in construction.

The giant structure will be raised vertically, using a special lifting cradle and heavy barges, and its hull cut into rings. These will be cleaned, filled with ballast and completed with concrete on top to form the quay. The topsides "the smaller living and control module" will be scrapped onshore in Norway.

Eric Faulds, Expro's decommissioning manager, said: "This elegant solution is not so much an end as a new life for a hard-working North Sea workhorse. Brent Spar will now serve another community for perhaps 100 years."

In the crucial first step of the BPEO evaluation, technical acceptability, four Short List options passed the hurdle. They were:

- \* Wood-GMC's re-use as a quay;
- \* Brown and Root's onshore scrapping in the uk;
- \* AMEC's re-use in a uk coastal protection scheme; and
- \* Deep-sea disposal



## 4.1. Brent Spar: Ferry to the future

Environment, safety and costs were considered next. In the detailed environmental analysis, Dialogue participants agreed there would be no significant environmental impact from any of the proposals, including deep-sea disposal. But they suggested the solution should save more energy than it consumed, and should prefer re-use to recycling and recycling to disposal.

On safety potential for loss of life and major accidents AMEC had higher risk. Wood-GMC and deep-sea disposal had the lowest risks. On cost, Brown and Root's scrapping cost the most, a total of between £49 million and £52 million. AMEC's total costs were similar. Wood-GMC's total was between £23 million and £26 million, while deep-sea disposal, taking account of new regulations expected this summer, totalled £17 million to £20 million.

Expro found a high degree of equivalence between Wood-GMC's proposal and the benchmark, deep-sea disposal. Participants in the Dialogue debated whether the environmental gains with re-use would be worth the additional cost of obtaining them. But in line with the BPEO guidance that financial considerations should not be overriding, Shell concluded that the BPEO was Wood-GMC's reuse.

## 4.2. A new way of doing business

### Article from the Shell UK FOCUS magazine (Spring 1998): Senior Shell UK managers put the Brent Spar saga under the microscope.

Shell UK's preferred solution for Brent Spar - re-use as a quay extension in Norway - has been widely welcomed. Although the project still has some way to go, including gaining UK and Norwegian approvals and the huge engineering task itself, Shell UK's decision marked a successful outcome for its new Way Forward strategy, launched after the Spar crisis of 1995. Eric Faulds, Shell Expro's former Decommissioning Manager, and Fran Morrison, Shell in the UK's former Media and Communications Manager, were key players in the events of the last three years. They reflect on what it was all about...

#### What did Shell get wrong the first time

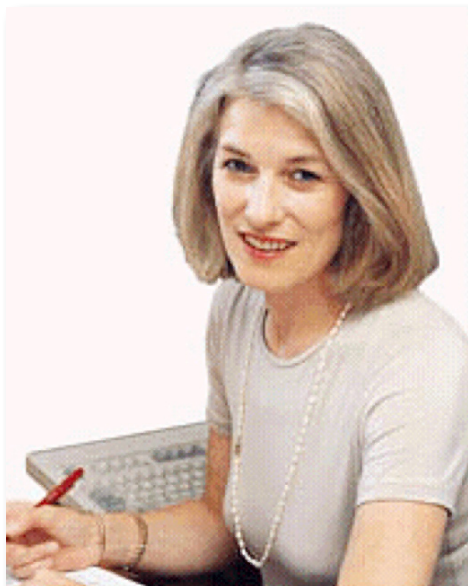


**Eric Faulds:** After the 1995 decision to halt the sinking, one of the first things we had to do was understand what really happened. We had considered the options in detail, made scrupulous analyses, and identified a disposal plan with the least technical risk, lowest exposure of the workforce to accidents, an insignificant impact on the environment and lowest cost. Why couldn't we carry it out? Was it just because people had been misled by the many inaccurate Greenpeace allegations? It wasn't only that. We realised that our work had essentially followed our normal technical procedure and regulatory compliance, but with limited analysis of potentially wider issues and external sensitivities. In particular, it was seen as a local Scottish, or UK, issue. There was a lack of appreciation that other countries would be interested in our plans and that they would see the issue quite differently.

Shell companies across Europe hadn't foreseen how a plan that was the preserve of a sovereign UK government and of Shell UK could rouse public protest across national borders. And although in the UK we had carried out statutory public consultation, neither we nor the rest of the industry had explained decommissioning widely enough, early enough. When we encountered low initial public interest, we mistakenly assumed that this meant people would not be concerned.

## 4.2. A new way of doing business

**Fran Morrison:** Greenpeace used our plan to inflame public feelings about the 'ethics' of waste disposal, and the Spar became a lightning rod for wider concerns about public policy, authority and control. Because the decision-making hadn't been opened up proactively, with explanations, external input and debate, people were more easily misled by exaggerated claims. Shell was aware of Greenpeace's interest, but because the company hadn't used its external 'antennae' too well, the extent of the protest caught us and potential supporters of our case by surprise. We found ourselves on the defensive after a decision, but it's always better to open a discussion, give people the facts, then decide after you've absorbed what others think and feel. People make judgements based on perceptions that don't necessarily match scientific fact - but taking the initiative with good communications can help to get a match between perceptions and fact. When the crisis hit we communicated hard and won more support than some gave us credit for at the time. But we hadn't communicated early enough and in the right way - which means listening too.



### How was the new Way Forward devised?

**Eric Faulds:** We had to evolve some new ways of doing business. In today's world, where people don't take government, institutions, business or technical abilities on trust, we had to do much more open communicating, and consulting and listening. With the new Way Forward, we aimed to regain the initiative and lead the agenda, and to resolve matters thoroughly rather than quickly. This would take as long as it needed to take! But first we had to clear the air of Greenpeace allegations about the Spar being a 'toxic time bomb' and so on. So our first step was to commission another independent audit of the Spar's contents, by Det Norske Veritas. If we had gone ahead and sunk the Spar, we would never have been able to show decisively what was true and what was not. We first made sure there was public and Greenpeace buy-in to the audit, so that no-one could challenge the competence of the investigators or later allege invalid methods or bias. When DNV's findings were published in autumn 1995, they showed clearly that our original inventory had been broadly correct, and that Greenpeace had made 'grossly exaggerated' claims. I and my team were always confident in our work methods and it was personally very satisfying to have a respected organisation like DNV confirm that we had carried out our technical analyses in a thorough and professional manner.

Many people remember the Greenpeace apology that autumn, when the pressure group revealed its flawed sampling, and that its claims of the Spar containing "5,500 tonnes of oil" were wrong. Many commentators have doubted whether this would have emerged had Greenpeace not been faced with the imminent results of DNV's audit.

**Fran Morrison:** There was also a high profile that summer to admissions by leading UK TV companies that in reporting the controversy, they had let Greenpeace "lead them by the nose". I believe many thoughtful discussions of this kind stemmed at least in part from our 'shock' decision to halt the sinking. By calling "halt" to a dramatised controversy, we had helped to enable time and space for a debate on the wider issues. We also began regaining the communications initiative that summer by co-operating in the first of two significant BBC TV documentaries that gave a fuller and more balanced perspective, with widespread screening in the UK and abroad.

## 4.2. A new way of doing business

### So what did the Way Forward set out to do?

**Eric Faulds:** Timing the Way Forward announcement was important. We launched it in October, 1995, a week before DNV's results, when we did not know what DNV's findings were. This signalled that whether DNV vindicated us or not, we were committed to seeking alternative solutions.

The Way Forward was a competition for the global contracting industry and others to propose alternatives to deep-sea disposal, with fair and open competitive tendering, and no preconceived outcome. It also involved a new, independently facilitated Dialogue, giving us opportunities to listen and giving participants opportunities to question and share views and values. And it involved a highly proactive communications plan, which amongst other objectives, had to communicate complex technical issues in an easy to understand manner. We aimed to achieve a situation where we would be listening to views based on appreciation of the facts rather than misconceptions.

**Fran Morrison:** The communications plan had two fundamental objectives, to inform and to listen. The end result aimed to be an acceptable solution - but not necessarily a consensus solution - and one that would not be a surprise to anyone. And it wasn't about leave public affairs to the public affairs department; it was run by a closely-knit joint team of our communicators and Eric's line managers. We had to maintain the initiative, and also demonstrate again and again that we had no hidden agenda or solution up our sleeve. We gave high-profile news conferences, interviews, speeches, offshore visits, Shell-authored articles and speeches. All the data, old and new, was published on CD-ROMs, a dedicated Brent Spar Website was launched, we talked to the authors of books, academic theses and case studies, and took part in public meetings, conferences, and an international trade fair in Germany. The global upstream industry also launched a new communications initiative, now called the Offshore Decommissioning Communications Project. It was good that the whole industry also became involved - we had stood alone during the crisis, but decommissioning issues are by no means unique to Shell!

### What issues did you then face?

**Eric Faulds:** It wasn't easy. The UK Government had to approve our choice, and had said any new solution must match or better deep sea disposal. The Government had said deep sea disposal could not be ruled out, but we had to show that we had no hidden agenda for it. We had to operate differently, but also follow the identical Best Practicable Environmental Option (BPEO) methodology as last time. We had to show that the Spar was unique, and not a precedent for any other structure; we had to explain complex regulatory, environmental, safety and technical issues, including new structural engineering analysis; and we had to engage over 20 contractors in open proactive communications.

The Dialogue had to bring a wide range of interest groups into a quality debate across Europe, and our sister Shell companies in Europe had to be actively engaged. We did not want to be hostile to Greenpeace but to bring them into the Dialogue. But we also had to replace inaccurate allegations with facts.

### Has the Way Forward strategy succeeded?

**Eric Faulds:** I believe it has. Our eventual choice is neither deep-sea disposal, nor 'scrap onshore at all costs' as urged during the controversy. We believe that we have demonstrated that our choice is the BPEO, taking account of new circumstances, most importantly the willingness of Norway now to allow work to be carried out there. We showed that it is a unique solution for a unique structure. The explanations and openness achieved 'no surprises'. And it does seem to be an acceptable solution; the UK Government has been amongst many stakeholders who welcomed it.

## 4.2. A new way of doing business

**Fran Morrison:** One indication of communications breakthrough came in early 1997, when an independent media evaluation across six European countries showed that Shell had become Europe's leading source of information on decommissioning. The most widely carried media 'messages' included the 'industry is now being open and transparent in its decision making', and 'a balanced view must be taken'. Other indications were the continuously improving quality of debate and comment, the volume of visits to the Spar Website, and the communications award won by one of the Spar CD-ROMs. During Dialogue seminars in Europe, while not abandoning its objections on principle, Greenpeace even conceded that deep-sea disposal would have minimal environmental impact. When the BBC screened a second TV documentary after our announcement, to which we had given unprecedented 'fly on the wall' access for a year, it marked a conclusion to three years of new departures in Shell openness. I hope there will be many more.

### What did Shell learn?

**Eric Faulds:** That in the 'show me' world, we must be more open and transparent. In controversial matters, good science and regulatory compliance aren't enough. We must interest and inform people even if they initially seem to show little interest, and we must explain complex issues, but simply. It's a mistake to underestimate objections on principle, or the commitment of those who make them. Public perceptions may be driven by feelings not facts, and instinctive feelings matter. We must keep devising new ways of sensing external perceptions, and take account of them in business plans. Ironically, being totally open can make it more difficult to raise interest, so that we can listen to the views of others! When you close the door and people can't see what you are doing, then suspicions and interest are aroused. We must build on our Spar experience so that neither we nor interest groups waste money and energy in conflict. We also need to share and understand differing national perspectives. And independent third parties, such as DNV, and The Environment Council who facilitated our Dialogue, can help to build public trust.

**Fran Morrison:** Sustained, high-profile, proactive communications are resource and time intensive, and need both top management commitment and good chemistry between business managers and the communicators. But I think Shell learned that communicating like this can help to seize and maintain the initiative, and pay measurable dividends. Creating a topical debate isn't necessarily 'dangerous'; it can in fact reduce controversy by helping potentially contentious matters to become familiar.

### And what did you learn about dialogue?

**Eric Faulds:** Dialogue isn't magic. It doesn't remove our real responsibility to make our own decisions, and it can't replace legal compliance. But it is a valuable forum for listening, and when we have to make value judgements, dialogue can help us ensure that our corporate values are aligned with those of our stakeholders. It can show we are responsive, and enable debate amongst many parties about each others' positions, as opposed to one-to-one confrontation. This is a most important point; in our dialogue events we put forward the facts, then listened to the participants debate the issues among themselves. Dialogue should start as early as possible in decision-making 'Dialogue-Decide-Deliver' is better and less costly than 'Decide-Announce-Defend'.

## 4.3.1. The final chapter for Brent Spar

### Article from Shell UK FOCUS magazine (Winter 1998): The Brent Spar story draws to a close.

By the end of next year, sections of Brent Spar's hull will form an integral part of a quay in a port on the west coast of Norway. The project means a new life for one of the world's most-discussed offshore structures. 25 years after it was constructed, Brent Spar will assist in a strategic initiative by the Norwegian Government to alter trade and traffic patterns in northern Scandinavia in the next century. Richard Felton reports.



The pistol-shot cracks of parting steel echoed across the smooth, coldly black waters of Yrkjefjord, near Stavanger. They signalled the beginning of the next phase in the life of the world's most famous offshore structure. The demolition of Brent Spar, one of the icons of the oil business in the 1990s, had begun.



As representatives of the world's press watched, almost breathless, Heerema's giant crane barge, Thialf, took the strain and the 1,600-tonne topsides lifted smoothly clear. The enormous crane, one of a pair on the Thialf each capable of lifting 6,000 tonnes, slowly rotated and deposited the severed unit on the barge deck. It had taken just 40 minutes from the time the cables tightened, appearing to lift the redundant North Sea oil storage buoy bodily.

As the control and accommodation superstructure lifted towards the Thialf, Shell Expro's decommissioning manager, Eric Faulds, said: "It's good to see the final part of the operation under way at last. And there is not a little irony in the fact that this solution, widely agreed by governments and a broad spectrum of other stakeholders, involves the reuse of most of Brent Spar in a marine application."

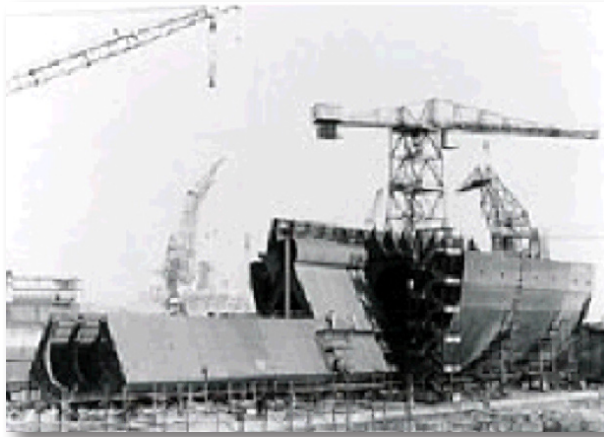


## 4.3.1. The final chapter for Brent Spar

Relieved of the weight of the topsides, the body of the Spar now floats higher in the water as it waits for the next stage of the operation, due to begin next month. Around 15 metres of the hull can now be seen, with 100 metres still below the surface.

The operation had begun in earnest as the light of a November afternoon faded to the stygian darkness of a Norwegian winter night. The Heerema project team had made last-minute adjustments to the lifting rig during the afternoon, and lit by the crane barge's floodlights and auxiliary lights from nearby supply boats, they attached the four huge shackles before being lifted away to the Thialf.

While some of the equipment on the topsides will probably be reused, most of the steel will be recycled, with only around 10 tonnes of asbestos going to landfill. The dismantling and scrapping is taking place at the Vikanset yard operated by Norsk Metallretur Offshore Recycling near Hjelmeland, northeast of Stavanger.



Early January will see the arrival of the world's biggest launch barge, the H851, equipped with a lifting arrangement that will be used to raise the 13,000-tonnes-plus main section of the buoy. As it is raised, it will be cut into rings that will be skidded back onto the 260-metre deck of the barge. Once cleaned, they will be taken to the port of Mekjarvik, near Stavanger, where they will be positioned to form the foundation of a 170-metre quay suitable for large roll-on/roll-off ferries and also provide deep-water anchorage. The new quay is expected to be completed by the end of 1999.

### 4.3.1. The final chapter for Brent Spar

However, the hull also contains a little oil, 50,000 tonnes of seawater, around 330 tonnes of sludge, 50 tonnes of wax and a small quantity of scale deposits in its pipework, thought to be less than 10 tonnes. While the oil and wax will be recycled, the scale produced from oil reservoirs, and the sludge both contain small quantities of naturally occurring radioactive material.

Senior project engineer Arvid Nygaard said: "To get the radioactivity aspect into perspective, it is estimated that a year's exposure to the scale in the pipework would be equivalent to exposure in the sun for five seconds; a year's exposure to the sludge would be equivalent to 0.5 seconds in the sun. Arrangements have been made for this material to be transported to the UK for treatment."



Safety has been a major consideration in developing the disposal plans for Brent Spar, and the project team recognises the seawater that has been sealed in the Spar's tanks represents a hazard.



### 4.3.1. The final chapter for Brent Spar

Gordon Stirling, the Wood Group's managing director for engineering projects explained: "When seawater is kept in anaerobic conditions, organisms called sulphur-reducing bacteria (SRB) can flourish. They produce hydrogen sulphide, an extremely poisonous gas, by reacting with sulphur compounds present in organic materials such as oil. We believe that it may be present in significant quantities.

"What we have to do in the period before the second phase of the operation begins is to ensure that there is no danger to personnel from hydrogen sulphide. There are a number of possible solutions, but we will probably use a newly available compound called Zydox to suppress the SRB. It is an enzyme-stabilised chlorine dioxide compound, a powerful oxidising agent." Once stabilised, the water will be pumped out as the hull of the Spar is raised for cutting.



## 4.3.2. Big, Bigger, Biggest

### **Article from Shell UK FOCUS magazine (Winter 1998): The Brent Spar story draws to a close.**

From sea level, even the visible bit of Brent Spar is big. In reality, it is much, much bigger. Half the height of the Eiffel Tower in Paris and twice as tall as Big Ben in London, when installed it stood 137 metres high, displacing 66,500 tonnes of water with a floating draught of 109 metres.

But beside the massive bulk of the Thialf and its looming cranes, it looked like a fisherman's float. The semi-submersible Thialf is more than 200 metres long, with a beam of 88 metres, providing accommodation for more than 700 people. Its gross registered tonnage is a massive 136,709 tonnes. It can change its draught from 11.8 metres to 31.6 metres, depending on sea state and workload. Self-propelled and with a sophisticated dynamic positioning system, its two giant cranes can lift a maximum of 12,000 tonnes.

However, when the main lifting and cutting operation begins in January, the star of the show will be the world's biggest offshore launch barge, the H851. Its deck, at nearly 260 metres, is even bigger than that of the Thialf. It is unique, a proposed sister vessel never having got past the planning stage.

Equipped with a jacking system linked by cable to a 600-tonne cradle on which the Spar will stand while it is lifted to be cut, the barge gives plenty of room for the sections - around 29 metres wide and 23 metres high - to be stored on its deck. After the operation the lifting cradle will be recycled.

When the foundations have been blasted at Mekjarvik, the sections will be lifted and installed by the Thialf before being backfilled with aggregate and topped with the new 170-metre quay. About five nautical miles north west of Norway's oil capital, Stavanger, by the end of next year Mekjarvik will be able to offer new and flexible deep-water facilities to the transport and oil industries.

### 4.3.3. Three Years in the Fjords

**Article from Shell UK FOCUS magazine (Winter 1998): The Brent Spar story draws to a close.**

Since the original disposal plan to sink Brent Spar in the Atlantic was abandoned in the summer of 1995, the buoy has been moored in the sheltered waters of Erfjord near Stavanger. It was moved to Yrkjefjord, hemmed in by mountains and offering even more sheltered waters, for the salvaging operation.

While the Spar became a tourist attraction, the focus of action moved onshore with the development of the broadly inclusive Dialogue process that has produced a disposal alternative widely agreed across Europe to replace the deep-sea option. The final seal of approval came in August with the British Government's approval of Shell's proposals as the Best Practicable Environmental Option.



## 4.4. Extracts

The following is an extract from a Stakeholding Speech to the Aberdeen Business Breakfast Club, 17 September 1998, by Malcolm Brinded, Shell UK Country Chairman at the time. It explains how Brent Spar changed attitudes within Shell towards communication.

Today, demands for increased openness and transparency in business reporting come from a wide range of stakeholders and are being actively promoted by Government. Recently, the Department for Environment Transport and the Regions (DETR) wrote to companies reminding them that "environmental reporting should be seen as part of an effective communication strategy and not just a public relations exercise."

One thing is certain. The days when companies were judged solely in terms of economic performance and wealth creation have disappeared - which is not to say that these factors are unimportant, since economic prosperity remains the foundation stone on which our wider contributions can be built. For us, Brent Spar was the key turning point. It was a wake up call, not only to Shell, but to the entire oil and gas industry, and to industry in general. Brent Spar required a unique solution, but the Spar dialogue set important general precedents for the future.

Major dialogue events were held in Copenhagen, Rotterdam, Hamburg and London in October 1997. Participants included Greenpeace and other environmental NGOs. In addition, we set up a dedicated Brent Spar internet site, which has so far attracted over 25,000 hits, and sent out 2,500 CD-Roms to interested stakeholders.

The dialogue process was an undoubted success; it led to a Brent Spar solution which has been formally approved, and, just as important, has been widely accepted by all concerned stakeholders. And I'm pleased to say that the stakeholder dialogue process which Brent Spar followed is now being repeated on other frontline business issues.

Nowhere is this more obvious than in the setting of Shell Expro environmental targets and in the recently announced oil industry drill-cuttings dialogue. Earlier this year, Shell Expro held its first in-depth meeting with external stakeholders to review our approach to managing environmental performance. This was a key step to gaining effective stakeholder input into establishing Shell Expro's long-term environmental targets. For stakeholders have a key role to play in helping us to make difficult decisions about where the environmental pound is best spent.

One thing is certain. These are not black and white choices. For example, should additional spending be directed to further reducing oil to sea discharges where the public interest is greatest, but where emission levels are already very low? Or should investment be directed to other, less obvious, areas where the environmental benefit may be greater? The workshop helped us re-set our long term goals and also highlighted to us the need to address the issue of cuttings left over from past drilling activity.

## 4.5. Game Over

The Brent Spar Saga is drawing to a close, appropriately enough in a Scandinavian fjord. The former oil storage buoy has found a new life - sliced into rings that are now in place on the seabed to form the foundation of a quay for roll-on/roll-off ferries that will improve transport links in western Norway.

Nearly five years on from Shell UK's first announcement of its intention to dispose of the Brent Spar oil storage and loading buoy, the story is almost over. In the process, Expro has come through a firestorm of adverse publicity to reach a widely agreed solution.

By early next year the four Spar sections already in place at the port of Mekjarvik in Stavangerfjord will have been filled with ballast and capped by a 150-metre concrete apron, and trucks will be rolling over them.

Since the original plan to sink Spar in the Atlantic was abandoned in the summer of 1995, it has evolved from being a symbol from environmentalists' concern over global business issues, through being a tourist attraction during its three-year mooring in Erfjord, to stand again as a symbol - this time for the success of a dialogue which has swung public and stakeholder opinion behind a marine disposal solution, albeit rather different from the original.

The Spar's topsides were removed by the giant crane barge Thialf last November (Shell UK Focus, Winter 1998) and dismantled onshore, with all of the steel heading for the smelter. The main hull of the 14,500-tonne buoy was then lifted by a specially constructed cradle arrangement fitted to the H851 barge. After cleaning by remotely operated high-pressure water jets, the rings were cut off and skidded to the end of the barge (Shell UK Focus, Spring 1999). The base section, which weighed 7,000 tonnes and could not be lifted, was floated off the cradle and towed to Mekjarvik by tugs to be placed in position in June.

The Thialf was once again on station in early July to lift the three rings - each 22 metres high and 29 metres in diameter, weighing between 1,200 and 1,800 tonnes - from the H851 and position them on the seabed.

Eric Faulds, Expro's former Decommissioning manager, said: "Clearly we're very happy to be almost at the end of the unprecedented engineering challenge of first finding, then carrying through this unique re-use decommissioning solution. It's been quite an experience being involved in such a groundbreaking, high profile project.

"We've learned a great deal in the process and, in the spirit of openness and communication which has been a feature of Brent Spar decommissioning since we launched the Way Forward dialogue process in October, 1995, we will be publishing information on the technical and other lessons learned in a close-out report later this year. In that report we will also be able to provide details of all aspects of the work including final costs and other statistical data compiled over the whole project.

"We are very grateful to the UK and Norwegian authorities for the support we have received and for their co-operative approach in helping to process the many authorisations and permits to allow work to go ahead."

## 5.1 1999 Press Releases

### **1999 Brent Spar Press Releases**

Shell honours commitment to openness and transparency

A symbolic end to deconstruction activities

An update on the progress of the Brent Spar project

Third update on the progress of the Brent Spar project

## 5.1.1. Shell honours commitment to openness and transparency

01/09/1999

**Shell U.K. Exploration and Production (Shell Expro) honoured its commitment to openness and transparency by providing details today in London of the decommissioning of Brent Spar to a group of interested parties and stakeholders who have been keeping track of the unique dismantling project.**

Participants at the feedback seminar were invited from those who were involved in dialogue over the search for a disposal solution in 1995. The challenging Brent Spar project was effectively completed on July 10 when cut and cleaned ring sections of the buoy's hull were placed on the seabed at Mekjarvik, near Stavanger in Norway to form the base of a new quay.

At the seminar, Shell Expro described the considerable technical, safety and environmental challenges faced during the execution of the work; how changes were made to the engineering of the originally conceived scheme for handling the Spar; how the decommissioning team had to deal with unforeseen circumstances during the dismantling; and how the fully integrated Shell / Wood-GMC team carried out the operation without a single accident and with no environmental spills or damage.

Significant safety issues which had to be addressed included the exceptionally high levels of hydrogen sulphide gas - dissolved in the water in the Spar tanks and dealt with by using a new environmentally friendly chemical treatment process, and unexpected levels of benzene vapour and methane gas released during the process to clean the inside of the Spar's huge tanks. These aspects required continuous monitoring for gases during the operation and the introduction of stringent protection procedures for the workforce. In all the project took some 330,000 man hours (equivalent to 200 man years) to complete.

The actual contents of the Spar tanks compared to the anticipated contents were well within the accuracy requirements for an environmental impact assessment set by the independent Norwegian foundation Det Norske Veritas (DNV) when they carried out an inventory check for Shell in 1995. For example the weight of oil in the Spar was found to be 150 tonnes - compared with the Greenpeace estimate of 5,500 tonnes.

The objective of generating a positive energy balance from re-using the Spar ring sections and recycling the topsides and transition column was not achieved. Accurate monitoring of energy balance across the project has shown a net overall energy consumption.

A surprising discovery was the substantial quantity of cold water coral (*Lophelia pertusa*) which had built up on the underside of the Spar. *Lophelia pertusa* or stonycoral, is to be found primarily in deep cold waters off Norway, in the Faroes-Shetland Channel and to the west of Shetland, normally in depths below 150 metres.

Costs of the project were significantly higher than estimated when the Wood-GMC proposal was selected. To the original GBP 21.5 million estimate, costs for engineering development, for additional safety measures and for extra environmental management requirements, have brought the dismantling project figure to GBP 41 million. Taking into account the cost of the original aborted deep sea disposal project, the costs incurred from June 1995 until the commencement of the Wood-GMC contract and the costs indicated above, the total cost of decommissioning Brent Spar amounts to GBP 60 million.

Eric Faulds, Shell Expro Decommissioning Manager, said: 'When you're dealing with old structures like this you have to expect the unexpected. Throughout the dismantling operation we were faced with a number of unexpected technical, safety and environmental challenges which had to be overcome, and each one cost time and money. The cleaning of the tanks for example was a considerable undertaking - it was the equivalent of cleaning the surface of four football pitches to a spotless condition.

'It has been a fascinating experience which has provided many lessons. My greatest satisfaction is that we have completed the work without injury to any of the workforce and without impact on the local environment. This success can be attributed to the professional approach taken by the contractors and their workforce throughout the project.'

## 5.1.2. A symbolic end to deconstruction activities

10/08/1999

**A symbolic end to deconstruction activities in the unique re-use solution for the Brent Spar takes place over the weekend of July 10-11, when the three cut and cleaned ring sections of the Spar hull will be placed on the seabed at Mekjarvik, near Stavanger. This is the last step in the transformation of the 14,500 tonne former loading and storage buoy for its new life as a quay being carried out by a project team from Shell and British/Norwegian consortium Wood-GMC.**

The ring sections, each weighing in the range of 1200 - 1800 tonnes, about 22 metres high and 29 metres in diameter, will be lifted into position at Mekjarvik by one of the largest floating cranes in the world, the Thialf, operated by Heerema Marine Contractors Nederland B.V. After placement, the rings will be filled with ballast, and finished with a concrete surface to form the new quay which is expected to be complete in early 2000.

Following removal of the Spar topsides in November 1998, Heerema's specially adapted flattop barge H851 also the world's largest arrived at the decommissioning location at Vats in Norway. It was fitted with a tailor-made lifting cradle to raise the Spar vertically for slicing the huge hull, which is longer than a football field floating on its end, and was also used to transport the cut and cleaned ring sections to Mekjarvik. The base section of the Spar, which weighs more than 7000 tonnes and could not be lifted, was floated off the support cradle and towed by tugs to Mekjarvik for placement at the quay location on June 23. The H851 with its cargo sailed from Vats to Mekjarvik on June 26.

Eric Faulds, Shell Expro's decommissioning manager, said: 'Clearly we're very happy now to be so close to the end of the unprecedented engineering challenge of first finding and then carrying through this unique re-use decommissioning solution. It's been quite an experience being involved in such a ground-breaking, complex, high profile project.

We've learned a great deal in the process and, in the spirit of openness and communication which has been a feature of Brent Spar decommissioning since we launched the Way Forward in October 1995, we will be publishing information on the technical and other lessons learned in a close-out report later this year. In the report we will also be able to provide details of all aspects of the work including final costs and other statistical data compiled over the whole project.

We are very grateful to the uk and Norwegian authorities for the support we have received and for their co-operative approach in helping to process the many authorisations and permits required to allow work to proceed.'



## 5.1.3. An update on the progress of the Brent Spar decommissioning project

09/07/1999

### Dismantling Completed and First Ring Section in Position

A major milestone in the Brent Spar decommissioning process has been achieved with completion of dismantling work on the buoy at Yrkefjord in Vats and the placing of the first Spar ring section into position for the quayside extension at Mekjarvik, near Stavanger, on June 23.

The three remaining cut and cleaned sections of the Spar hull to be used for the quay are now all located on the deck of the barge H851. The barge sailed to Mekjarvik with its cargo over the weekend of June 26-27 to await the mid-July arrival of the heavy lift crane vessel Thialf to lift the three sections into position and complete the base for the quay.

### Progress According to Plan

Following arrival of the flat-top barge H851 at Vats in February, and positioning of the Spar on its specially constructed support cradle, dismantling work proceeded according to plan. The 24-hours-a-day operation involved a total workforce of up to 150 persons at the work site, accommodated on the hotel barge, Malm, located at Vats quay.

With the topsides removed at the end of last year, four hull sections, each weighing in the range of 1200-1800 tonnes, were cut and removed to be stored on the deck of the H851. Before each section could be removed however, the Spar had to be lifted and the oil storage tanks cleaned of any residual oil deposits on the tanks' inner walls.

Lifting to expose enough of the Spar structure to cut each of the 22 metre high sections was achieved by removing water from some of the storage tanks, and by raising the cradle under Spar using a system of jacks located on the H851 barge. This shared the load between the effects of increased buoyancy of the Spar and direct lifting using the jacking system.

Cleaning of the oil storage tank walls was carried out using jets of high pressure cold water from automatic cleaning equipment operated remotely from outside the tanks to minimise the need for personnel to work in the tanks during the cleaning operation.

The bottom section of the Spar, which cannot be lifted because it weighs over 7000 tonnes, had damage to the outer shell of its structure in two of the six storage tanks, caused whilst Spar was in operation in the Brent field during the late 1970s. Repairs were carried out before this last section was floated off the support cradle and towed by tugs to Mekjarvik for placement at the quay location.

As well as the main dismantling activities onboard Spar at Vats, work has continued at Mekjarvik with civil engineering preparations for the new quay. Waste management activities have also been ongoing with disposal of hydrocarbon material and the water from the main storage tank.

### Current Programme

The remaining work is now scheduled as follows:

**July 1999** - Spar buoy sections placed on seabed at Mekjarvik, using heavy lift crane vessel Thialf, to form base sections

**Q3 1999** - Base sections infilled with aggregate

**early 2000** - Quay complete and waste management activities concluded

**Health, Safety, Environment Monitoring & Performance** - Ongoing monitoring of mussels, by Cordah and Rogaland Research, environmental consultants to the project, indicates that water quality in the area of Brent Spar is not being adversely affected by project activities. A sediment sampling survey of the area around Spar at Yrkefjord will be carried out this month, now that dismantling activities have been completed. The Labour Inspection Authority of Stavanger and Haugesand carried

## 5.1.3. An update on the progress of the Brent Spar decommissioning project

out a second routine HSE related inspection of the ongoing activities at Vats, and expressed overall satisfaction with the operations.

**Approvals & Permits / Authority & Community Liaison** - Approval was given by the State Pollution Controls Authority, SFT, to take the water from the Spar storage tanks and dispose of it through the facilities at the Norsk Hydro Sture terminal, north of Bergen. The Project is continuing the regular liaison process with technical personnel from the Vindafjord and Tysvaer communes.

**Waste Disposal Management** - Seawater from main storage tanks: An agreement was reached with Norsk Hydro for the treatment and disposal of the 50,000 cubic metres of seawater from the main oil storage tanks at their oil loading terminal at Sture, provided the water met required quality standards. The first cargo of water, some 12,000 cubic metres, was delivered to Sture at the end of April. The remaining shipments were delivered in June. No traces of H<sub>2</sub>S have been measured in the water since the successful H<sub>2</sub>S removal operations in January.

**Hydrocarbon Inventory:** Cleaning operations to remove the weathered hydrocarbons from the inside surfaces of the oil storage tanks have been completed. This material had adhered to the underside of the top of the tanks, and to the tank walls in the form of a hard wax layer which has required high pressure washing to remove.

**LSA (low specific activity) Scale in Pipework and Sludge at the bottom of Main Storage tanks:** All the pipework has been removed to the deck of the H851 under controlled conditions as required by international regulations and the Norwegian Radiation Protection Authority (SS), and supervised by specialists from AEA Technology.

Shipment of this material to UK, which was a condition of the agreements between the UK and Norwegian governments leading to the approval for the decommissioning of Brent Spar in Norway, is likely to take place during Q3 1999.

Removal of the sludge located at the bottom of the storage tanks was completed towards the end of the programme at Vats, again supervised by AEA Technology.

A Trans Frontier Shipment Application for the LSA waste material has been submitted to the Environment Agency in England, on the basis of proposals to treat the material at AEA Technology's facilities at Winfrith in Dorset, and for disposal of the material at BNFL at Drigg in Cumbria.

**Topsides & Transition Column Disposal:** Norsk Metallretur Offshore Recycling (NMOR), at Vikaneset near Hjelmeland, are continuing with the dismantling of the topsides, due to be completed during Q3 1999.

The transition column, weighing some 1200 tonnes, will be moved from H851 to the NMOR yard in mid 1999 with dismantling scheduled for completion by end 1999.

**Validation of Waste Materials Quantities:** Lloyds Register have continued to verify the quantities of hazardous and non-hazardous waste materials recovered from Spar dismantling to provide an independent verification at the end of dismantling. Final details of quantities of hydrocarbons and other waste materials removed from Brent Spar, and their method of disposal or re-cycling, will be published by Shell later this year.

**Construction of Quay at Mekjarvik** - Preparations of the foundations for the quay extension have been completed. Dredging and blasting operations removed a top layer of moraine and some of the underlying bedrock, followed by the application of a levelling layer of coarse aggregate. Following placement of the remaining ring sections, stabilisation by infilling with aggregate will be carried out during Q3 1999. Final completion of the quay is expected early in 2000.

## 5.1.4. Third update on the progress of the Brent Spar project

24/02/1999

### Current Position

The topsides was successfully removed on 25 November 1998, using the Heerema heavy lift crane vessel Thialf, which then transported the topsides from the fjord at Vats to the dismantling yard of Norsk Metallretur Offshore Recycling (NMOR) at Vikaneset, near Hjelmeland, where it was lifted onshore for recycling and disposal.

**H2S disposal:** Following the topsides removal, work started on eliminating the high levels of hydrogen sulphide gas in the 50,000 tonnes of seawater within the main oil storage tanks. This operation was successfully completed during January 1999.

**Civil Engineering** Preparations at the site of the quay at Mekjarvik began with dredging work in December 1998. Preparatory work will continue into Q2 1999.

Project team engineering work is operating to the following timetable:

**Q1 + Q2 1999** Barge H851 moored at Vats and Spar re-positioned for Spar cutting operations

Spar main buoy structure cut horizontally into sections

Waste disposal managed in parallel with cutting activities

**Q2 1999** Civil engineering preparations for quay completed at Mekjarvik

**Mid 1999** Spar buoy sections placed on seabed at Mekjarvik to form quay base

**Q3 1999** Base sections infilled with aggregate

**Q4 1999** Quay complete

### Dismantling the main structure

This phase of the work which will cover the cutting and cleaning of the main Spar oil storage tank sections is now underway. The flat top barge H851, with a specially-constructed lifting cradle, sailed from Rotterdam to Mekjarvik for installation of construction equipment and a gantry crane for lifting the cut sections of the Spar. Moving H851 to Vats and mooring in Yrkefjord, making the support cradle ready for operation, and positioning the Spar on the cradle ready for the first of the lifting and cutting operations, is being carried out during the first two weeks in February. Additional personnel required for the dismantling work will be accommodated on a hotel barge located at Vats quay.

### Community Liaison

Regular meetings have been held by Wood-GMC with technical staff from Vindafjord and Tysvr community offices, to keep them apprised of the decommissioning activities and plans.

### Approvals & Permits

**State Pollution Control Authority (SFT):** Notification of Wood-GMCs preferred method to dispose of the 50,000 tonnes of seawater has been submitted to SFT, and close dialogue is being maintained with SFT.

**Norwegian Radiation Protection Authority (NRPA):** AEA Technology has developed plans to handle the naturally occurring radioactive substances found in the Spar. These plans have been submitted to the NRPA for evaluation and comment.

**Coastal Department 2nd. District:** The project team are maintaining close dialogue with the

## 5.1.4. Third update on the progress of the Brent Spar project

Coastal administration on issues around the marine operations of the H851 in Vats.

**Health, Safety, Environment:** The Labour Inspection Authority made a HSE related visit to the Spar worksite in January 1999, and concluded that arrangements for HSE appeared satisfactory.

**Environmental Monitoring:** Cordah, environmental consultants, as part of the ongoing environmental monitoring programme for the dismantling operations, placed mussels a metre below the water level during the fourth quarter of 1998, for ongoing analysis. The samplings made to date indicate no pollutants or detrimental effects to marine life from decommissioning operations.

### Waste Disposal Management

**Hydrocarbon inventory:** Several cubic metres of hydrocarbons recovered from the Spar to date are being recycled in Norway by specialist contractor Henriksen.

**Seawater treatment to remove H<sub>2</sub>S:** The 50,000 tonnes of ballast seawater currently contained within the Spar storage tanks has been chemically treated to remove the H<sub>2</sub>S. The adoption of a chemical treatment process as the preferred solution followed a thorough review over several months of the options available, and included:

- \* Chemical stabilisation and oxidation
- \* Sparging with air
- \* Chemical treatment
- \* Nitrate charging
- \* Processing and flaring

The final selection of both the process and the specific chemical to be used followed an exhaustive review and validation process to ensure that the chemistry of the treated water would be benign, and that the work could be carried out safely and in an environmentally acceptable manner within the project schedule. The treatment process has involved the injection and in place mixing of an enzyme stabilised aqueous solution of chlorine dioxide with the tank fluids, and post treatment testing has verified the success of the process. As well as removing the H<sub>2</sub>S, the chlorine dioxide has been effective in suppressing further bacterial activity which would otherwise cause a regeneration of H<sub>2</sub>S gas. This dual action of chlorine dioxide has eliminated the need for a separate application of biocide for further H<sub>2</sub>S regeneration inhibition and consequently the final treatment process of the water is much simpler and less time consuming. The chemical reaction process, in addition to removing the H<sub>2</sub>S, reinstates the water to a chemistry that is very close to the original configuration of seawater. Final treatment of the tank water, before sea discharge, will involve filtration to further reduce what is already a very low level of hydrocarbons in the water.

### Disposal of seawater

An evaluation of methods and facilities for water treatment and disposal has identified a ships ballast water treatment plant at Sture oil handling terminal north of Bergen, and a specialist waste facility at Langoya in Oslo fjord, as being able to handle the waste water and provide the necessary water discharge permits. Discussions to finalise the arrangements will be completed during February.

### LSA scale disposal

Following evaluation of methods and proposals to handle the expected 8-10 tonnes of LSA scale, regulatory approvals are being sought for the descaling of the pipework at the AEA Technology facility at Winfrith in Dorset, UK and for disposal of the scale at the BNFL facility at Drigg in Cumbria.

## 5.1.4. Third update on the progress of the Brent Spar project

### **Main oil storage tank sludge**

Disposal methods and routes in the UK are being evaluated on the basis that the estimated 360 cubic metres will be partially dried to reduce volume to about 50 cubic metres, which can then be disposed of as LSA material.

### **Validation of waste materials quantities**

Lloyds Register have been engaged to provide an independent verification of the quantities of hazardous and non-hazardous waste materials recovered during the dismantling of the complete Spar structure.

### **Topsides disposal**

Norsk Metallretur Offshore Recycling, (NMOR), at Vikaneset near Hjelmeland have commenced the dismantling of the topsides. Specialist contractors have completed the removal of all asbestos materials which have been disposed of at a licensed landfill site. Most of the steelwork will be recycled through the steel plant at Mo-i-Rana, in northern Norway, which specialises in recycling used steel materials.

### **Construction of quay at Mekjarvik**

An agreement has been signed between Wood-GMC and the Stavanger Port Authority to cover the management arrangements for the construction of the quay extension at Mekjarvik. Civil engineering contractor, Selmer, started engineering work in November 1998 on site at Mekjarvik, including dredging at the location of the quay prior to rock blasting to achieve the required foundation profile for the Spar ring sections. The foundations will comprise four 29 metre diameter sections of the main storage buoy filled with ballast. The single 17 metre diameter section which contains a considerable amount of partitioning steelwork, equipment and pipework is not considered suitable for a foundation section for the quay and will now not be used. It will be dismantled at NMOR and recycled in the same manner as the topsides portion.

## 5.2 1998 Press Releases

### 1998 Brent Spar Press Releases

Re-use solution for the Brent Spar gets underway

The Annual Achievement Lecture to the Institution of Mechanical Engineers

Second update on the progress of the Brent Spar project

Approval given for the decommissioning of Brent Spar

An update on the progress of the Brent Spar project

Brent Spar moves to a new location

Brent Spar report welcomed

Shell chooses Wood-GMC solution for Brent Spar

## 5.2.1. Re-use solution for the Brent Spar gets underway

25/11/1998

**The unique re-use solution for the Brent Spar gets underway on Wednesday, November 25 in Norway, with the start of the major engineering task to turn it into a new quay at Mekjarvik, near Stavanger. The first step in transforming the 14,500-tonne former loading and storage buoy for its new life as a quay will be the removal of its 1,600-tonne 'topsides', the control and accommodation superstructure visible above the water.**

The topsides will be lifted off by one of the largest floating cranes in the world, the Thialf, at the Spar's mooring at Vats in Norway, and taken ashore to be dismantled and scrapped at Vikaneset near Hjelmeland north east of Stavanger. Over the next six months, the Spar will be raised in the water, and its huge hull - longer than a football field floating on its end - will be cut into 'rings'. After careful cleaning, these will be placed on the seabed at Mekjarvik, filled with ballast, and completed with a concrete surface to form the new quay.

Since the UK Government's Department of Trade and Industry approved this innovative one-off solution in August, a project team from Shell and the British/Norwegian consortium Wood-GMC has been carrying out preparatory engineering work for the topsides lift. Lifting points have been installed on the topsides and the outer hull cut through as well as all internal bulkheads, stairways, pipework and cabling about eight metres above the waterline. Some of the remaining equipment in the topsides may be refurbished and re-used, and the steelwork will be recycled.

The lift and removal will be carried out by the giant semi submersible crane vessel Thialf, operated by Heerema Marine Contractors Nederland B.V. After sailing into the fjord it will run trials on its dynamic positioning system, then move into position alongside the Spar.

A heavy-lift rigging frame suspended from one of the Thialf's twin cranes will be attached to the lifting points on the topsides, and after a final safety check, Thialf will take the strain and start lifting. As the 1,600-tonne module is gradually raised, the rest of the Spar will also rise in the water about seven metres as the load is removed, giving an impression that the whole structure is being lifted. When lifted well clear of the Spar's hull, the topsides will be swung around and placed on the Thialf's deck. The major part of the Spar, its hull, will remain floating at its moorings with 100 metres below the water line and about 15 metres visible above the surface, until it is raised and sliced into rings.

The crane barge will transport the topsides for scrapping 39 km (24 miles) to the decommissioning yard operated by Norsk Metallretur Offshore Recycling A.S. (formerly Ardal Mekaniske Verkstad - AMV) at Vikaneset near Hjelmeland.

Early next year a specially adapted barge, the H851 also operated by Heerema, will go to Vats to lift the Spar vertically for slicing and transport the ring segments to Mekjarvik where the Thialf will position them to form the new quay foundation. The quay is planned to be complete by the end of 1999.

## 5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers

13/11/1998

### Introduction

The highly publicised events of 1995 surrounding the plans to dispose of the redundant offshore installation Brent Spar, along with other events such as the BSE crisis and the debate surrounding nuclear waste disposal, have shown that decisions taken on the basis of science alone, without the wider involvement of interested stakeholders, can create significant public disquiet.

This paper reviews the Shell\* experience of the Brent Spar crisis, describes the different processes through which Shell developed a new solution, and describes how the Shell Group more generally is adapting to increasing demands from society to demonstrate that its companies' business activities are acceptable. More specifically, the paper discusses how engineers must adapt to this new 'show me' world.

For the purposes of clarity, operation and disposal of the Brent Spar was the responsibility of Shell uk Exploration and Production ('Shell Expro'), the offshore oil and gas exploration and production division of Shell U.K. Limited, a large operating company of the Royal Dutch / Shell Group of companies. Shell uk Exploration and Production is operator of a co-venture in the uk North Sea with Esso Exploration and Production uk Limited. Both parties jointly own the Brent Spar (50/50).

### The Brent Spar installation

The Brent Spar was unlike any other installation in the North Sea. It had a unique function: both to store oil, and to offload the oil from its storage tanks into tankers offshore. It was constructed as a huge floating buoy, fabricated from steel, and moored to the sea bed in the North Sea by six anchors. Its displacement was 66,500 tonnes, its floating draught 109 metres, its total height 137 metres and its dry weight 14,500 tonnes.

The buoy was designed and built in the mid 1970s. The larger hull section was fabricated in a horizontal position in a dry dock in The Netherlands, and floated and towed to Norway to be rotated into the vertical floating position then mated to the top deck section. The whole unit was then towed to the Brent Field for final installation.

While the Spar was robust and fit for the purpose for which it was designed, modern structural analysis using finite element analysis rather than the less advanced techniques available at the time of its design, showed that the original installation sequence could not safely be repeated in reverse order. Such an operation would impose unacceptably high stresses in the hull structure. Decommissioning by simply reversing the original build process was therefore not an acceptably safe option. Another solution had to be found.

### The original deep water disposal plan

Following the shut down and demanning of Brent Spar in 1991, Shell Expro commissioned some 30 studies over four years to review the decommissioning options. Initially studies looked at methods of bringing Spar onshore for scrapping, but the more this was studied the more the technical difficulties became apparent. From an initial list of 13 potential solutions, the most viable were narrowed down to a short list of two: onshore dismantling in the uk, and deep sea disposal. These were evaluated in detail to determine the Best Practicable Environmental Option (BPEO)(see note 1) which, in accordance with uk Government requirements, was identified by Shell Expro and then recommended to the uk Government for its approval. The BPEO can be described as a practical balance of technical feasibility, environmental, safety and cost considerations.

Before making its final submission to the uk Government, Shell Expro commissioned an independent evaluation by Aberdeen University (see note 2). This concluded that the deep sea disposal option was preferable when judged against the required BPEO criteria. Both deep sea disposal and onshore



## 5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers

scrapping in the uk were judged to have minimal environmental impact; however deep sea disposal had a significantly lower fatality risk and lower cost.

A relatively limited consultation as required by the uk Government was undertaken with parties directly affected, and elicited no objections. In February 1995 the uk Government publicly announced its formal approval, and in accordance with international Conventions, notified its partner European governments in the North East Atlantic maritime area (see note 3), none of whom objected within the normal timeframe.

Having thus undertaken rigorous engineering analysis of the disposal options including independent assessments, having complied with all national and international regulations, and having undertaken the required consultation, Shell Expro made plans to carry out deep sea disposal in the good weather period of summer 1995. However, the plan sparked off a concerted campaign by Greenpeace, which eventually captured global publicity. On 30 April 1995, shortly before work was due to begin, activists boarded the Spar, attracting notable media coverage. The Greenpeace campaign was based on various allegations, of which the more significant were:

\*That the Spar was a 'toxic time bomb' and '14,000 tonnes of toxic rubbish', containing '5,500 tonnes of oil' and 'hidden' toxic chemicals

\*That Shell had not carried out a proper inventory of the Spar's contents

\*That its disposal was a precedent for 'more than 400' North Sea platforms to be 'dumped at sea'

\*That the matter had been decided secretly

\*That it was wrong on principle to dispose of waste material of any kind in the ocean.

Many of these allegations were grossly exaggerated, untrue or misleading, and were later publicly shown to be so. However it is noteworthy that the latter two are based either on perceptions or pertain to particular beliefs or values. They continued to resonate as worthy of further consideration when other allegations had been widely accepted as untrue.

Over the ensuing two months, the Greenpeace campaign attracted significant attention, particularly in continental Northern Europe, and most notably in Germany. The German Government, facing elections and political challenges to its 'green' credentials, changed its initial position and lodged a protest to the uk Government.

Activists were removed from the Spar to major media attention. At an international conference concerned with broad issues of North Sea pollution, various European governments called for a ban on sea disposal of disused oil installations, isolating the uk and Norway, the only countries with the significant problem of eventual disposal of the largest, heaviest, more difficult structures.

As Shell Expro towed the Spar to the disposal site, a boycott of Shell products started in Germany and 200 service stations were damaged, two fire-bombed and one raked with bullets. On 20 June 1995 the British Prime Minister publicly defended the disposal plan in Parliament only hours before an announcement by Shell uk that the operation would be halted.

The decision was welcomed by protestors and celebrated by Greenpeace as a major victory, but Shell uk was publicly attacked both by deeply angered British Government ministers, and by scientists who saw it as a reversal of sound environmental decision-making.

Throughout the early part of 1995, the argument of scientific precision and regulatory rigour had been consistently and tirelessly presented, and gained considerable support in the uk. However it was not a set of messages lending itself to easy sound bites; nor was it visually dramatic. It was also difficult to match the speed of the misinformation propagated by Greenpeace via satellite links and the Internet.

That the Brent Spar was a unique and difficult installation, that it was not the first of 400 installations to be disposed in the deep sea, that a responsible organisation such as Shell would not dispose of it were it full of toxic waste, that detailed studies and an independent inventory had been professionally carried out, and other similar points did achieve significant penetration in the uk, but were not widely

## 5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers

appreciated by the media and members of the public elsewhere.

Shell was starkly reminded of a tenet it already recognised, but had on this occasion at least allowed to 'slip', that it could not take public understanding or trust for granted.

### Key dimensions of the Brent Spar issue to summer 1995:

- \*Relatively limited pre-decision dialogue held with external parties
- \*Lack of wider external interest interpreted as lack of concern
- \*Approach had been 'Decide-Announce-Defend'
- \*Greenpeace campaign presented a new and very visual 'hook' for media, portrayed as a 'David v. Goliath' struggle
- \*Issue escalated as it became a 'lightning rod' for wider societal concerns about public policy, authority and control
- \*Specific plan used by pressure group to resonate and inflame public feelings about the 'ethics' of waste disposal
- \*A plan which was the legitimate preserve of a sovereign UK Government sparked external stakeholder concerns far beyond the boundary of the regulatory process

### Company learning points

Within Shell, we recognised that we had focused too narrowly on presenting the scientific risk message and had failed fully to anticipate the potential for emotion-driven, public outrage. We were surprised and somewhat shaken by the strength of public feeling in some areas, and by the readiness with which we could be considered part of 'irresponsible industry killing off the oceans'.

Many people simply did not know about the complex issues involved, and we had done little in advance to explain them.

We recognised that we had focused almost exclusively on issues surrounding technical risk and regulatory compliance, and had not incorporated key elements of the perception of risks and their relevance to individuals, in order to 'win hearts and minds'. We had also failed to anticipate how widely a specific UK plan could attract attention and concern across national borders.

We accepted that we needed to engage on such issues in a much wider political and public domain. We also accepted that there could be real limitations to the 'decide, announce, defend' approach, in which decisions are taken by 'authorities' or 'experts', announced to interested parties, then followed by what may be confrontational debate between proposers and objectors.

While robust debate can ventilate issues in a healthy and open manner, it can too easily also result in 'winners' and 'losers', and can close off opportunities to explore a wider range of values, perceptions, or alternative solutions.

### New Way Forward: Background

In June 1995 the Norwegian and UK Governments agreed that the Spar could be moored temporarily in a sheltered fjord in Norway, one of the few sheltered anchorages in Europe deep enough to take it, while Shell UK considered the structure's fate.

In the summer of 1995 Shell Expro carefully analysed the lessons learned and devised a new strategy. The first objective was to clear the air of allegations made during the Greenpeace campaign. Early decisions were that resolving matters thoroughly would be far more important than resolving them

## 5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers

quickly, and that openness and transparency would prevail in all our actions. The openness would not be passive as before; we would be much more proactive in ensuring that all with an interest would be kept fully informed.

In a key initial step, Shell Expro gave unrestricted access to the respected independent Norwegian certification authority Det Norske Veritas to carry out a new audit of the Spar's contents, and to investigate the Greenpeace claims, including those of '5,500 tonnes of oil' still in the Spar's tanks and of toxic chemicals 'hidden' on board.

Public and Greenpeace buy-in to DNV's competence, independence and the scope of the study were ensured before the audit, avoiding later challenges to the results, or accusations of invalid methods or biased science.

This was a key learning point. Securing stakeholder buy-in to study scopes and methods before work begins means that any subsequent debate can be focused on the significance of the results, rather than the methods or the competence of the researchers.

In July 1995, the UK Government publicly stated that any new plan for which Shell Expro might seek approval would have to be at least as good or better than deep sea disposal, the only option then currently approved, on the key BPEO criteria. This became an important cornerstone of the subsequent new Shell strategy.

By late August, the role of the media in the controversy had become a significant topic of debate. A high profile was given to admissions by leading UK TV companies that in publicising the controversy; they had inadequately tested Greenpeace assertions and had been 'led by the nose' by the pressure group's claims.

During July and August, Shell UK had already made an early start in regaining the communications initiative. As part of the commitment to openness, and to further demonstrate that we had nothing to hide, we co-operated in the first of two significant BBC TV documentaries, which gave a fuller and more balanced presentation of the Shell position and later achieved widespread screening in the UK and abroad.

In early September, almost certainly faced with the prospect of being exposed by DNV's audit, Greenpeace itself publicly chose to reveal that its sampling while occupying the Spar had been flawed and that its claims of the Spar containing '5,500 tonnes of oil' were wrong, and apologised publicly to Shell UK, amidst further widespread publicity.

In October, DNV published its results (see note 4), to further high-profile attention. DNV demonstrated that Shell Expro's original inventory had been broadly correct, and that Greenpeace had made grossly exaggerated claims. Greenpeace were unable to challenge the findings.

### **Brent Spar Way Forward strategy**

In October 1995, Shell Expro announced its new Brent Spar Way Forward strategy. Significantly, we chose to announce this before the results of DNV's audit were either published, or known to ourselves. The purpose of this was to demonstrate that regardless of whether DNV's findings vindicated our own inventory and environmental impact assessments, or not, we were publicly committed to greater openness and to a wider search for alternative solutions, to be weighed against the currently-approved option, deep sea disposal.

The Brent Spar Way Forward strategy had three main strands:

- \*An international engineering competition
- \*A highly proactive, open communications plan
- \*A series of dialogue events with interested stakeholders

## 5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers

### International engineering competition

This competition essentially followed the normal process for an international construction tender, starting with a notice in the Official Journal of the European Communities for interested contractors to come forward for pre-qualification. The most important selection criterion was that a contractor or consortium must have experience of large scale marine construction activity.

There were however significant differences from the normal tendering process, resulting from the wide public interest in the project and our stated commitment to openness.

Firstly, we had received over 400 letters suggesting many innovative new ideas. With the originators' permission, these were made available to all interested contractors. Secondly, all contractors' proposals would be made public, including their prices.

### Open communication plan

The communications plan had two fundamental objectives: to inform and to listen. The end result aimed to be an acceptable solution - but not necessarily a consensus solution - and one that would not be a surprise to anyone.

It was implemented by a closely-knit joint team of project engineers and public affairs communicators. It required engineers to learn new media skills, since media interviews would almost exclusively be given by the engineers working on the project.

Communications subsequently included high profile news conferences, press, TV and radio interviews, offshore visits and Shell-authored articles and speeches. The commitment to openness meant that all information and data would be fully and easily available.

As a first step, all historic study reports and correspondence with the Government were copied to CD-ROM for ease of distribution to any interested party. Two further CD-ROMs followed at key stages in the process, and were widely appreciated (see note 5). Two of the Spar CD-ROMs won professional communications awards. A dedicated Brent Spar Website was launched (see note 6), providing large volumes of information across national boundaries to a wide and varied range of visitors.

Shell also gave a great deal of assistance to authors of books, academic theses and case studies, and participated in public meetings, conferences, and an international trade fair in Germany.

A mailing list of over 500 self-nominated interested individuals and organisations was established, who were regularly informed of issues and progress in developing new solutions. The communications continue through the dismantling work now taking place in Norway.

\*Brent Spar Way Forward open communications plan:

\*Publication of historical papers, correspondence and reports on CD-ROM

\*Open publication of all new data by announcement and CD-ROMs

\*News conferences; press, TV and radio interviews; speeches, articles, briefings and visits

\*Two fully open TV documentaries

\*World Wide Website as detailed information source

\*Active contact database constructed

\*Assistance to third parties writing books, theses

\*Participation in conferences, public meetings, key exhibition in Germany. **Brent Spar Dialogue**

A key aspect of the new Way Forward was to listen to the views of others, and in particular to listen to what other organisations and individuals felt important to the decision making process. This was achieved through a series of dialogue events.

## 5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers

### Establishing the Brent Spar Dialogue involved:

- \*Appointing an independent charity, The Environment Council, to design the dialogue and facilitate the events to ensure a fair, balanced, open and credible process
- \*Establishing a database of a wide range of different parties, including technical experts and many without any technical background whatsoever
- \*Shaping a manageable interface for dialogue that was acceptable to all involved
- \*Agreeing firm ground rules on the scope and objectives of the dialogue and securing the participants' endorsement of 'balance'.

### The Brent Spar Dialogue was carefully designed as follows:

It should:

- \*Accommodate statutory processes
  - \*Not undermine the role of the regulator
  - \*Act as a 'sounding board' to inform on the criteria Shell Expro must use in its decision making
  - \*Not act as a decision-making forum
  - \*Involve dynamic, challenging, independently facilitated event(s)
  - \*Not be seen as boring series of technical lectures
- Comprise a wide balance of representatives of organisations or key constituencies, which also act as gateways to a wider public
- \*Be open and inclusive
  - \*Not turn into a 'media circus'
  - \*Improve mutual understanding by enabling constructive debate within an agreed framework of ground rules
  - \*Not be a 'free-for-all' or biased to achieving any specific pre-determined result
  - \*Be structured so that the entire range of complex issues could be debated
  - \*Not allow participants to focus on single issues or wider topics
  - \*Ensure parallel feedback into technical development process
  - \*Not become a separate, disconnected process
  - \*Enable peer debate and challenge
  - \*Not attempt to gain consensus and not develop into a 'them and us' debate
  - \*Be tailored to local/national context, but portable elsewhere
  - \*Not be restricted to the uk
  - \*Start as early as possible in the alternative technical selection process
  - \*Not be left until final choice stage
  - \*Have senior management commitment
  - \*Not be a superficial PR exercise

The Dialogue was launched with the first Brent Spar Dialogue Seminar on 1 November 1996 in London, attended by over 60 representatives of a wide range of interested organisations, including environmental groups, economists, engineers, students, trade unions, churches and consumer groups.

## 5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers

The output was used to re-balance the selection criteria that Shell Expro would follow in reducing the Long List of 29 contractors to a Short List of 6.

The participants felt that Shell was placing too much focus on technical feasibility and not enough on safety risks and environmental impacts. An additional item, to cover local social impacts wherever the work might be carried out, was added to the assessment criteria.

Similar dialogue events took place in Denmark (Copenhagen, March 1997) and The Netherlands (Rotterdam, May 1997). Following each event, a summary report was prepared by the independent facilitator, distributed to all participants, offered to media and posted on the World Wide Web (see note 7).

After the Short List of bidding contractors had submitted their detailed proposals on 2 June 1997, Shell Expro again engaged DNV to develop a methodology for ensuring that each BPEO element (technical feasibility, safety risks, environmental impacts and costs) could be compared on a like-for-like basis, and to make a relative ranking of the proposals within each BPEO category.

The DNV review included the original deep water disposal option. DNV did not combine the individual scores in any way, nor did they produce an overall 'best' option across all the categories.

Significant effort was again built in 'up-front' to ensure wide credibility for DNV's assessments. The DNV methodology (see note 8) was sent for comment to contacts on the Brent Spar contact database, which included Greenpeace, before DNV applied it to each proposal.

When all information on the proposals along with DNV's independent report (see note 9) had been announced and made widely publicly available, a second series of dialogue events was held in London, Copenhagen, Rotterdam and Hamburg.

These sought views from a wide public on the most societally appropriate means of balancing the different BPEO elements. For example, are emissions to air more important than marine pollution? Is environmental risk more important than worker safety? To what extent should costs be a consideration?

A key learning point had been that many of these assessments cannot be made purely on a scientific basis. 'Value judgements' must be made, in which any person's values are as valid as those of any other.

Shell Expro absorbed the output from the second stage of dialogue to inform its own values in selecting a solution to recommend to the uk Government for approval.

On 29 January 1998, Shell Expro recommended to the uk Government that the Best Practical Environmental Option was now the proposal to re-use the Spar in a quay development project near Stavanger in Norway.

Key factors in the choice had not only been feedback from the Dialogue, but new safer opportunities for dismantling and re-using the Spar in Norway which had not been available previously, and the now considerably higher costs that would be incurred in deep sea disposal. The uk Government approved the proposal on 26 August 1998.

### **Lessons learned to date from the Brent Spar controversy, new Way Forward and Dialogue**

\*We now inhabit a 'show me' world, an era which demands that companies are more open and transparent in their decision-making. The views of 'expert' engineers, scientists and other professionals are no longer accepted without challenge.

\*We must avoid technical arrogance. That we have applied engineering logic to a problem, and had our work reviewed by like-minded peers, does not necessarily make our answer 'correct'.

## 5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers

\*Sound science and regulatory compliance are not in themselves sufficient to secure public support for decisions or to guarantee a company's longer-term 'licence to operate'.

\*There is a need to inform people - even if they appear to show limited interest - about the complex issues involved in making such decisions, to reduce misconceptions, resolve misunderstandings, and to illustrate the difficulties in finding a balance amongst social, environmental, economic and safety issues.

\*Engineers and other 'technical experts' must face up to the major challenge of being able to communicate the complexities of our analyses, so that 'non experts' can meaningfully contribute.

\*The importance of external perceptions should never be underestimated. These need to be anticipated - through active external sensing - and taken into account in business planning. The views of a wider public may be based more on perceptions than on facts. A key communications challenge is to ensure the facts are more simply explained and better understood, helping to inform public perceptions. It is not impossible for public perceptions to resonate with sound engineering.

\*It is not acceptable to say 'the public do not understand the issues'. The onus is on the engineer or other 'expert' to make sure the public do understand the issues - before decisions are made.

\*There are few, if any, engineering analyses which do not require value judgements. When, as engineers, we say something is 'safe', we are in fact saying 'in our expert opinion it is safe enough'. But the public perception of what is 'safe enough' may be quite different from the view of an expert trained in logical risk analysis.

\*Avoid DAD: 'Decide-Announce-Defend'. Adopt DDD: 'Dialogue-Decide-Deliver'.

\*Do not underestimate the sense of commitment felt by those of opposing views, particularly on the 'ethical' or 'moral' dimensions of an issue.

\*The international dimension can matter, driven by different cultural interpretations and approaches.

\*Pre-decision dialogue is resource intensive and time consuming. It requires senior management commitment. It must be - and be seen to be - inclusive, and must demonstrate responsiveness. The output should be better understanding of others' views and values, peer debate and peer challenge, rather than consensus. It is likely to require independent facilitation to enable trust and credibility.

\*Dialogue should start as early as possible in the decision-making process.

### Change in Shell

It has sometimes been suggested that Shell was prompted to change its values, or approach to open communications and listening, as a result of the 1995 controversies surrounding Brent Spar and events in Nigeria. This is not entirely the case.

In 1994, the Shell Group had already begun an internal process of change, involving a radical review of the way in which Shell companies managed their businesses.

Driven by the need to remain competitive, the process questioned fundamentals such as structure, business portfolio, quality of leadership, relationships and vision of the future. It continues now to build on core Shell values, and to gain new insights into current challenges, including the need to be more open, transparent and accountable for the way Shell business are run.

The Brent Spar controversy and the events in Nigeria in 1995 did not start the change process, but were certainly catalysts which accelerated learning.

As part on the ongoing work, the Shell Group in 1996 held a major stakeholder engagement project, which became known as Society's Changing Expectations, involving workshops and opinion surveys throughout the world.

One outcome was that explicit commitments to express support for fundamental human rights, and to contribute to Sustainable Development, were added to the Royal Dutch / Shell Group's long-standing

## 5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers

Statement of General Business Principles (see note 10). Group policy and procedures on Health, Safety and Environmental management were also strengthened.

Shell has always accepted that leading companies are expected to behave in a socially responsible and accountable way, and Shell companies have long sought to do so.

However there is now a growing expectation that companies must more systematically account for such behaviour. People are less trusting, and want to see exactly what companies are doing - that deeds match words - and in the case of Shell, that the Group is living up to its long-held Principles. One vehicle to help meet these expectations is the Shell Group's new integrated Report to Society, covering the combined effects of financial, social and environmental performance.

The first Report, called Profits and Principles - does there have to be a choice? (see note 11), benchmarks the Group's performance in such areas as operating efficiency; contribution to sustainable development, human rights, business honesty and care for the environment against the promises of the Business Principles.

Compiled with the help of potentially critical independent external parties, it also examines current issues and dilemmas, explains the Shell approach to them and invites open feedback. It also provides a 'Road Map', charting the Shell Group's past performance and looking forward to its growing contribution to sustainable development.

Shell uk has also published its first Report to Society (see note 12), again compiled with the help of varied inputs gathered during independently-facilitated dialogue.

The Chairman of the Royal Dutch / Shell Group, Mark Moody-Stuart, recently summarised some of the Shell thinking with admirable simplicity:

'Meeting our objectives,' he said, 'doesn't depend just on our own efforts. It requires the support of others. We can only gain that support by being open about what we do. But it is not enough just to show others what we are doing. We must be open to their views with the confidence that comes from the clarity of our own values. Shell people engage with different strands of opinion all over the world. They don't always agree, but what they learn does affect business decisions.' (see note 13)

Chris Fay, Chairman and Chief Executive of Shell uk, recently echoed these sentiments:

'The world has changed,' he said. 'The days when companies were judged solely in terms of economic performance and wealth creation have long disappeared. Today, companies have far wider responsibilities to the environment, to local communities and to broader society. These are not optional extras or 'icing on the cake'. Our wider social responsibilities form a fundamental and integral part of the way in which we do business, and are vital to our long-term economic performance.' (see note 14)

Listening, dialogue, more open communications, greater social accountability - and new ways of building these into the ways that we do business - are all here to stay. Our experience with Brent Spar has, we hope, become a case study, from which we and others may draw valuable learning about doing business differently in the 'show me' world.



## 5.2.2. The Annual Achievement Lecture to the Institution of Mechanical Engineers

### Notes:

1.The BPEO is defined by the Royal Commission on Environmental Pollution as 'the option that provides the most benefit or least damage to the environment as a whole, at acceptable cost, in the long term as well as the short term'. It requires comparative assessment of technical feasibility, environmental impacts to atmosphere, land and water, risks to health and safety of the workforce, economics and public acceptability.

2. Removal and Disposal of the Brent Spar - A Safety and Environmental Assessment of the Options, by The University of Aberdeen Research and Industrial Services (AURIS) Ltd., 1994.

3. OSPAR is the Oslo and Paris Conventions governing all aspects of preventing marine pollution in the North East Atlantic region. It regulates disposal at sea, including offshore installations. The OSPAR partners are 15 European states and the European Community.

4. DNV Inventory Study Management Summary Report No. 95-3586.

5. CD-ROMS available from Shell Expro, 1 Altens Farm Road, Nigg, Aberdeen AB12 3FY.

6. <http://www.shellexpro.brentspar.com>

7. <http://www.greenchannel.com/tec>

8. DNV Methodology Report IIBJ-000424.

9. DNV Assessment of the Proposed Options for 10. Disposal of Brent Spar Report No. 970911-0007.

11. Royal Dutch / Shell Group of Companies Statement of General Business Principles, publ. by Shell International, Shell Centre, London SE1 7NA.

Profits and Principles - does there have to be a choice? publ. April 1998 by Shell International, Shell Centre, London SE1 7NA.

12. Shell uk Report to Society publ. May 1998 by Shell U.K. Limited, Shell/Mex House, Strand, London WC2R 0DX.

13. Mark Moody-Stuart speech at the Annual General Meeting of the 'Shell' Transport and Trading Company, p.l.c., London, May 1998.

14. Chris Fay speech to the Institute of Chartered Accountants 21st Century Annual Report Conference, London, Sept. 1998.

## 5.2.3. Second update on the progress of the Brent Spar project

15/10/1998

### Current Position

The UK Government's Department of Trade and Industry (DTI) approved Shell UK's Application for Decommissioning of Brent Spar on 26 August 1998. Engineering work has progressed to allow the following timetable to operate for the rest of the project:

**present** Pre-mobilisation work at Vats in preparation for the removal of the topsides

**November 1998** Decommissioning commences with topsides removal and transportation to shore for recycling by Norwegian sub-contractor

**Q4 1998 + Q1 1999** Treatment and removal of waste fluids from inside the Spar structure

**Q1 + Q2 1999** Spar main structure cut into horizontal sections at Vats

**mid-1999** Sections placed on seabed at Mekjarvik to form quay base

**Q3 1999** Base sections infilled

**Q4 1999** Quay complete

Project team operating from Vats and Forus

In addition to the project team (from **Shell, Wood-GMC**, and **Global Maritime**) working in Forus, Stavanger, an operations base has been established with the installation of two barges alongside the Spar at Vats. Onshore storage and office facilities are also being set up at the quay at Vats to support the offshore operations.

Community Briefings at Vindafjord and Tysvaer

Wood-GMC hosted public briefing and information sessions on September 30 and October 1 in the Vindafjord and Tysvaer communities in Norway, close to the site where the Spar is located. In addition to presentations showing how the decommissioning work will be carried out, Wood-GMC was supported by specialists to answer detailed questions about environmental considerations or technical aspects of the work. On October 1 Shell also hosted a briefing session for interested parties at Hjelmeland, where the topsides portion of the Spar is likely to be dismantled and recycled.

Approvals and permits

Shell, Wood-GMC and relevant subcontractors continue to identify and submit applications for the necessary approvals to complete the complex process of dismantling, recycling and re-using the various Spar components. Permission has been granted for the mooring operations at Vats, and approval was given by the Norwegian department of fisheries for the decommissioning work for the Brent Spar in Yrkjefjord.

Health, Safety and Environment

The following systems are now in place:

safety management system

contractors and subcontractors interface management system

emergency response plan

pollution control contingency plan

site-specific safety procedures

## 5.2.3. Second update on the progress of the Brent Spar project

### Environmental monitoring

A seabed survey has been carried out at Vats. An environmental monitoring programme for the Vats area continues, and includes analysis of seabed sediments and positioning mussels around a metre below the surface of the water in the fjord for analysis throughout the project.

### Topsides removal

Project team representatives from Shell, Wood-GMC, Global Maritime and Heerema are proceeding with engineering work to plan for the removal of the 1600-tonne topsides. Heerema's heavy lift crane vessel, the Thialf will lift off the topsides portion of the Spar in November, and transport it to shore for recycling in Norway.

So far, the project team has

- established safe access and safe working conditions on the Spar and its associated barges,
- made preparations for installing steelwork for the lifting operations on the structure of the Spar
- made preparations for the actual cutting operations, which will include slicing through the outer hull, piping, cabling and inner bulkheads, at a point approximately 8m above the water line
- made plans to ready the Spar topsides for removal

As a result of the 1600-tonne topsides being lifted off, the Spar will rise approximately 7m in the water, leaving 15m visible above the surface of the sea, and about 100m below the water line.

### Topsides disposal

Contractual discussions continue with a Norwegian contractor for the dismantling and recycling of the topsides portion of the Spar. Most of the steel will be recycled, and some of the equipment may be refurbished and re-used.

### Waste disposal

Evaluation of acceptable methods of waste disposal continues, including **LSA:** removal and disposal of the LSA (low specific activity) scale contained in some of the pipework, and disposal of the scale in the uk at Drigg in Cumbria

### Seawater

Options under consideration for treatment of the 50,000 tonnes of seawater inside the Spar main storage tanks to eliminate hazards to personnel include

- neutralise the H<sub>2</sub>S with a scavenger chemical
- possibly add biocide to prevent regeneration of H<sub>2</sub>S
- possible agitation with air to prevent regeneration of H<sub>2</sub>S

consideration is also being given to further treatment of the water to minimise environmental impact on disposal by

- treatment by refining process plant

## 5.2.3. Second update on the progress of the Brent Spar project

ship's ballast water treatment plant

offshore platform treatment

long-term tank storage of the water to allow natural degradation

options under consideration for disposal of the seawater after satisfactory treatment include

specialist waste facility in Norway which allows neutralisation and natural degradation of waste materials

dispersal at sea

incineration

**Sludge:** removal and disposal of the sludge in the base of the storage tanks, which is currently being sampled and analysed

**Waste products:** removing the waste products that may result from cleaning processes applied to the structure

Construction of the quay at Mekjarvik

A contractual arrangement is under discussion between Wood-GMC and the Stavanger Port Authority as a basis for the management of the design and construction of the quay at Mekjarvik.

## 5.2.4. Approval given for the decommissioning of Brent Spar

26/08/1998

### **Shell UK Exploration and Production (Shell Expro) welcomes today's announcement from UK Energy Minister John Battle that the Department of Trade and Industry has approved the company's preferred solution for the decommissioning of Brent Spar.**

In January this year, Shell selected the innovative re-use proposal put forward by the British/Norwegian consortium Wood-GMC as its preferred solution. The proposal, to use cleaned slices of the Spar's hull to build a quay extension at Mekjarvik near Stavanger in Norway, was then submitted in a Decommissioning Programme to the UK Government.

Eric Faulds, Shell Expro's decommissioning manager, said: 'Clearly we're delighted to get the green light. When we launched our Way Forward process back in October 1995, we said we were confident of finding a solution that would be as good as or better than the original, and we're very pleased that the Government supports the solution we have found.'

'It's been quite an experience being involved in what must be the most thorough and comprehensive process yet carried out to find a Best Practicable Environmental Option (BPEO). It was particularly interesting developing our Dialogue to gather public views and values at sessions across Europe, and applying those to the technical and scientific evaluation of the engineering process.'

'With this major approval in place, we can now finalise outstanding permits and other approvals required from UK and Norwegian authorities to allow work to start.'

With a project team of Shell, Wood-GMC and Global Maritime personnel now established in Stavanger, and the Spar safely moored at its new location in Vats, about 60km (37miles) north-east of Stavanger, preparatory work can now proceed for the removal of the topsides, due to take place later in the year.

The work programme will aim to provide cleaned sections of the Spar hull to the Stavanger Port Authority in time for the new deep water quay at Mekjarvik to be in operation by the end of 1999.

## 5.2.5. An update on the progress of the Brent Spar project

21/08/1998

### Current Position

**Shell UK is awaiting approval from the UK Government's Department of Trade and Industry (DTI) of its Application for Decommissioning of Brent Spar. In the meantime engineering work is progressing to allow the following timetable to operate for the rest of the project, subject to Q3 approval:**

12 August 1998 - Spar moved from Erfjord to Vats

Q3 1998 - Pre-mobilisation work beginning in preparation for the removal of the topsides

Q4 1998 - Decommissioning commences with topsides removal and transportation to shore for recycling by Norwegian sub-contractor

Q1 + Q2 1999 - Spar main structure cut into horizontal sections at Vats

mid-1999 - Sections placed on seabed at Mekjarvik to form quay base

Q3 1999 - Base sections infilled

Q4 1999 - Quay complete

### Project team established

A project team comprising 20 or so people is now working in Forus, Stavanger, including representatives from Shell, Wood-GMC, Global Maritime and other sub-contractors. In addition to seeking the necessary local, regional and national approvals and permits (about 50 in all) required to complete the whole range of decommissioning operations, the project team is continuing to develop its written procedures and operational documentation. These documents include all necessary health, safety and environmental protection arrangements as well as emergency preparedness and pollution contingency plans.

### Approvals and permits

Over the past 18 months, both Shell and its subcontractors have identified and submitted applications for the necessary approvals to complete the complex process of relocating, dismantling, recycling and re-using the various Spar components. These applications have been submitted to a wide range of regulatory, government and community organisations both in the UK and Norway. They cover, for example:

Permission to move the Spar to Vats

Permission to moor the Spar at Vats

Approval from the Norwegian Maritime Directorate to tow the Spar from Erfjord to Vats

Decommissioning the Spar in Norway according to the Wood-GMC proposal

Consultations with local communities in Randabeg, Suldahl, Vindafjord and Tysvaer

Stavanger Port Authority approval to build quay extension at Mekjarvik

SFT (Statens Forurensningstilsyn) approvals for pollution control and environmental monitoring

Contingency plans for pollution control during towing and during marine operations

Consent from Norwegian authorities for handling LSA scale waste

Import approval from uk authorities to receive LSA scale for disposal

## 5.2.5. An update on the progress of the Brent Spar project

### **Moving the Spar to Vats**

Brent Spar was moved in mid-August and is now moored at Vats, about 60km (37miles) north-east of Stavanger, where the dismantling operations will be carried out. The 24-hour tow was managed by Maritime GMC and was completed on 12 August. Vats is a well-established deepwater construction site with quay facilities, a large onshore work area, electrical power supply, and good connections by road to both Stavanger (90km/56miles) and Haugesund (50km/31 miles). Several major offshore platforms have been completed at Vats in the past, and it has been evaluated as the most suitable site for the work.

### **Environmental monitoring**

An environmental monitoring programme for the Vats area has been developed by Cordah, the uk-based environmental specialists, and has been accepted by the Norwegian Pollution Control Authority (the SFT). This monitoring programme is now underway, and includes analysis of seabed sediments and positioning mussels on the seabed for analysis throughout the project.

### **Waste disposal options**

Evaluation of acceptable methods of waste disposal is underway by AEA Technology, including removal and disposal of the LSA (low specific activity) scale contained in some of the pipework, and disposal of the scale in the uk.

treatment and disposal of the 50,000 tonnes of seawater inside the Spar main storage tanks; options under consideration include:

treatment and disposal by refinery process plant

ships' ballast water treatment plant

offshore platform treatment and storage

removing the hydrogen sulphide dissolved in the seawater prior to dismantling of the main buoy section; options under consideration include:

a scavenging process using chemical treatment

agitating with air to oxygenate the water, then possibly flaring the products from the process

removing the waste products that may result from cleaning processes applied to the structure.

### **Dismantling operations**

Global Maritime is proceeding with structural and marine engineering design work for the lifting cradle and removal of the topsides. A significant development of this phase has been the appointment of Heerema Marine Contractors to carry out the marine services work to support the dismantling operations. Heerema will use a large launch barge instead of the catamaran arrangement proposed originally, and will be responsible for removal of the topsides and positioning the ring sections on the seabed at Mekjarvik. This single barge solution will greatly simplify the marine operations and bring technical and safety advantages, as well as being cost-effective.

### **Topsides recycling**

Discussions are underway with contractors for the dismantling and recycling of the topsides.

## 5.2.5. An update on the progress of the Brent Spar project

### **Construction of the quay at Mekjarvik**

A contractual arrangement is under discussion between Wood-GMC and the Stavanger Port Authority as a basis for the management of the design and construction of the quay at Mekjarvik. A basis for the design work has been prepared by the Norwegian company, Multiconsult. In June 1998 the Norwegian civil engineering contractor, Selmer carried out a seabed rock profile survey at the Mekjarvik site.

### **Key dates so far**

1976 - Brent Spar installed in Brent field

1991 - Brent Spar ceases operations

July 1995 - Brent Spar moored in Erfjord/Shell seeks Best Practicable Environmental Option (BPEO) for decommissioning the Spar

August 1996 - 19 contractors submit decommissioning proposals

July 1997 - Shell appoints 6 contractors to refine their proposals

January 1998 - Wood-GMC awarded decommissioning project, subject to DTI approval



## 5.2.6. Brent Spar moves to a new location

10/08/1998

**The Brent Spar storage and loading buoy is on the move to a new location today (Monday, August 10) in preparation for dismantling work to begin depending on Shell uk receiving approval for its decommissioning plan from the UK Government.**

As announced in April, an assessment was carried out into three possible dismantling sites by Wood-GMC, the British/Norwegian consortium whose innovative re-use proposal was selected as Shell UK's preferred choice of solution for Brent Spar.

After reviewing the study and seeking approval from the Norwegian authorities, Shell uk was granted permission for the Spar to be moved to the site at Yrkjefjorden in Vindafjord/Tsvaer (known as Vats), located about 60km (37 miles) north east of Stavanger. Vats is a well-established deep water construction site with quay facilities, a large onshore work area, electrical power supply, a quicker road connection to Stavanger (90km/56 miles) and proximity to the town of Haugesund (50km/31 miles by road).

Over the course of the weekend, two of the Spar's four mooring lines were transferred from the current site at Erfjord and installed at Vats. The operation will continue today when the 14,500 tonne buoy will start its 24-hour tow to the new location.

Shell submitted the Wood-GMC proposal, to use cleaned slices of the Spar's hull to build a new quay extension at Mekjarvik near Stavanger, in a decommissioning plan to the uk Government in January. Shell hopes that the UK Government and Norwegian approval can be granted in time for dismantling work to start later this year.

## 5.2.7. Brent Spar report welcomed

30/06/1998

### **Shell UK Exploration and Production (Shell Expro) welcomes the report on its proposed Brent Spar solution published today by the Scientific Group on Decommissioning Offshore Structures under the aegis of the Natural Environment Research Council (NERC).**

Eric Faulds, Shell Expro Decommissioning Manager said: 'We believe the report is a constructive contribution to the wider decommissioning debate, and having set out to seek an alternative Best Practicable Environmental Option (BPEO), we're particularly pleased that the NERC Group say 'the exercise undertaken by Shell Expro probably represents one of the most comprehensive and thorough BPEO studies ever undertaken'. We're also pleased that they say our work accorded with the 'definitions, guidance and spirit' of the BPEO process'.

The UK Government asked the Scientific Group to compare deep sea disposal of the Brent Spar with the option Shell UK has submitted to the Government for approval, the Wood-GMC proposal to re-use cleaned slices of the Spar's hull to build a new ferry quay near Stavanger in Norway.

The Group say Shell Expro's Brent Spar Dialogue was 'a very creditable effort to implement wide consultation and open consideration of the options on an international scale', and that Shell undertook the BPEO evaluation and selection 'in accordance with the available definitions, guidance and the spirit of the process'.

The Group note that the environmental impacts of both the Wood-GMC proposal and deep sea disposal are small, and that the balance between the two options is not clear cut and may have to include other factors such as cost, technical considerations and public acceptability. The Group also notes that the Wood-GMC option fits more closely with the 'waste hierarchy', in which re-use is preferred to recycling, and recycling to disposal.

Eric Faulds said: 'We believe the Group's observations broadly accord with our own conclusions in choosing the Wood-GMC proposal. We and the Dialogue participants also found only small environmental differences between deep sea disposal and Wood-GMC, and the Dialogue participants were in widespread agreement that none of the proposals would cause significant environmental impacts.

'In comparing the relatively small environmental differences, the Dialogue participants felt the waste hierarchy was important. They also felt the solution should save more energy than it consumed, and these points gave Wood-GMC some environmental advantages. With both Wood-GMC and deep sea disposal emerging as sound on technical feasibility and safety, the other point of relatively small difference was cost, with Wood-GMC costing slightly more. The Dialogue participants debated whether the environmental gains with Wood-GMC were worth the additional cost of obtaining them. We listened to all these views, and in line with the official BPEO guidance that financial considerations should not be overriding, we concluded that Wood-GMC's re-use is the BPEO.

'We therefore believe that the Scientific Group's independent review broadly endorses our findings, and our Dialogue approach to seeking a wide range of views'.

Shell UK also welcomes the Scientific Group's observation that there are other threats to the marine environment more serious than those associated with decommissioning offshore structures, and that undue focus on offshore structures could divert attention and resources away from tackling them.

Eric Faulds said: 'We agree with the Scientific Group that while environmental impacts are amongst the most important criteria in decommissioning decisions, other aspects are also vitally important and must be balanced. We believe we have made this difficult balance carefully and openly in reaching a unique re-use choice for a unique structure.

'With the Scientific Group's review completed, we hope that in due course the UK Government will be in a position to grant approval for the Wood-GMC proposal in time for work on dismantling the Spar to proceed later this summer'.

## 5.2.8. Shell chooses Wood-GMC solution for Brent Spar

29/01/1998

**Shell UK has chosen the innovative re-use proposal from the British/Norwegian consortium Wood-GMC as its preferred solution for the Brent Spar storage and loading buoy. The proposal, to use cleaned slices of the Spar's hull to build a new quay extension at Mekjarvik near Stavanger in Norway, will be submitted by Shell in a decommissioning plan to the UK Government, the first step in seeking Government approval.**

Shell has concluded that Wood-GMC's re-use is the Best Practicable Environmental Option for the Brent Spar after making the required balance of technical, environmental, safety and cost considerations. The decision is based on detailed analyses of the Short List proposals both by Shell and by the independent Norwegian foundation DNV, and is informed by the views and values gathered during two years of Brent Spar Dialogue.

At a news conference in London today, **Heinz Rothermund, Managing Director, Shell U.K. Exploration and Production (Shell Expro)**, said: 'Our Way Forward launched in 1995 was to find a solution that on balance would be at least as good as, or better than, deep sea disposal; to work openly; and to gather a wide range of views and values to help inform our choice. We believe we have achieved what we set out to do.'

Mr Rothermund said Shell UK's choice had three important features:

First, this solution is not, and never can be, a precedent for other offshore structures. We have been explaining for 3 years that the Spar is unique, and it is. This is a 'one-off' solution for a 'one-off' structure. Second, Wood-GMC's proposal has emerged as the Best Practicable Environmental Option through the exacting individual analysis and careful balance which the UK Government requires for each offshore installation. The industry supports this 'case-by-case' approach, and we believe that our choice for the Spar demonstrates how robust it is. Our decision is based on what is technically sound, the risks to life and limb, and a realistic assessment of the costs - as well as on detailed environmental analysis.

Finally, it is a solution that was not available to us when we first considered decommissioning the Spar in 1991. It is based on a particular re-use opportunity that did not then exist, and with the Spar now in a sheltered Norwegian location it permits the use of cable-lifting barges especially suitable for the Spar, improving our technical confidence that it can be safely raised from the water. 'Our choice is not deep sea disposal, and it is not 'scrap onshore at any cost' as some have urged. It is a unique re-use solution for a unique structure.'

**Eric Faulds, Shell Expro Decommissioning Manager**, said: 'Much has changed since last time around. Not only is the Spar now a 'special case' about which many people have unusually deep-seated feelings, but on the key BPEO criteria, several aspects are also different. For example the Spar is starting from a different location, there are now specific re-use opportunities which we did not have before, and costs have changed. This elegant solution is not so much an end, as a new life for a hardworking North Sea workhorse. Brent Spar will now serve another community for perhaps a hundred years as a useful quay, saving money, energy and greenhouse gas emissions in construction.'

### Wood-GMC's plan

The Stavanger Port Authority is planning the quay extension at Mekjarvik with or without Brent Spar, to provide new Roll-On/Roll-Off ferry facilities from the summer of 1999. But using slices of the Spar's hull will save both money and energy that would otherwise have been spent in new steel construction.

Wood-GMC will raise the Spar vertically in the water by building a lifting cradle, placing it underneath the Spar, and connecting it by cables to jacks fixed on board special very heavy barges. Jacking the cables upwards will raise the Spar in its vertical position, so that its hull can be cut into 'rings' for transport by barge.

After careful cleaning, the rings will be placed in the sea beside the existing quay at Mekjarvik, filled

## 5.2.8. Shell chooses Wood-GMC solution for Brent Spar

with ballast, and the construction of the quay extension will be completed by a concrete slab on top. The Spar's topsides, its smaller living and operations module, will be removed and scrapped onshore at a Norwegian yard.

### Evaluation process

Shell worked with the BPEO definition established by the UK's Royal Commission on Environmental Pollution (see Notes), and guidance notes published by the Environment Agency of England and Wales. The process involves first establishing the technically acceptable options, then from these selecting the best from an environmental point of view. The safety aspects are assessed next, then costs. The Shell evaluation was informed throughout by feedback from the Dialogue.

**Technical:** From the Short List, the top options on technical feasibility are the proposals from Wood-GMC, Brown and Root, AMEC, and deep sea disposal.

**Environment:** The environmental analyses covered energy balance, emissions to air, resource consumption and waste disposal, containment, ecological effects, aesthetic impacts, local societal effects, and contractors' environmental management systems.

In the Dialogue, there was widespread agreement that there would be no significant environmental impact from any of the proposals, including deep sea disposal. However in comparing the small environmental differences, Dialogue participants suggested that two of the more important aspects were a positive energy balance, in which the solution saves more energy than it consumes; and the waste hierarchy, in which re-use is preferred to recycling, and recycling preferred to disposal, with the aim of minimising waste.

All the options have a positive energy balance except deep sea disposal. Of the best four technical options, Wood-GMC's has the best energy balance and is highest in the waste hierarchy, with re-use at more than 80%. Its other environmental 'positives' include the best all-round balance of emissions to air amongst the top four technical options. The Wood-GMC proposal is judged the all-round best on the environmental criteria.

**Safety:** Of the best four technical options, the work involved in AMEC's has higher safety risks. All the others have acceptable safety risks, comparable to those in normal offshore construction operations. Wood-GMC and deep sea disposal have the lowest potential for loss of life and risks of major accidents.

**Costs:** The costs to be considered must represent the full cost to Shell Expro. These therefore not only include the contractor's bid price (previously published) but also charges such as insurance, inspection and monitoring of the work, costs of the Shell management team and a normal project contingency allowance.

Wood-GMC's published bid price (£21.5 million) rises to a £23-£26 million total cost. Brown and Root's bid price (£48 million) is by far the highest, and rises to a £49-£52 million total cost. The cost of deep sea disposal remains the lowest, but its total cost rises to significantly more than the basic £4.7 million price for towing from Norway and sinking. (Some £5 million of engineering, testing and cleaning was done in 1995.)

Deep sea disposal is the only option which would require reference to OSPAR (see Notes), the Convention for the protection of the marine environment of the North East Atlantic which regulates sea disposal. The full cost of any new deep sea disposal plan must therefore take account of a new framework anticipated to be agreed by OSPAR in July this year for the disposal of floating installations. In calculating the total cost, Shell has allowed for a requirement to remove the Spar's topsides, and an extensive consultation period amongst OSPAR governments, incurring prolonged storage and maintenance in Norway. Shell also believes it prudent to cost for re-surveying the existing and potential new disposal sites to ensure full international acceptance. As a result, the total project cost of deep sea disposal rises to £17- £20 million.

## 5.2.8. Shell chooses Wood-GMC solution for Brent Spar

### The BPEO

The innovative Wood-GMC re-use option emerges from the BPEO evaluation as technically sound, with the best all-round environmental benefits, a good safety profile, and an estimated cost of £23-£26 million. The 'benchmark' option, deep sea disposal, emerges as technically sound, with fewer environmental benefits but no significant environmental impacts, a good safety profile and an estimated cost of £17-£20 million.

Shell has concluded that there is a high degree of equivalence between the Wood-GMC re-use option and the 'benchmark', deep sea disposal. Both are sound on technical feasibility and safety, and have small differences on environmental benefits and costs. In balancing these two aspects, Shell took note of Dialogue concerns about whether the value of the environmental gains with the re-use option were worth the additional cost of obtaining them.

However in line with the position of the Royal Commission on Environmental Pollution, namely that in determining the BPEO, 'financial considerations should not be overriding', Shell has concluded that the BPEO for Brent Spar is now the Wood-GMC proposal for the re-use of Spar in a quay development project.

### Next steps

The approval schedule now rests with the UK Government's Department of Trade and Industry. Shell anticipates that the Government will instruct the company to carry out formal consultations before the Government undertakes its final approval considerations. Shell hopes approval can be granted in time for work to start this summer.

### NOTES:

The DNV Technical Report, a detailed independent analysis of the Short List contractors' proposals and deep sea disposal, was published by Shell and DNV in October 1997. It is on DNV's Website [www.dnv.com](http://www.dnv.com), which is linked from the Shell Expro Brent Spar Website [www.shellxpro.brentspar.com](http://www.shellxpro.brentspar.com).

A Shell CD-ROM published in June 1997 details the Short List proposals with video, illustrations and text. Note that a KSSA proposal on the CD-ROM, for re-using parts of the Spar as mooring dolphins, was later withdrawn by the contractor.

The Brent Spar Dialogue seminars were facilitated for Shell by The Environment Council, an independent charity which helps different interest groups work together to find common ground. Final seminars were held in October 1997 in London, Copenhagen, Rotterdam and Hamburg. The Environment Council's report on feedback was published in November and is on its Website.

The BPEO is defined by the Royal Commission on Environmental Pollution as 'the option that provides the most benefit or least damage to the environment as a whole, at acceptable cost, in the long term as well as the short term'. It requires comparative assessment of technical feasibility, environmental impacts to atmosphere, land and water, risks to health and safety of the workforce, economics and public acceptability.

OSPAR is the Oslo and Paris Conventions governing all aspects of preventing marine pollution in the North East Atlantic region. It regulates disposal at sea, including offshore installations. A new framework for the disposal of offshore installations is expected to be agreed at a meeting planned for July 1998 of Ministers representing the OSPAR partners, who are 15 European states and the European Community.

The offshore oil industry supports regulatory decisions based upon the pursuit of sound science, reason, and the careful balancing of environmental, safety, health, technological and economic considerations. The industry notes that each facility to be decommissioned is different, and believes that no single

## 5.2.8. Shell chooses Wood-GMC solution for Brent Spar

answer will strike the right balance among complex factors in each situation. The industry welcomes dialogue and discussions with governments and society on decommissioning matters.

The Short List proposals in alphabetical order. Contractor's bid prices are not total project costs:

AMEC Civil Engineering: Take cleaned slices of hull from another contractor and re-use them to help build a coastal defence barrier against sea erosion in Norfolk, south east England. Contractor's bid price: £18.8m, estimated at £32.8m allowing £14m for another contractor to raise Spar and supply cleaned slices.

Brown and Root Energy Services: Up-end Spar at mooring in Norway using compressed gas, then tow across the North Sea to a yard at Nigg in Scotland for scrapping onshore. Contractor's bid price: £48.0m.

KSSA (Kvaerner Seaway Spar Alliance): Two lifting methods. After towing Spar to a yard in Norway, either raise vertically using compressed gas, or raise and rotate it to the horizontal, then either scrap onshore or re-use sections of the hull in a fish farm, with the topsides becoming a land-based training centre. Contractor's bid price: £17.6m vertical / £11.4m horizontal.

McAlpine Doris Able: Up-end using compressed gas, tow Spar to a dry dock in the north-east of England, and re-use much of the hull to build a quay wall at the dock itself. Contractor's bid price: £19.6m.

Thyssen-Aker: Partly raise using compressed air, tow to a yard in Norway, then raise up fully with jacked cables and scrap onshore. Contractor's bid price: £21.3m.

Wood-GMC: Raise vertically at present location using jacked cables, cut hull into 'rings' and re-use cleaned rings to extend quay at Mekjarvik near Stavanger, Norway. Scrap topsides onshore. Contractor's bid price: £21.5m.

Deep sea disposal: the original plan approved by UK Government in 1995. Adjusted for towing from Norway, not the Brent Field, to the original UK disposal site, and not including work carried out in 1995, the basic price is £4.7m. The total project cost however incurs significantly higher additional charges.

## 5.3 1997 Press Releases

### 1997 Brent Spar Press Releases

Brent Spar disposal solution closer today  
Brent Spar bidding on CD Rom  
Spar solution proposals submitted  
Brent Spar CD ROM wins business communications award  
Brent Spar Dialogue Seminar held in Copenhagen  
Deadline for disposal solution bids extended by one month  
Six leading international contractors find alternative solutions for the Brent Spar  
Response to the Environment Council report on the Brent Spar

## 5.3.1. Brent Spar disposal solution closer today

13/10/1997

**The choice of a disposal solution for the Brent Spar took a major step closer today with the publication of an independent assessment of the final list of proposed solutions, and the launch of a new pan-European round of Dialogue to gather wide-ranging views and values on each proposal.**

The six Brent Spar Short List contractors submitted their detailed proposals to Shell UK Exploration and Production in June, after Shell had paid each contractor about £250,000 for the detailed work over several months. At Shell Expro's request, the independent Norwegian foundation Det Norske Veritas (DNV) has assessed each proposal for technical risks, safety risks and environmental effects. DNV has ranked the proposals within each aspect, and verified the contractors' prices, now published for the first time. It was not DNV's task to balance the technical, safety, environmental and cost aspects against each other, and they have not made an overall ranking indicating a preferred solution.

The DNV findings will now be discussed in a final round of Dialogue, before Shell defines its preferred option to take to the UK Government.

At a news conference in London this morning, Heinz Rothermund, Managing Director, Shell UK Exploration and Production (Shell Expro) said: "We are now entering the 'home straight' - the last stages of the project we launched exactly two years ago this month to start all over again in finding a solution. With the publication today of DNV's independent findings, and of the prices the contractors are tendering, we have put into the public domain all the key facts and figures about the Spar. The contractors are proposing methods of lifting the Spar from the water, scrapping or re-using it. Our work over the last two years has been to find a solution that on balance is at least as good as, or better than, deep sea disposal, which is still the option currently approved by the UK Government. This remains the 'benchmark' for comparison before we make our choice of Best Practicable Environmental Option to take to the UK Government. DNV's work has therefore covered deepwater disposal along with the other proposals. All have been analysed even-handedly with exactly the same methodology, so that anyone can see clearly what the comparison involves."

Eric Faulds, Shell Expro Decommissioning Manager, thanked DNV for their careful and scrupulous work. He said:

"We truly appreciate having the benefit of DNV's expertise. It is an excellent analysis. Their work shows that no proposal is the 'best' in every category - technical risk, environment, safety and cost. All have their upsides and downsides. At this stage, there is no clear 'winner'. We are keeping our promise to be fully open by publishing all the key information. But we will not be jumping to hasty conclusions. DNV's work will be presented in the Dialogue, and we will listen carefully to the views and values of a wide range of representatives across Europe before we make our decision. We will be taking careful note of the proposals that DNV have found to have higher risks. But at this stage we have not ruled any options out. All are in the frame and we will gather Dialogue views on them all."

### Dialogue Seminars:

The new round of Dialogue seminars starts this week in London on Wednesday 15 October and in Copenhagen on Friday 17 October, continuing in Rotterdam on 22 October and Hamburg on 28 October. As before, the independent charity The Environment Council will run the seminars for Shell and publish full reports on participants' views.

After the Dialogue, Shell hopes to define its preferred solution and take its proposal to the UK Government around the end of 1997. Shell anticipates that the UK Government will instruct the company to carry out formal consultations before the Government calls for a final abandonment plan.



## 5.3.1. Brent Spar disposal solution closer today

### Technical Feasibility and Risks:

Eric Faulds said technical feasibility is the first hurdle that any proposal will have to cross. A key concern is the stress levels the Spar would have to withstand in some of the proposals. He said:

"It is very difficult to calculate how a complex structure like Brent Spar will behave under extreme loads. If things were to go wrong, the Spar could collapse or sink; vessels could be damaged, and people injured or killed. There could be some risks that Shell will not accept because of the threat they pose to human lives and the environment."

Mr. Faulds added:

"Another way of thinking about technical risk is; would you choose to fly in an aircraft with excellent engines but question marks about the strength of its wings, or in a plane with sound engines and sound wings? I think most people would choose the plane with sound wings."

### Safety, Environmental Impacts and Cost:

Mr. Faulds said safety, environmental impacts and cost will be balanced next, once technical feasibility has been established as acceptable. But the balance will not be clear-cut:

"For example, there is no simple answer to the question 'is concern about global warming more or less important than marine pollution?' There is no straightforward comparison between environmental impacts and safety of the workforce, nor is it simple to establish how much more money it might be worth paying for very small environmental differences amongst the proposals."

"Our decision will be dependent on value judgements. But this time, we will be making sure that our values are also informed by the values of a wide range of our stakeholders. That is what the Dialogue is all about."

### Prices:

The prices are as submitted by the contractors. Before being verified by DNV, they were reviewed by independent quantity surveyors to ensure that each price covered everything in the scope of work. The contractors are not allowing Shell to publish detailed breakdowns showing for example profits and overheads.

### Short List:

In June 1997 Shell announced that the Short List of six top contracting groups had submitted nine detailed proposals. These were published on CD-ROM and video. KSSA later withdrew one of its ideas, for re-using parts of the Spar in a quay development. The following, in alphabetical order, are the final proposals from the six groups, which DNV have studied along with deepwater disposal:

**AMEC Civil Engineering** would take cleaned 'slices' of the hull from another contractor and re-use them to help build a coastal defence barrier against sea erosion in Norfolk in the south east of England.

**Contractor's price: £18.8 million. Estimated at a total of £32.8 million, allowing £14 million for another contractor to raise Spar and supply cleaned 'slices'.**

**Brown and Root Energy Services** propose upending Spar at its mooring in Norway using compressed gas, then towing it across the North Sea to a yard at Nigg in Scotland for scrapping onshore.

**Contractor's price: £48.0 million.**

## 5.3.1. Brent Spar disposal solution closer today

**KSSA (Kvaerner Seaway Spar Alliance)**, formerly Kvaerner Stolt Seaway Alliance propose two lifting methods. After towing Spar to a yard in Norway they would either raise it vertically using compressed gas, or raise and rotate it to the horizontal, then either scrap it onshore or re-use sections of the hull in a fish farm, with the topsides becoming a land-based training centre.

**Contractor's price: £ £17.6 million vertical / £11.4 million horizontal.**

**McAlpine Doris Able** propose upending the Spar using compressed gas, towing it to a dry dock in the north-east of England, and re-using much of the hull to build a quay wall at the dock itself.

**Contractor's price: £19.6 million.**

Thyssen-Aker propose partly raising Spar using compressed air then towing it to a yard in Norway, where they would raise it up fully with jacked cables then scrap it onshore.

**Contractor's price: £21.3 million.**

**Wood-GMC** propose raising Spar vertically at its present location using jacked cables, then cutting the hull into 'rings' and re-using these to extend a quayside in Norway. The topsides would be scrapped onshore.

**Contractor's price: £21.5 million.**

**Deepwater disposal** is the original plan approved by the uk Government in 1995, adjusted for the Spar being towed from its mooring in Norway, not from the Brent Field, to a uk deepwater disposal site.

**Price: £4.7 million.**

## 5.3.2. Brent Spar bidding on CD Rom

17/06/1997

### **A new CDROM (and video) from Shell U.K. Exploration and Production (Shell Expro) shows how the six international construction groups bidding to dispose of the Brent Spar would carry out the nine proposals they have developed.**

The proposals, which will now be analysed and discussed over several months and compared to the currently approved option of deepwater disposal, are brought to life on the CDROM with new computer generated graphics and interactive maps, video sequences, photographs and text.

The easy-to-use road map format of the CDROM provides easy access to each of the contractors' proposals. The CD user follows an explanatory route from project planning and preparation to the decommissioning destination for the Spar, the process by which it would be re-used or recycled and its eventual end use. A VHS video providing an edited guide to the highlights of the CDROM has also been produced.

Speaking at a screening of the new CDROM and video this morning in London, Eric Faulds, Shell Expro's decommissioning manager, said: "We have found the CD-ROM to be a valuable medium for explaining the complex engineering challenge posed by Brent Spar decommissioning. The CD's interactivity and its detailed animation and video sequences make it much easier to understand and follow each stage of the disposal or re-use proposals put forward by the individual contractors."

The CDROM takes users on a step-by-step guide through proposals from:

**Brown & Root Energy Services** who propose using compressed gas to upend the 137 metre high structure at its present mooring at Erfjord in Norway, then towing it across the North Sea to the BARMAC dockyard at Nigg near Inverness in Scotland for complete dismantling and recycling.

**Wood-GMC** who aim to use a jacked cable lift system to raise the Spar vertically in the water and then cut the hull section into 'rings'. These would be used for an extension to an existing quayside at Merkjarvik in Norway. The Spar topsides would be dismantled and recycled.

**Kvrner Stolt Seaway Alliance (KSSA)** whose proposal is to tow Spar to their yard at Hanoytangen in Norway where it would be raised vertically using compressed gas and cut into sections. These would either be scrapped onshore or used in developments in Norway such as a mooring dolphin scheme at Karsto or a fish farm at Mongstad. KSSA also propose using the topsides as a training centre at Trondheim.

**Thyssen-Aker** who propose reducing the Spar's draught by 15 metres using compressed air, then towing it from its present location to a yard at Hinna in Norway where it would be raised vertically in the water using a jacked cable lift system and cut into sections for smelting.

**AMEC Process & Energy** propose using cleaned ring sections from the Spar hull - provided by one of the other contractors - in a coastal defence scheme being carried out by the Environment Agency off the north Norfolk coast. Hull sections would be filled with sand to stabilise them and then surrounded by rock armour, similar to that used in other artificial reefs already created under the scheme.

**McAlpine Doris Able JV** who plan to use the dedicated drydock at Teesside Environmental Recycling and Reclamation Centre (TERRC) in north east England. Once upended in Erfjord using the compressed gas method, Spar would be towed to TERRC for dismantling with much of the main hull sections being used in the construction of a new quay wall in the drydock.

Over the next three months Shell will carry out a painstaking assessment of the viability and the risks associated with each of the proposals. They will similarly be reviewed by Det Norske Veritas (DNV), the international certification, classification and advisory authority, to ensure they can be compared on a 'like for like' basis. Following Dialogue events, Shell will then present a proposal to the Department of Trade and Industry on the preferred way forward.

## 5.3.2. Brent Spar bidding on CD Rom

This is the third in a series of Brent Spar CDROMs to be produced by Shell Expro. The second CD won a Certificate of Merit in the UK Communicators in Business Awards for 1997. It was described by the judges as: "a very good way of delivering a complex, technical data set to a not necessarily technical audience."

### 5.3.3. Spar solution proposals submitted

03/06/1997

**All six leading international contractors and consortia on the Brent Spar Short List have now submitted detailed proposals for the alternative solutions they have developed for disposal of the giant oil storage and loading buoy owned by Shell U.K. Exploration and Production (Shell Expro).**

By yesterday's deadline (June 2) detailed bids covering nine of the original 11 Short List ideas had been delivered to Shell Expro. One proposal to use parts of the Spar hull as a dock gate and one of the two proposals to use the buoy's topsides as an onshore training centre have been dropped by the contractor groups concerned.

Eric Faulds, Shell Expro's Decommissioning Manager, said:

"Now we've received the nine detailed bids, we can start the long process of comparing them with each other and with the benchmark option of deep sea disposal. As announced previously, we have asked Det Norske Veritas (DNV) the international certification, classification and advisory body to review all the proposals to ensure they can be compared on a 'like for like' basis. We therefore won't be announcing any contractors' cost estimates or their calculations on safety or environmental impacts until DNV have ensured that these have been provided on a similar basis and are therefore truly comparable."

Full details of the proposals, including costs, will be published after DNV have carried out their study, in about three months' time. There will then be further Dialogue events before Shell makes a recommendation to the Department of Trade and Industry on the preferred way forward.

To help explain the nine Short List proposals in more detail a new Brent Spar CDROM is to be published on June 17. The third in the Spar CDROM series, it will use video and animation sequences with a high degree of interactivity to show graphically how the contractors have developed their ideas and how they propose to carry them out.

CDROMs have proved a valuable medium for explaining Brent Spar decommissioning. The last Spar CD, which contains information about the buoy itself and Shell Expro's Way Forward to identify alternative disposal solutions, won a Certificate of Merit in the Communicators in Business Awards for 1997. It was described by the judges as: "a very good way of delivering a complex, technical data set to a not necessarily-technical audience."

#### Dialogue Seminar

Meanwhile, the third Brent Spar Dialogue Seminar was held on Friday May 30 in Rotterdam. It followed similar events in London in November last year and Copenhagen in March - as well as Shell Expro's participation in the British Pavilion at the Hanover Fair in Germany in April. The Rotterdam seminar was facilitated by The Environment Council, who organised the previous events on Shell's behalf. It was attended by 24 representatives from environmental groups, the media, government departments and academia, invited by Shell UK's sister company Shell Nederland B.V.

Using display material, presentations and discussion groups, Dutch Dialogue participants considered the Short List proposals for raising Spar out of the water and those for dealing with it ashore. They also discussed the criteria for evaluating the proposals.

Eric Faulds said:

"We were very pleased with the support and reaction of all those who made time to take part. There was a lot of lively debate and interesting views and observations came to the fore, not only on specific Spar issues but on the importance people place in being involved in the process. Once again, feedback from the day will be very useful in informing the next stage."

### 5.3.3. Spar solution proposals submitted

Tim van Kooten, Issues Manager, Shell Nederland said:

"I think everyone found the workshop participative, genuine and open. While some views are still based on emotion it was an interesting exercise in dilemma sharing and searching for validation of the dilemma. It's clear Brent Spar is a complex and challenging project."

Ferd Crone, Member of the Dutch Parliament said:

"I think that it's very good that Shell has taken the initiative to organise this open workshop so that the issues surrounding Brent Spar can be discussed in an open manner. After all, this is what was missing in 1995."

Gerard Peet, Friends of Earth International said:

"Having attended the first Dialogue seminar in London, I'm very pleased to see a similar event being held in Rotterdam because I think it's vital that views are gathered from countries other than the UK."

As with previous Dialogue events, The Environment Council will produce a full report of the Rotterdam seminar including all the participants' comments and feedback as well as a short summary.

#### **Notes:**

Kvrner Stolt Seaway Alliance (KSSA) have dropped their proposal to convert the Spar hull into a floating dry dock gate. Wood-GMC have dropped their proposal to use the Spar topsides as a training centre, although a similar topsides training centre proposal from KSSA has been developed and submitted.

The Environment Council is an independent charity which helps different interest groups work together to find common ground. Its individual members and supporters include public and private sector organisations, environmental groups and academics. Although individual members might hold differing opinions on a potential solution to a problem, the Council itself does not take a position.

## 5.3.4. Brent Spar CD ROM wins business communications award

19/05/1997

**A CDROM produced by Shell U.K. Exploration and Production (Shell Expro) to help explain the Brent Spar decommissioning project has been awarded a Certificate of Merit in the Communicators in Business Awards for 1997.**

Run by the British Association of Communicators in Business, the awards scheme is now in its 43rd year and is recognised as the largest competitive scheme of its type in Europe - this year producing a near-record 1253 entries.

Described by the judges as "a serious and well executed piece of work demonstrating a professional understanding of the medium", the Brent Spar CD-ROM contains detailed information about the storage and loading buoy and Shell Expro's new Way Forward to identify alternative disposal solutions. Information is presented as text, graphics, interactive maps and video sequences.

Eric Faulds, Shell Expro's decommissioning manager, said: "We are very pleased that such an important part of our communications on Brent Spar should be recognised in this way. We had to meet the challenge of trying to deliver a complex, very technical set of messages to a not necessarily technical audience. The CD-ROM with its high degree of interactivity, graphics, video sequences and animation proved an ideal medium.

"We have already issued over a thousand copies of the CD to people on our contact list, journalists and others. It's an integral part of a communications initiative which includes our dedicated Brent Spar Website, dialogue seminars in the UK and Europe, media briefings, speeches, articles and helping students and academics with case studies. We believe all this is helping to spread wider understanding of the complex issues surrounding the Brent Spar and decommissioning in general."

Shell Expro is likely to use the CD-ROM medium again later this year to provide more information about contractors' proposals for disposing of Brent Spar.

## 5.3.5. Brent Spar Dialogue Seminar held in Copenhagen

22/04/1997

**A Brent Spar Dialogue Seminar has been held in Copenhagen, Denmark, facilitated for Shell by The Environment Council, the independent charity which facilitated the Brent Spar Dialogue Seminar in London last November. The Environment Council's full report of the Copenhagen seminar has now been compiled; it includes all the participants' comments and feedback and a short summary.**

Feedback from the London seminar helped Shell U.K. Exploration and Production (Shell Expro) in its selection of the Short List of six contractors and 11 proposals announced earlier this year.

The Copenhagen event, held on 11 March, was the first Brent Spar Dialogue Seminar to be held outside the UK. Dansk Shell, Shell UK's sister company in Denmark, invited more than 60 participants to the interactive workshop including representatives from environmental groups, the media, Government departments and academia.

Using display material, presentations and discussion groups, the Danish Dialogue participants considered the outline Short List proposals for raising Spar out of the water and those for dealing with it ashore. They also discussed in detail the criteria for evaluating the proposals when they have been further developed, and how to prioritise them.

The event was welcomed by all the participants and prompted considerable media coverage and wider debate of the Brent Spar issues on Danish radio and TV.

After the seminar Eric Faulds, Brent Spar Decommissioning Manager, said:

"We were delighted by the support and reaction of the participants who gave up their time to take part. There was much lively debate and some interesting views and observations, not only on the Spar issues but on the process and principles beyond. I have no doubt that feedback from the day will be very useful in informing the next stage."

Margrethe Skov, Public Affairs Manager, Dansk Shell said:

"Shell Expro's efforts to actively engage in dialogue with interested parties have been warmly received in Denmark where the Brent Spar is still a topic of great interest. I look forward to more events of this kind until an acceptable solution is found."

As the Brent Spar Way Forward progresses, Shell plans to hold further seminars in other European countries, as well as in the UK. The Short List contractors have until Monday, 2 June to submit their detailed proposals.

Key feedback points from the Copenhagen Seminar and Shell Expro response:

**Feedback:** Participants accepted that safety, cost, and the environment were all key considerations in the search for a Spar solution, and recognised the difficulty of reaching a balance. However, they expressed particular concern for any potential environmental impacts - especially on water or the marine environment. Many also felt that the long-term impacts of any given solution had to be given the same level of consideration as the immediate impacts.

**Shell response:** Shell will address all these aspects as part of the technical development. Shell has also contracted Det Norske Veritas (DNV), the international certification, classification and advisory body to carry out an assessment of each detailed proposal on the Short List. DNV will ensure that the environmental and safety aspects of each proposal are compared on a 'like for like' basis.



### 5.3.5. Brent Spar Dialogue Seminar held in Copenhagen

**Feedback:** There was clear recognition amongst the participants that the ultimate solution for the Spar needed to be not only technically feasible but also broadly acceptable to the public.

**Shell response:** Shell will continue to deepen understanding of the framework within which we are legally obliged to work, to canvass views and openly explore concerns alongside the technical development, and to extend the Dialogue in continental northern Europe.

**Feedback:** The participants' diverse backgrounds and varying levels of knowledge about the Spar meant that some found the information at the seminar too technical, but others would have liked even more technical detail. Some also felt more emphasis should have been given to the 'softer' issues such as communications.

**Shell response:** Shell and The Environment Council will carefully analyse the feedback to help ensure that future Dialogue events are made as accessible as possible to as wide a range of participants as possible.

## 5.3.6. Deadline for disposal solution bids extended by one month

09/04/1997

**Shell UK Exploration and Production (Shell Expro) has extended by a month the deadline for the delivery of bids from the six leading international contractors and consortia competing to develop alternative solutions for the disposal of Brent Spar. The Brent Spar Short-List contractors had been aiming to meet a delivery date of April 30, but this has now been deferred to Monday, June 2.**

Eric Faulds, Decommissioning Manager, Shell Expro said: "A number of contractors have indicated they would appreciate more time to prepare quality tender proposals. We have always said that we are more interested in doing this right rather than quickly, so we are happy to extend the deadline".

All six ShortList contracting groups have been advised of the extended deadline.

## 5.3.7. Six leading international contractors find alternative solutions for the Brent Spar

13 January 1997

**The six contracting groups - from the UK, France, Germany, The Netherlands, and Norway - now form the Brent Spar Short List. They will be asked to develop in detail 11 different ideas for re-using the Spar's component parts or scrapping it onshore, and submit commercial bids to carry out their schemes.**

As part of their submissions, five of the six groups will also be asked to develop in detail their ideas for raising Spar from the water, which poses an enormous engineering challenge and is crucial to any alternative disposal or re-use. Shell believes that six groups working on a variety of ideas will enable maximum scope for innovation, good competition, and a wide range of schemes from which to choose an eventual solution. The Short List of six contractor groups and 11 proposals has been chosen from the Long List of 19 groups who offered 30 outline proposals to Shell last July. They now have some four months to complete their studies before making commercial bids at the end of April. The more detailed and costed schemes will then be widely discussed in the continuing Brent Spar Dialogue. They will be carefully analysed and compared with each other and with the existing best Practicable Environmental Option, deepwater disposal, on the BPEO criteria - safety and risks to human life, technical feasibility, economics, and environmental impacts - before Shell UK proposes a Spar solution to the UK Government. The Government has said that any new solution must match or better deep sea disposal on a balance of the BPEO criteria.

At a media briefing in London today, Heinz Rothermund, Managing Director, Shell Expro, said:

"Identifying the Short List is an important milestone in the new Way Forward for decommissioning the Brent Spar, and I am delighted that our selection of the Short List has been helped by the excellent feedback we received at our Dialogue Seminar in November. We are committed to openness and communication on this complex subject and we are very pleased that we have found a process which enables others to help us."

Eric Faulds, Decommissioning Manager, Shell Expro said:

The proposals now to be developed represent the best of those we were offered, while also maintaining a good range of potential solutions. In particular, the re-use ideas chosen for further work are those where a real potential customer has been identified.

This is an exciting competition, and still wide open. We genuinely do not know what the eventual solution will be. All the proposals have advantages and disadvantages, and the eventual outcome could be a combination of different schemes. All the ideas require the Spar to be first raised from the water. Overcoming its structural limitations to do this, without serious risks, poses an enormous engineering challenge. But we believe these six world-class contractor groups can do some ground-breaking work.

### How the Short List was Reached

The Long List outline proposals and the criteria for choosing the Short List were presented and discussed at the Brent Spar Dialogue Seminar in November, and participants representing a broad range of interests provided valuable feedback.

The Short List was chosen by evaluating the Long List proposals on the attached criteria (see Assessment Criteria for Short List Contractor Selection, attached). These consist largely of three of the four stipulated BPEO criteria, so that the ideas were assessed on their potential for the lowest safety, environmental, and technical risks. Cost was not specifically addressed at this stage because the outline Long List proposals could not include detailed cost estimates. However the BPEO criterion of cost will be fully weighed with the other aspects at the next stage of the Way Forward when the schemes are detailed and costed. A key aspect of selecting the Short List was that the proposals should cover a wide range of potential solutions, to ensure that the eventual recommendation represents the best possible balance of the BPEO criteria.

Participants at the Dialogue Seminar generally endorsed using the BPEO criteria to choose the Short

## 5.3.7. Six leading international contractors find alternative solutions for the Brent Spar

List, but suggested that the detailed questions Shell proposed to ask about technical feasibility could imply that this was being given more weight than the other criteria. Shell therefore balanced evenly the detailed questions to be asked in each category.

Participants at the Dialogue Seminar also gave general views on the Long List proposals. Re-use ideas were generally seen as creative, but some were questioned on feasibility and whether there was a real need for them. There was a clear lack of support for both the power generation proposal and the proposal for excavating a trench in the sea bed and burying the Spar.

The Long List proposals were considered in two distinct parts: methods for raising the Spar from the water, which is crucial to the pursuit of any further ideas, and proposals for dealing with it afterwards. The best solution could eventually be a combination of different contractors' proposals.

### Short List Contractor Groups and Their Proposals

Brown & Root Energy Services - UK

Raising from water: - Raise and rotate with compressed gas

After raising from water: - Scrap onshore

Kvaerner Stolt Seaway Alliance (KSSA) - Norway/Netherlands

Raising from water:

- \* Raise and rotate with compressed gas

- \* Raise vertically with compressed gas

After raising from water:

- \* Scrap onshore

- \* Topsides as training centre

- \* Hull as dock gate

- \* Hull sections as fish farm

- \* Hull as quay extension

McAlpine Doris JV - UK/France

Raising from water: - Raise and rotate with compressed gas

After raising from water: - Hull as quay extension

Thyssen Stahlunion GMBH/Aker NC - Germany/Norway

Raising from water: - Raise vertically with jacked cable lift

After raising from water: - scrap onshore

Wood-GMC - UK/Norway

Raising from water: - Raise vertically with jacked cable lift

After raising from water: - Topsides as training centre - Hull as quay extension

AMEC Process & Energy - UK

Raising from Water - N/A

After raising from Water: - Hull sections as coastal protection

## 5.3.7. Six leading international contractors find alternative solutions for the Brent Spar

### Raising SPAR from the Water

Nearly all the Long List proposals suggested compressed gas, jacked cable lift, or lifting with heavy cranes. Key questions about these at the Dialogue Seminar include risks to the workforce and the environment, technical complexity and energy use.

**Compressed gas:** This proposes raising the Spar vertically by replacing the water in the tanks with compressed gas, to prevent the hull collapsing from outside sea pressure as water levels in the tanks fall, then either rotating Spar to the horizontal to tow ashore, or raising it vertically to be cut into sections to take ashore for scrapping or re-use.

**Issues:** The technique needs careful study to ensure that the Spar would not collapse. But it could be remotely controlled, reducing safety risks to the workforce, and energy consumption should be low.

**Jacked cable lift:** This proposes building a lifting cradle, placing it underneath the Spar, and connecting it by cables to jacks which would be on barges moored alongside. Jacking the cables upwards would raise the Spar vertically to be removed in sections.

**Issues:** Keeping the Spar in its vertical position would reduce the stresses on the hull from outside sea pressure which could cause collapse. But there could be more exposure of the workforce to safety risks, and possible risks to the local fjord or shallow sea environment. This is a low energy lifting technique, but the lifting cradles would need several thousand tonnes of new steel construction, creating additional waste.

The following Long List ideas will not be studied further:

**Heavy lift crane:** Using a very powerful heavy lift crane barge to raise the Spar vertically, either for slicing into 'rings', or rotating to the horizontal to tow ashore. This would also need lifting cradles to be built. **Issues:** The large amount of diesel fuel used would mean very high energy consumption. Along with building lifting cradles, the energy consumed could be more than the energy gained by recycling. This method compared less favourably with compressed gas and jacked cable lift.

**Oil or ice:** One contractor proposed raising the Spar by replacing the water in the tanks with rape seed or fish oil, or with aerated ice.

**Issues:** There could be technical feasibility problems in removing the fish oil without over-stressing the structure, and disposing of 40,000 tonnes of contaminated fish oil is not in line with minimising waste. The novel ice technique was not based on proven technology and also raised issues about maintaining the Spar's structural integrity.

### After Raising from the Water

**Quay/harbour extensions using hull sections:** The Short List proposals all relate to real quay development schemes already being planned or studied, whether or not it proves possible to use the Spar. They offer potential environmental and safety benefits to compare with onshore scrapping. KSSA and Wood-GMC propose quay developments in Norway. McAlpine Doris identified two possible locations in the UK.

**Onshore scrapping:** The most significant differences amongst the Long List proposals were the contractors' suggestions for first raising Spar from the water, and the proposed scrapping methods and location. Brown & Root, KSSA and Thyssen-Aker's proposals were judged the best on the selection criteria. Brown & Root proposes scrapping the Spar at Nigg in the UK; KSSA at its Hanøytangen yard in Norway; and Thyssen-Aker at the Aker yard at Hinna near Stavanger in Norway.

**Dock gate:** KSSA submitted a late proposal to convert the Spar hull to a floating dry dock gate. Shell has not had the opportunity to examine the proposal in detail but believes it merits further study. As KSSA is Short Listed to develop its onshore scrapping proposal, it will also be asked to develop its dock gate idea.

## 5.3.7. Six leading international contractors find alternative solutions for the Brent Spar

**Fish farm:** KSSA also submitted a late proposal to use sections of the Spar hull for a fish farm development. As with the dock gate idea and subject to further clarification, Shell will invite KSSA to study this idea.

**Coastal protection:** AMEC proposes using Spar sections in a coastal defence scheme being carried out by the Environment Agency off the east coast of England. The coastal defences are currently being built with rock from Norway. Placing the rock is potentially hazardous and three lives have been lost in the work. It is proposed that Spar hull sections could form a core to help make construction safer. The scheme therefore has potential to generate significant safety and environmental benefits.

**Topsides as a training centre:** KSSA and Wood-GMC also identified potential clients with an interest in using the Spar topsides for offshore training facilities in Norway. The following Long List ideas will not be studied further:

**Fish ranch:** KSSA proposed using the hull as a reef where young fish would be fed on waste fish products to increase fish stocks. The idea attracted local community support, but its business viability was not clear. There were also question-marks about the feasibility of raising species such as cod in this way.

**Oil storage tanks:** A proposal from Hollandsche Staalbuow Maatschappij BV (HSM), to use hull 'ring' slices as oil storage tanks, was technically less attractive than the accepted proposals, but most importantly no customer was identified for the tank farm.

**Modify Spar for re-use as an offshore platform:** RAMBøll/Monberg & Thorsen A/S Consortium proposed cutting off the lower part of the hull and converting the upper part of Spar to a gravity-base production or accommodation platform. The engineering complexity would be considerable and no customer was identified.

**Wind and wave electricity generation:** The Hollandia /Volker Stevin Offshore Consortium proposed placing three large windmill generators on the Spar and hooking it to wave power generating buoys, to provide up to 1.5 megawatts of electricity. The technical feasibility was questionable, but the main concern was that the scheme offered little evidence of long term business viability. The estimated cost of converting the Spar was around \$30 million, with eventual decommissioning still to be considered.

**Excavate and bury Spar in seabed:** Jan De Nul NV proposed excavating an area of the seabed and burying the Spar in the dredged hole. The proposal was technically difficult and very inefficient in energy consumption.

**Desalination plant:** Thyssen-Aker proposed using the Spar as a desalination plant off Norway. There were question-marks on technical feasibility, and neither a suitable location nor customer was identified.

**Tourist Centre:** AMEC proposed converting the topsides to a tourist centre at a coastal location. There were written objections, question-marks over business viability, no identified commercial operator for the centre and the likelihood of a lengthy process for planning permission.

### Next Steps

After the contractors' detailed studies are received at the end of April, Shell intends to ask independent specialists to review and comment on them. A key part of this review will be to ensure that all the detailed proposals are compared on a 'like for like' basis. It is anticipated that this process will take about three months, after which Shell will prepare a recommendation to the DTI on the preferred way forward. It is likely the DTI will then require Shell to undertake formal consultation with interested parties.

## 5.3.8. Response to the Environment Council report on the Brent Spar

09/01/1997

**The day provided an excellent opportunity for Shell Expro to listen to a wide range of views and opinions before moving forward in the next stage in the Spar solution development phase, namely the selection of a short list of options for further study.**

One of the first objectives of the day was to give the participants an appreciation of the Spar itself and the process we are following to reach the Best Practicable Environmental Option (BPEO). In particular to identify some of the engineering problems facing the contractors as they develop new solutions to challenge the existing BPEO of deep sea disposal.

Another important objective was to provide an opportunity for discussion and feedback from the participants on the issues raised by the potential options and the basis for selecting a short-list of about 6 for further development from the 30 outline proposals.

As you will see from the seminar report, the volume of feedback was substantial. Too much to respond to on a line by line basis. We will therefore restrict our initial comment to the main themes identified by The Environment Council.

With such a wide range of interests represented it is perhaps not surprising that there is a wide range of opinions. Whilst there were clear themes and issues, it reinforces the difficulties we will face in balancing the factors whilst accounting for all the views expressed.

Many of the comments related to issues and concerns which will be addressed as the technical development progresses, when we will be able to identify the actual levels of risk; the particular environmental impacts and comparative costs of each solution to feed into the BPEO evaluation. But there are some general observations of the feedback which can be made at this stage.

It appears from the evaluation results that we were reasonably successful in giving the participants a better understanding of the technical issues involved. It was apparent from the discussion, however, that there is not a clear understanding or acceptance of the BPEO process, particularly on the continent. There was however an apparent acceptance that environment, safety and cost were all key elements to be considered when making a final decision, and we noted that the participants generally recognised the difficulty in reaching a balance between these potentially conflicting issues.

There was also a recurring reference to ethics and values during discussions and we feel that Shell's business principles as well as the statutory process, need further explanation

Shell operates within a comprehensive framework of corporate principles, reflecting the expectations and aspirations of the company, its employees and society in general in the way we conduct our business. These are fundamental "givens" to the individuals working on the team who are making the decisions.

For instance, we must work within the legislative system of the country we operate in; we must protect human life and guard against injury for all involved in or affected by our operations; we must seek to protect the environment and minimise pollution in the way we plan and conduct all our operations. All principles which many people would associate with , but we are aware that disagreements and tensions can arise as to how they can best be achieved. Some participants expressed their strong commitment against marine disposal for instance, whereas others were equally adamant that it is an acceptable method recognising the safety benefits. Shell is committed to carry out the judgements that inevitably have to be made in an open manner. We will look to the dialogue process to assist in exploring ways to achieve this.

It is also worth re-emphasising the regulatory process as set out by the UK Department of Trade and

## 5.3.8. Response to the Environment Council report on the Brent Spar

Industry, which requires us to look at as many feasible, legally acceptable decommissioning solutions as practically possible. The suggestion that Shell should perhaps exclude options on anything other than technical grounds is not a route that is open to us even should we wish to do so. We, in fact, agree with the Government's requirements that the options selection should be based firmly on sound science.

We also highlighted on 1 November the fact that the process as set out by the government does not allow Shell to determine a "public acceptability" element for BPEO, but that this is only considered by Government in their approval of the scheme. We would encourage the Government to seek wide coverage and provide opportunities for full comment on the proposed solution. We will certainly pass on the relevant issues raised during the Brent Spar dialogue process. To restate the Government position, as recently confirmed in a House of Lords debate, where the Deputy Minister, Baroness Miller of Hendon, said

"Public acceptability is not part of BPEO, but it is not ignored. Ministers must take a view on the public acceptability of any particular decommissioning programme. The final decision takes account of all the relevant factors and is taken in a transparent manner."

Looking briefly at some other specific concerns raised, all solutions require some work to be undertaken in a fjord environment in either Norway, Scotland or Canada. Attention to protecting and minimising risk to these environments will be very important, along with protecting and minimising risk to personnel.

There are also likely to be substantial differences in energy consumption between different solutions and we intend to take this into account in the final selection process. In the same way we will consider the benefits of onshore scrapping against the efforts and risks involved.

Several participants stressed that we should take the waste management hierarchy into account. That is reuse is preferred to recycling, which in turn is preferred to disposal, however, it was interesting to note that there were few supporters of the re-use solutions for Spar. The general view being it would simply put off the inevitable decommissioning. Shell Expro's view is that re-use options, either full or partial, are indeed preferable to recycling or disposal provided certain criteria are met. Such as there must be a real need, environmental and community impact must be properly assessed, future liabilities must be clearly defined and the new owner must be clearly capable of meeting these liabilities. We have actively pursued a number of re-use interests ever since Spar ceased service in 1991 but none have proven viable, primarily on technical grounds.

The general consensus that offshore burial offered no advantages over deep sea disposal is noted.

On the subject of shortlist selection criteria, we accept that as presented it appeared that we were giving greater importance to "technical feasibility" in comparison to "environment" or "safety". We have modified our selection criteria so that each category contains the same number of assessment items.

There were a number of participants who felt that societal issues such as job creation should be included in the criteria. We have added an item to our assessment criteria to take account of effects on society depending on where the work would be carried out. For example, work carried out in an existing industrial area would be preferable to work carried out in a remote area with no labour or transport infrastructure but we feel it is not appropriate for considerations such as job creation to be taken into account at this stage by Shell.

The view that all costs must be taken into account is certainly one of the criteria for the final selection process. Currently the proposals are conceptual outlines and it would not prove possible at this stage to estimate costs with sufficient reliability to compare proposals.

Moving on to the plenary discussions of the way forward, it was clearly felt that regulators should be present at any future seminars, with their role restricted to observer status if necessary. This would enable the regulator to directly hear the views expressed by a wide range of individuals and organisations. We have asked the DTI to review their position and they have indicated that they will consider their attendance at future seminars.

As you can appreciate, many points will not be developed or criteria evaluated against each other until



## 5.3.8. Response to the Environment Council report on the Brent Spar

much further into the design stages of the individual solutions, but if you feel that your specific concern or comment has not been covered or interpreted correctly in the report, particularly if it should be addressed in the short term, please let us know.

Remember, the dialogue process goes on and it is our intention to keep people informed and engage in further debate and discussion as the solutions mature, so there will be more opportunities to tell us what you think.

E. C. Faulds

Decommissioning Manager

Shell uk Exploration & Production

## 5.4 1996 Press Releases

### 1996 Brent Spar Press Releases

Brent Spar Dialogue seminar report published

The first Brent Spar Dialogue Seminar

Brent Spar Dialogue seminar to be held

Publication of the report of the Scientific Group on Decommissioning Offshore Structures

Contractors bid for Best Practicable Environmental Option for Brent Spar

Shell welcomes contribution to the wider decommissioning debate

The environment is not a simple issue with clear rights and wrongs

Shell discusses the unprecedented challenges and opportunities presented by Brent Spar

Chris Fay meets Peter Melchett

## 5.4.1. Brent Spar Dialogue Seminar report published

12/12/1996

**The report on the Brent Spar Dialogue seminar in London on November 1 has been published by The Environment Council, the independent charity which facilitated the event for Shell U.K. Exploration and Production (Shell Expro). The report compiles all the seminar comments and feedback, reflecting wide and varied views, and includes a short summary. Shell is responding to all the main points of feedback.**

The Seminar was an interactive workshop for representatives of UK and continental European organisations to help Shell work towards its eventual recommendation to the UK Government on a Brent Spar solution.

The Environment Council invited over 70 organisations including universities, voluntary, professional and industry bodies, and consumer and environment groups. With presentations, display and reading material, work stations and discussion groups, the participants considered the current outline proposals for the Spar, issues and views surrounding them, the regulatory framework for decommissioning, and how the Spar Dialogue might develop.

Welcoming participants, Shell Expro Managing Director, Heinz Rothermund said:

"Brent Spar is Shell's problem and we take responsibility for it. However, we wish to ensure that when we make decisions these take account of a wide range of opinion."

After the seminar, Shell Expro Decommissioning Manager, Eric Faulds, said:

"We are very grateful to everyone for giving their time and energy. This was an excellent chance to listen. We asked if we were on the right track in taking many views into account, and there was general support that we were. There was considerable support that our immediate next stage now needs to focus on developing the technical options, with exploring of public views and values when the options are more fully developed".

### **Key points of feedback (see Environment Council report) and Shell response:**

**Feedback:** Participants raise many issues, and recognised tensions amongst different types of environmental impacts, health and safety risks, costs and societal values. Participants appeared to accept that environment, safety and cost were all key elements, and recognised the difficulty of reaching a balance. The Report shows clearly that Shell must rationalise concerns about sea, land and air pollution, then compare and weigh them against safety risks, cost and societal values.

**Shell response:** Shell accepts that many of these issues cannot be properly addressed until proposals for the Spar have been developed further to identify actual levels of risk, environmental impacts, technical feasibility and comparative costs. To enable the Dialogue to progress as fully as possible, Shell believes it is now important to finalise the choice of the Short List contractors, so that proposals can be developed in detail. The Short List is likely to be announced early in the New Year.

**Feedback:** Many participants felt that as presented, Shell appeared to be giving more importance to "technical Feasibility" compared to "environment" or "health and safety". There was a need to make sure that these had the same balance of criteria.

**Shell response:** Shell has now changed the criteria to make it clear that each category - technical feasibility, health and safety, and environment - has the same number of assessment items.

## 5.4.1. Brent Spar Dialogue Seminar report published

**Feedback:** Participants wanted to see more continental European involvement, and to reach as broad a cross-section of the public as possible.

**Shell response:** Participants' evaluations showed they now had a better understanding of the technical issues. But the discussions indicated that there is not a clear understanding or acceptance of the Best Practicable Environmental Option (BPEO) process, particularly in continental Europe. Shell will seek to continue deepening understanding of the framework within which we are legally obliged to work, and to extend the Dialogue in continental Europe.

**Feedback:** Participants frequently raised questions of how to include ethics and values in finding a solution.

**Shell response:** Shell will actively seek to explore a wide range of values, including explaining the company's own comprehensive framework of corporate principles.

**Feedback:** A number of participants welcomed the fact that the benchmark BPEO of deepsea disposal is still to be compared with alternative proposals. Principal concerns related to public acceptability and societal values associated with deepsea disposal. Some were strongly against marine disposal, while others were equally adamant that it is acceptable, recognising the safety benefits.

**Shell response:** Shell is committed to openly making the judgements which will have to be made, with more Dialogue to explore how best to achieve this.

### Feedback (Long List outline alternative proposals):

There was little controversy about the outline proposals for raising Spar from the water, since it was clear that this would have to be done before any alternative re-use or disposal could take place. Principal concerns were about safety of the workforce, spillages, and energy consumption.

Proposals for re-using the whole structure of the Spar attracted some positive comments, but the majority were concerned that this simply postponed the need for final disposal. However, this conflicted with the view of several participants that decisions should take account of the "waste management hierarchy", which widely advocates that re-use is preferable to recycling, which in turn is preferable to disposal.

Proposals for re-using parts of the Spar - the hull or topsides - were seen as 'very creative' and sending positive messages about the waste management hierarchy. But there were concerns about the existence of real markets for such ideas, their economic viability, local acceptability and local environmental impact.

The only outline proposal which participants almost unanimously regarded as unattractive was excavating a trench on the seabed and burying the Spar in the excavated hole.

Numerous positive comments were made about onshore scrapping, but equally as many concerns were expressed over energy use, disposal of hazardous material, costs, and dangers to the workforce.

**Shell response:** Shell believes that the waste management hierarchy can provide a good framework for decisions, and that the best means of addressing these varied concerns is now through detailed development of specific options, accompanied by further widespread Dialogue.

Eric Faulds said:

"The Dialogue Seminar has shown us that developing proposals in more detail is a vital next step. The feedback will also be valuable in helping us choose which proposals contractors will be asked to develop. We expect to announce the Short List of contractors and proposals early in 1997, then alongside the detailed technical development, we will continue to explain, canvass views, and openly explore concerns."

## 5.4.2. The first Brent Spar Dialogue Seminar

01/11/1996

### **The first Brent Spar Dialogue seminar, held in London today, drew strong attendance and an encouraging range of in-depth contributions from a wide variety of participants.**

The seminar, an interactive workshop held at the QEII Conference Centre, involved 71 representatives of UK and continental European organisations in discussions and feedback to help Shell work towards its eventual recommendation to the UK Government on a Brent Spar solution. The seminar was facilitated by the Environment Council, an independent charity which helps different interest groups work together to find common ground but takes no position itself.

The participants were selected as a balanced group by The Environment Council from Shell UK's Contact List of organisations who have registered an interest in Brent Spar. Organisations represented included universities, voluntary, professional and industry bodies, and consumer and environmental groups.

The seminar was designed as a structured working day, enabling participants to focus on the current outline proposals for the Spar, issues and views surrounding them, and the regulatory framework for decommissioning. The Format was a mixture of explanatory presentations, display material, work stations which participants could move freely around, and discussion groups facilitated by The Environment Council to encourage maximum feedback. Shell is seeking insight into many views and values.

Speaking immediately after the seminar, Eric Faulds, Decommissioning Manager, Shell U.K. Exploration and Production (Shell Expro) said: "We felt this was a very successful day and we are very grateful to everyone for giving their time and energy. It was an excellent chance to listen. We asked participants if we were on the right track in taking many views into account, and there was general support that we were. There was considerable support that the next immediate stage of the Spar Way Forward needs to focus on developing the technical options, and then exploring public views, values and ethics when the options are more fully developed - especially at the consultation which will be required by the UK Government."

Steve Robinson, Chief Executive of The Environment Council said: "We were very encouraged with the outcome of the day. This is a complex issue, but a lot of good work was done on deepening understanding, and opening discussion on some fundamental principles."

Some initial comments from participants:

Malcolm Grimston, Imperial College Centre for Environmental Technology: "We began to tease out the relationship between the Best Practicable Environmental Option criteria, and people's values. A year ago the argument was about the disposal of waste; now it is about values which people attach to these matters. I hope the argument is now going to be more upfront and honest."

David Cope, UK Centre for Economic and Environmental Development: "It was definitely a promising day, and not a day constrained by any particular ethical perspective. As an economist I personally feel that explaining costs in decommissioning is important and must be included in the debate."

James Firebrace, a consultant on business and society and former Director General of Consumers International: "The seminar looked successfully at some of the technical issues, for example in environment and safety. However, the values people have surrounding disposal and the emotions that we saw last summer still need properly addressing. It's important that the public sees Shell giving these real attention and listening to a wide audience - wider than could be here today."

Roger Lankester, Christian Ecology Link: "We wanted to discuss the ethical parameters of the debate and to ensure that these are fully considered and inform the technical issues."

Gerard Peet, Friends of Earth International: "The dialogue will really have started when Shell shows what it has done with the contributions made today."

## 5.4.2. The first Brent Spar Dialogue Seminar

Eric Faulds added: "We will now certainly be reviewing and absorbing all today's contributions, as we work towards selecting the Short List contractors and proposals. We expect today's seminar to be the first of several, and the best value for everyone might be if further seminars were held when we arrive at considering the more detailed Short List proposals."

The Environment Council will be compiling a full independent report on today's seminar, including participants' feedback. It will be published in 2-3 weeks' time and issued widely to media.

### **Notes to Editors:**

Today's seminar was another step in the wide ranging communications initiative launched last year. Shell and the rest of the offshore industry have hosted and taken part in conferences and workshops, taken visitors to offshore installations, published articles, made speeches, helped students and academics with studies and kept journalists informed.

### 5.4.3. Brent Spar Dialogue seminar to be held

08/10/1996

**The first seminar in the Brent Spar Dialogue process is to be held at the QEII Conference Centre in London on November 1. Invitations are now going to a range of interested parties asking them to join in helping to inform the Shell recommendation to the UK Government on an eventual solution for the Spar.**

The seminar aims to bring together a balanced representation of organisations from across Europe, including universities, professional bodies, churches, consumer groups and environmental groups. It aims to stimulate understanding of the 30 current outline proposals for the Spar and issues surrounding them, gather feedback, and enable Shell to gain insight into many views and values.

The event will be managed and directed by The Environment Council, an independent charity, who have selected the mix of participants from Shell UK's Contact List of organisations who have registered an interest in Brent Spar.

Eric Faulds, Decommissioning Manager, Shell UK Exploration and Production (Shell Expro), said:

"We aim to make the seminar an opportunity for open discussion and sharing information. The participants will discuss the technical issues surrounding trying to raise the Spar up out of the water - which is still one of our biggest challenges - and consider the criteria that should be adopted in choosing a Short List from the 30 outline proposals that we currently have on the table."

We expect this will be the first of several similar events, all part of the Brent Spar Dialogue which began with our commitment to openness in the new Way Forward last October. We will be publishing the outputs from the seminar, and are committed to reviewing and absorbing what participants say."

The Dialogue seminar will be interactive with a strong workshop element, to enable full contribution and consideration of the issues by everyone taking part. Participants will be given full information on the potential solutions and on the legislative framework, in a form that aims to be clear and accessible to non-specialists.

The seminar is another step in the wide ranging communications initiative launched last year. Shell and the rest of the offshore industry have hosted and taken part in conferences and workshops, taken visitors to offshore installations, published articles, made speeches, helped students and academics with studies and kept journalists informed.

The dedicated Brent Spar site set up on the Internet by Shell has attracted thousands of visitors. The offshore industry has also launched an Internet site and runs a public telephone Information Line

Shell Expro has received 30 outline proposals for Brent Spar from 19 contractors and consortia - the Long List. Over the coming months these will be narrowed down to a Short List of around six. The Short List proposals will be developed in detail, leading eventually to a final decision on the Best Practicable Environmental Option (BPEO), which Shell will propose to the UK Government. The BPEO will be determined on a balance of safety and the risks to human life, technical feasibility, economics, environmental impacts of all kinds, and widespread acceptability.

## 5.4.4. Publication of the report of the Scientific Group on Decommissioning Offshore Structures

10/09/1996

**The Report of the Scientific Group on decommissioning Offshore Structures was published by the National Research Council (NERC) on 22 May 1996. Shell UK Exploration and Production (Shell Expro), with the rest of the offshore industry, has welcomed the important contribution the report makes to the wider debate on the decommissioning of offshore oil industry structures.**

Readers of the report may also find useful this perspective from Shell Expro, which includes in particular further explanation of the process Shell followed in reaching the original Best Practicable Environmental Option (BPEO) for Brent Spar, and in proposing it to the UK Government's Department of Trade and Industry (DTI) for approval.

### Environmental Impact

The NERC report concluded that the environmental impacts of deep-sea disposal of the Brent Spar would have been small and localised. It also concluded that the case for adopting the 'precautionary principle' against deep-sea disposal of the Spar would have been 'extremely tenuous'. In this regard, the report generally endorsed the Impact Hypothesis assessment prepared for Shell as part of the company's BPEO submission to the UK Government. The report however also noted doubts amongst the Scientific Group that the Spar would have remained intact on impact at the deep-sea disposal site.

To put these points into context we describe the process we followed when considering environmental impact. We analysed how the Spar might behave during descent and on impact, taking into account the advice of structural experts. The actual disposal site had not yet been chosen at the time of this analysis, so the studies also took account of different types of seabed conditions and took the base case to be a very soft sediment seabed which experts predicted to be the most likely case. The expert structural advice was that although it was difficult to predict accurately the Spar's ultimate strength, break-up during descent was unlikely. We therefore worked from a base case assumption of no significant break up. However, the studies also determined the environmental consequences of different scenarios for release of the Spar's contents during descent and impact to identify any different environment effects. The Impact Hypothesis discussed this work, and demonstrated that no appreciable differences were apparent. Predicting whether the Spar would actually break up or not, either during descent or on impact, was therefore judged to have no material effect on the environmental impact of deep water disposal.

### Site Selection

The Scientific Group concluded that the chosen disposal site was suitable, whilst commenting that other sites outside the UK's jurisdiction may have had advantages. Readers of the NERC report may find useful the following short description of the regulatory process in respect of the choice of site.

During the BPEO identification process, we reported regularly to the Department of Trade and Industry (DTI). When sea disposal began to emerge as the most serious contender of the options under consideration, the DTI asked for a thorough review of the issues surrounding deep-sea disposal to be carried out by scientific experts at the Marine Laboratory Aberdeen, part of the UK Government's Scottish Office. At this stage these Scottish Office experts considered that likely disposal sites would be deep abyssal plains. Much of the early study commissioned by Shell to assess environmental impact was therefore carried out on this basis.



## 5.4.4. Publication of the report of the Scientific Group on Decommissioning Offshore Structures

In early 1994, when further studies and the independent review of the options by AURIS (Aberdeen University Research and Industrial Services) confirmed that deep-sea disposal was emerging as the BPEO, the Government scientists at the Scottish Office began detailed consideration of specific disposal sites, and indicated that sites other than deep abyssal plains would be considered. They also required a rigorous survey of potential locations to be carried out.

The Scottish Office prepared the detailed specifications for survey work and sampling at three sites of their choice. We contracted the survey vessel and paid for the work, but passed all the survey data to the Scottish Office for evaluation. The survey was supervised on location by Scottish Office scientists.

The detailed scope of the data gathering meant that it was not completed until the spring of 1995. It was therefore agreed with the DTI that our BPEO submissions to the UK Government, to be made in October 1994, would include the generic studies of environmental impacts, but not the detailed data from the survey of specific sites, which was still in progress. However, when the survey had been completed the Scottish Office scientists conducted a rigorous analysis of the data, and concluded that the environmental consequences had been adequately assessed for the three proposed sites. After reviewing the data, the Scottish Office scientists selected the disposal site and in May 1995 formally licensed the disposal under the Food and Environmental Protection Act. It should be noted that the approval of a BPEO under the offshore installation regulations is a DTI responsibility whereas the granting of a specific deep-sea disposal licence is the responsibility of the Scottish Office (for Scottish waters).

The NERC report supports a case by case approach on sea disposals, but also notes reservations about cumulative effects. For the Brent Spar disposal, the Scottish Office specified that base line data be established at each of the three potential sites, and made it clear that a condition of the disposal licence would be future monitoring, to confirm the scientists conclusions and to assess any cumulative effects if further deep-sea disposals were authorised. We fully accepted this requirement.

### Engineering Aspects

The Scientific Group confirmed that the Brent Spar should be seen as unique, and not typical of North Sea Installations.

During their study, the Group requested information on engineering studies made during the original Spar BPEO process. The Group were also informed of the extensive detailed engineering undertaken after approval of the BPEO evaluation, in particular the design and testing of the small shaped explosive charge used to breach the empty ballast tanks with confidence. We offered or provided this information, but the lack of reference to it in the report suggests that the Group had insufficient time to assess it fully. We are disappointed that engineering issues, fundamental to the unique structure of the Brent Spar and to the emergence of deep water disposal as the BPEO, are not covered in the report.

The BPEO process is similar to methods used in developing large engineering projects, and is thus well understood by the offshore oil industry, its consultants and contractors. In essence, it is a comparative evaluation of a wide number of options, in sufficient detail to identify key differences between them, and to allow the balance of the evaluation criteria. The criteria are tested to ensure that conclusions are not affected by uncertainties. If at any stage clear comparisons cannot be made, more detailed evaluation of particular aspects is undertaken to enable clearer differentiation, particularly between options which are close contenders.

We followed this method in the original comparison between onshore scrapping and deep sea disposal for the Brent Spar. It became clear, on the basis of expert advice and careful analysis, that in the case of onshore scrapping, the probability of a fatality was six times greater and the cost four times greater with no environmental benefit. Indeed, environmental risks were considered to be marginally greater in the case of onshore disposal. The comparison of these options had therefore indicated such a clear balance in favour of deep sea disposal that there was judged to be no justification for yet further detailed analysis of the onshore option.

## 5.4.4. Publication of the report of the Scientific Group on Decommissioning Offshore Structures

### **Public Acceptability**

The Scientific Group endorsed public acceptability as an important factor that should be strengthened by good understanding and informed debate.

We are committed to promoting widespread public acceptability as an integral part of the new process for developing a Brent Spar solution. Our contributions to improving understanding include more widespread availability of all the original data and independent studies, the establishment of a dedicated Brent Spar site on the Internet, speeches, articles, support for academic studies and a new educational pack for schools (The Brent Spar Data Bulletin, published by the World Wide Fund for Nature) and regular briefing of the media.

Contrary to some suggestions (not made by the Scientific Group), the original BPEO process was not 'secret'. Formal consultation was carried out, and information and documentation was issued to a wide range of parties including members of the Oslo and Paris Commission (OSPAR), the media, and Greenpeace months in advance of the planned disposal operation. No adverse response was received and there was little public or media comment. However, the later strength of public feeling and misunderstanding, particularly in continental northern Europe, made it clear that Shell must be much more active in seeking wider public understanding and discussion in the new process towards a solution for Brent Spar. We remain committed to this goal.

## 5.4.5. Contractors bid for Best Practicable Environmental Option for Brent Spar

03/07/1996

**Shell U.K. Exploration and Production (Shell Expro) today announced the names of 21 contractors who are "on the starting blocks" to outline their proposals for disposing of the unique installation.**

Shell Expro also unveiled a new, state-of-the-art analysis of the Spar's structure, which confirms that reversing the Spar's original installation procedure to raise it out of the sea for dismantling would be far from straightforward, and that overcoming its structural limitations without serious risks presents a huge challenge.

Eric Faulds, Decommissioning Manager, Shell Expro, said:

"As the 21 contractors line up to compete today, they face an unprecedented engineering challenge. Brent Spar is a unique structure, which needs a unique solution. But we remain confident that we will work through to an outcome which is altogether better understood."

Heinz Rothermund, Managing Director, Shell Expro, also outlined a new Dialogue Process to help Shell identify a solution which takes full account of a wide range of views and concerns.

He said:

"We have reached the next step in the Way Forward which we announced last October, an open process to find the Best Practicable Environmental Option (BPEO) for the Spar. We aim to identify several options for disposal, and to reach the BPEO we will propose to the UK Government. Whatever solution we propose needs Government approval and must be at least as good or better than the original deepwater disposal plan. The BPEO will be determined on a balance of safety and the risks to human life, technical feasibility, economics, environmental impacts of all kinds, and widespread acceptability.

"We have acknowledged that we originally set out to dispose of the Spar without explaining what we were doing early enough or widely enough. As we develop the Way Forward, we aim to share information with a varied mix of interested parties, and stimulate a greater awareness and understanding of the issues involved. We want to engage, not enrage."

### Contractors

The 21 contractors on the Long List were chosen from those who contacted Shell or responded to the PIN (Periodic Indicative Notice) placed by Shell Expro in the Official Journal of the European Communities last October. They all meet the criteria set for experience and expertise in areas such as marine construction and structural engineering.

The Long List reflects the international nature of the competition. Three contractors are from Norway, four from the Netherlands, one each is from Germany, Denmark, Belgium and Canada, and seven are from the UK, plus one UK/French, one UK/Dutch and one UK/Norwegian. (For names see Notes to Editors)

The contractors have until noon on July 31 to complete their Outline Concepts for Brent Spar. Until then they are in competition and will want to keep their proposals confidential. They will however be published by Shell in August. The 21 proposals will then be appraised and narrowed down to a Short List of six or so which merit further development to Detailed Concepts.

### Ideas from all over the world

Each Long List contractor has been given all the previous studies into the disposal of Brent Spar, and can access a database of almost 450 offers and ideas received by Shell. Most are from companies offering services such as scrapping or waste management, but about 100 are ideas for disposal or re-use.

## 5.4.5. Contractors bid for Best Practicable Environmental Option for Brent Spar

Ideas, some more practical than others, include turning the Spar into a hotel or casino, using it to generate wind or wave power, or submerging part or all of it to form a reef or fish farm. Others suggest a civil engineering solution in a harbour, breakwater or bridge building project, and suggestions have been received from companies interested in refurbishing the Spar to do its old job as an offshore loading buoy. Some ideas are only for the Spar's topsides, the section seen above water, including turning it into a restaurant or a training centre for offshore personnel.

However the Spar is longer than a football field floating on its end, weighs about the same as 2000 double-decker buses, and its huge tanks could hold the equivalent of almost four Big Bens. As Eric Faulds said:

"Many people haven't appreciated how huge the Brent Spar actually is. It's like an iceberg, with only a small part showing above the sea, and people tend to overlook its enormous submerged draught of 109 metres. This places a very real constraint on where it can be taken and what can be done with it."

### **New structural analysis**

Also see attached Fact Sheet: The Engineering Challenge

The 21 Long List contractors face an unprecedented engineering challenge, demonstrated by new state-of-the-art structural analysis carried out for Shell by the specialist engineering company W. S. Atkins. Structural analysis has developed rapidly since the Spar was designed and built in the 1970s. Huge advances in computer techniques, from the slide-rule which was a commonplace tool at the time, now enable much more to be known about structures than could have been known then.

The analysis shows that reversing the original installation procedure to bring the Spar ashore for dismantling is far from straightforward; that raising the Spar from the sea presents a huge challenge in overcoming major structural limitations and safety risks.

The Spar's storage tank walls are thin, stiffened membranes, designed to ensure they do not experience high external water pressures while floating in the normal position - an efficient and safe design for the hostile waters of the northern North Sea. But the new analysis shows that the Spar was highly stressed during installation, close to the point of failure. Safety regulations mean it cannot be placed under those same stresses again, which could make the tank walls buckle or collapse. The study results have been given to the contractors to help clarify the task they must tackle.

The BPEO process requires consideration of a wide spectrum of options. Eric Faulds said:

"We would not like to arrive at a Short List of six very similar onshore scrapping options, for example, or six fish-farm ideas. We are looking for a spread of realistic disposal options which can compete strongly with each other, and with deepsea disposal, to determine the BPEO."

### **Dialogue Process**

Shell is committed to openness and will introduce a new Dialogue Process as the Way Forward develops. Heinz Rothermund said:

"Since last year we and the rest of the industry have hosted and taken part in conferences and workshops, taken visitors to offshore installations, published articles and made speeches, helped students and academics writing dissertations and kept journalists informed. We have launched a dedicated Brent Spar site on the Internet, which has been attracting thousands of visitors. The industry has also launched an Internet site and opened a public telephone Information Line."

As the Long List outline concepts are appraised and the Short List concepts are developed in detail, Shell aims to share information widely with interested parties to stimulate greater awareness and understanding of the issues involved, and obtain feedback. The Dialogue Process will be adapted as issues arise, with participants helping to shape it as it progresses.

## 5.4.5. Contractors bid for Best Practicable Environmental Option for Brent Spar

Shell is building an extensive Contact List of interested parties who may wish to be involved, including environmental groups, engineers, academics, students, trades unions, churches and consumer groups. It will not be limited to UK interests and will be open to any organisation at any stage.

Mr Rothermund said:

"We hope people will participate through the Spar Internet site. We will publicise the proposals to media, and everyone on the Contact List will be kept informed. We are also developing the idea of a Dialogue Launch Conference with perhaps 200 participants, representing a good range of interests, invited from the Contact List by an independent facilitator, who could also structure the discussions. If this idea proved useful, the timing could be this October."

Later, dialogue on the Short List proposals will largely depend on the proposals themselves and feedback. Shell might host independently-facilitated seminars so that participants could actively consider the proposals on the table as they relate to the BPEO criteria. Shell will also hold formal consultation on its proposed solution as directed by the UK Government.

Mr Rothermund said:

"We do not expect participants in the Dialogue Process necessarily to agree. We hope to promote a deeper understanding of the emerging proposals and any issues surrounding them, and of the rationale behind the recommended solution. We are looking for 'soundings' as we go along, and we are committed to absorbing and reviewing what we hear. We will also publish the outputs from any Conferences and seminars to share them more widely."

He said Shell did not aim to set up new decision-making bodies to decide the BPEO.

"We must work within the requirements of the UK Government - we select the BPEO we will propose, and they judge our preferred option. But we are seeking a structured open Dialogue Process that can help inform our choice of BPEO."

Anticipating the question of whether the original Brent Spar BPEO of deepsea disposal had been ruled out, Mr Rothermund said:

"Deepsea disposal is currently the option approved by Government and they have made it clear that any new option must be at least as good or better. We will therefore assess it closely in comparison with the six detailed options that are to be developed, at the stage of choosing the BPEO to propose to the Government. However, we believe that the combination of innovative work by world class contractors, creative thinking from all over the world, and the open Dialogue Process should enable us to identify whether there is a solution at least as good as, or better than deepsea disposal."

### Notes to Editors:

Of the 21 contractors on the Long List (see separate sheet for full names and addresses):

Five are international, multi-discipline offshore contractors: AMEC, Brown and Root and McDermott from the UK and AKER and Kvaerner from Norway.

Four are international marine and civil engineering contractors: H.S.M. Rotterdam from The Netherlands, Land and Marine and Taylor Woodrow from the UK, McAlpine Doris (UK/France).

Mayer Parry is a UK recycling company, and Jan De Nul from Belgium is an international dredging company.

Stolt Comex Seaway (UK/The Netherlands) and Heeremac from The Netherlands are in international marine heavy lifting.

## 5.4.5. Contractors bid for Best Practicable Environmental Option for Brent Spar

Ship and oil rig repair yards are represented by N.N.C. Cammell Laird (UK), and UMOE Haugesund (Norway).

Six international consortia represent a mix of skills: Hollandia BV and ROS Holland BV (The Netherlands), Ramboll (Denmark), Rhodes Offshore Partners (Canada), Thyssen Stahlunion (Germany) and Wood GMC (UK/Norway).

Shell has been working on the design of the Dialogue Process with The Environment Council, an independent charity with considerable experience of helping different interest groups work together to find common ground. The Council's individual members and supporters include public and private sector organisations, environmental groups and academics. Although these individual members might hold differing opinions on a potential solution to a problem, the Council itself does not take a position.

The W. S. Atkins Group is one of Europe's leading multi-discipline consultancies providing a wide range of services to the offshore oil and gas industry. These include the supply of conceptual and detail design services together with specialist analysis capabilities for investigating the behaviour of floating vessels and structures subject to transportation, installation, in-place, hydrodynamic and fire and blast loading. W. S. Atkins are experienced in the use of a wide range of materials and are increasingly required to use non-linear and reliability techniques to confirm both the ultimate strength and long term behaviour of structures.

## 5.4.6. Shell welcomes contribution to the wider decommissioning debate

22/05/1996

### **Shell UK Exploration and Production (Shell Expro) welcomes today's publication of the report of the 'Scientific Group on Decommissioning Offshore Structures' by the Natural Environment Research Council, as a contribution to the wider decommissioning debate.**

Eric Faulds, Shell Expro's Decommissioning Manager said:

"We note that the NERC committee report confirms our earlier extensive studies which found that the environmental effects of deep ocean disposal of Brent Spar would have been very small and localised.

"In particular we are pleased that the committee found that: 'the estimated impacts are so small that there are believed to be very large margins for safety, so that the basis for precautionary action would be extremely tenuous'."

The report also arrives at a conclusion similar to other independent scientific studies in that:

'The available evidence indicates that the environmental impacts of deep sea disposal of structures such as the Brent Spar are not likely to be large enough to be a crucial factor in the selection of the best disposal options, or for this option to be excluded from consideration'.

Shell Expro is disappointed however that the committee appears to have been able to review only a very small part of the information made available to it. In particular the engineering studies undertaken by specialised contractors do not seem to have been reviewed and as a result the environmental and safety risks associated with onshore disposal have not been fully addressed in the report.

### **Notes for Editors:**

Shell Expro has only today seen the final version of the NERC report and it will therefore take some time for its content to be studied in detail.

The independent Scientific Group on Decommissioning Offshore Structures was established by NERC at the request of Mr Tim Eggar, the Energy Minister at the Department of Trade and Industry following the controversy surrounding the original Brent Spar deep sea disposal plan which was abandoned in June 1995.

Brent Spar is currently moored in a deep sheltered haven at Erfjord in Norway. The UK Government has stated that any future disposal solution for the Spar must meet the same standards as the original deepwater disposal plan. In October 1995 Shell Expro announced the Way Forward process by which it aims to find a solution for the Brent Spar. The process requires contractors to compete to find the best solutions, with the contract being awarded to whoever develops the Best Practicable Environmental Option (BPEO). This will balance environmental, safety, health, technological and economic considerations and public acceptability. Shell Expro will propose the BPEO to the UK Government for approval.

Shell Expro is currently finalising a long list of around 20 contractors, who will have access to a database of proposals from members of the public and other companies, of which 419 have been received to date. A final short list of six contractors will be invited to develop full project proposals.

## 5.4.7. The environment is not a simple issue with clear rights and wrongs

20/05/1996

**The environment has no easy answers - and sound science matters.**

**The environment is not a simple issue with clear rights and wrongs and easy answers - and the search for simple truths may obscure the uncertainty of reality, said Dr Chris Fay, Chairman and Chief Executive of Shell UK Limited, speaking in Cardiff tonight.**

In a speech to international media at the Reporting the Environment conference organised by the Centre for Journalism Studies at the University of Wales, Dr Fay said society needed the help of open-minded journalists in unravelling the complexities of the environment, but that journalists could do more to bring better understanding of the science, technology and business management that were central to environmental progress.

Speaking on the topic Not Black and White, but Shades of Green, Dr Fay said the Brent Spar debate had raised fundamental questions about the reporting of environmental issues. One of the defining features of late 20th century life was the scale, intensity and speed of news media and their power to shape public debate. In reflecting on what this meant for society, there was a need for better understanding of complexity in three areas central to environmental progress - science, technology and business management.

"Journalists seek to cut through complexity to provide the clarity and simplicity their readers and viewers desire," said Dr Fay. "But with issues as complex as the impact of human activity on the natural environment, the search for simple truths may obscure the uncertainty of reality."

In Britain, a feature of the Brent Spar debate had been prominence for the views of independent scientists.

"Some were oceanographers, mainly supporting our belief that the planned disposal would affect the deep ocean very much less than was being alleged," said Dr Fay. "I don't claim that proves we were right. Some scientists tended to Greenpeace's point of view and an argument along the lines of 'my scientist is better than your scientist' clarifies little. But many were concerned that environmental decisions should continue to be made with due regard to science and scientific method. I think this is the fundamental issue. Confident assertions of environmental cause and effect are easily made. But we should always question whether there is, in fact, the scientific knowledge to back them up."

Dr Fay added:

"Reporting as fact what is still conjecture misleads in two ways - in the detail of what is said and, more damagingly, by giving the impression that environmental choices are simple. In fact decisions must be based on careful, scientific analysis of risks." Relative risks were a complex subject and difficult to communicate; easily misunderstood and open to alarmist interpretations. Another example was benzene. Prolonged and repeated exposure to very high levels had been associated with a leukaemia. But studies of oil industry workers, much more exposed to benzene than the public, revealed no statistically significant incidence of the disease; experts had concluded that air benzene levels were an exceedingly small health risk; and benzene emissions from vehicles were being rapidly reduced. Yet the public had been alarmed by sweeping statements giving the impression that benzene was a danger, whatever the exposure.

"Almost everything we do, consume, or are exposed to has some risks," said Dr Fay. "Modern science has given us the ability to measure minute quantities of substances. But what is important is the extent of our exposure to them. We have to decide which risks require tackling, with what priority, in what way, to what extent, and at what cost. We can only proceed safely by systematically balancing all the risks, taking into account the extent of our uncertainty and ensuring sound science underpins our choices."



## 5.4.7. The environment is not a simple issue with clear rights and wrongs

The scientific approach did not mean neglecting human values and concerns. Scientific method was not an absolute blueprint, but a map for guidance; decision must always depend ultimately on human judgement.

"My point is that environmental science is much more complex than the impression we often gain from the media. I can appreciate that describing technical data and detailed risk evaluation is difficult for busy journalists with limited time and space. But it reflects the reality of the choices society must make."

Accelerating technological advance was the basis for wealth creation and rising standards of living. Cleaner technologies were essential for environmental progress. Yet many people were uneasy about the pace of development; concerned that technology was out of their control, manipulated by companies for their own interests.

"The Brent Spar debate revealed a widespread ignorance of the technology of North Sea oil and gas. Media coverage has not fully reflected the industry's impact on this country's economy over a quarter of a century, or the scale of its technological achievements. In these circumstances it was hard for people to appreciate the problems involved in dealing with an offshore structure like Brent Spar - as long as a football pitch and big enough to contain four Big Bens. Modern structural analysis had revealed that the risks involved in trying to raise it out of the water were much higher than was originally thought. Safety was a major factor in the choice of deep sea disposal as the Best Practicable Environmental Option.

"If people are unaware of such engineering issues, or assume that they can easily be solved, it is natural for them to think that companies are only concerned for costs. I make no apologies for taking costs into account in environmental decisions. Otherwise we could not make rational choices about the use of resources. But there are always many other factors and, in the case of Brent Spar, these were decisive."

Dr Fay added:

"I believe that wider media coverage of technological development would help people to understand it better. Equally, engineers also have a responsibility to help people to appreciate the value of technology and to demonstrate that they can be trusted to use it in society's interest. Describing things more simply would be a help."

Business management also needed better media coverage. Management quality determined national competitiveness and the efficiency of public services, and was more important for environmental progress than the capital spending on which there was so much focus.

Many people saw business management in very simple terms. But thousands of people - staff, contractors and suppliers - were involved in a company's operations, constantly making decisions and balancing technical, human, safety, environmental and commercial factors. Management provided the framework to motivate, support and guide, but those individual decisions determined environmental, and business, performance.

Shell uk's environmental management system had at its heart a systematic continual improvement process. This meant assessing the environmental impact and risks of operations, planning and implementing ways to reduce them, monitoring the results, and feeding back the knowledge to inform further action. Audit and review programmes superimposed a further 'learning loop'.

"This careful, iterative approach is a long way from some of the easy assumptions about how to achieve environmental progress," said Dr Fay. "But it is much sounder than trying to mandate particular action through prescriptive legislation. The complexity of environmental issues, and our ever-changing scientific understanding, can make such over-specific legislation ineffective - even regressive. I have no doubt that the pragmatic, goal-based British regulatory approach - supporting continual improvement by companies - will achieve much more in the long-term."

## 5.4.7. The environment is not a simple issue with clear rights and wrongs

Dr Fay added:

"I sympathise with the difficulty journalists face in trying to report science and technology. I know that they work in an increasingly competitive industry with ever more demanding deadlines. But these disciplines are so important for our future - not just for environmental choices - that it is vital that a wider understanding of them is developed.

"In the case of management the media could be missing a trick by neglecting a fascinating human discipline which is relevant to everybody - whether they run a football team, a multinational corporation, or a newsdesk. But journalists do have an excuse in the corporate gobbledygook which so often obscures discussion of the subject. Systematic management is business's greatest strength, and we must learn to communicate it better."

What had the Brent Spar debate taught us about how environmental issues were reported?

The plan to dispose of Brent Spar in the deep-Atlantic had been decided as a result of a careful process, involving much study of the different disposal options by independent and government scientific and engineering experts. The process was in line with international agreements, which require all offshore installations in shallow water - three quarters of those in the North Sea - to be completely removed. However it allowed the particular characteristics of a unique structure to be taken into account.

"Bodies like Greenpeace clearly have the right to argue that offshore disposal is wrong in principle. We should remember the debt we owe to environmentalists for awakening society to the environmental challenges we face. They remain a vital strand of opinion in our environmental considerations. But the question is how should such arguments be debated - because the issues are not simple, and sound science matters."

Greenpeace had occupied the Spar:

"They knew that activists in rubber boats among the massive ironmongery of the North Sea made good television; David against Goliath. They didn't leave that to chance; they used their considerable resources to equip themselves with the latest video transmission equipment and ran a powerful operation to make their footage and messages available to the media. So they got a lot of coverage. And like all good spin doctors, they knew how to manage the debate with a flow of simplistic allegations - the daily 'curve-ball' as I called it at the time. We now know that most of those allegations were unsound.

"I know that senior television executives have questioned whether broadcasters surrendered their independence by relying too much on one side for coverage, and accepting too uncritically one argument. Certainly it was difficult for the complex details of risk analysis - which take time to explain - to make headway against such compelling visuals, simple arguments and sensational allegations. But we continued putting our case and, in this country, it began to come through strongly.

"Our analysis of coverage in the British media shows that the complexity of the issue and the reasons for choosing deep-water disposal were increasingly understood as the debate progressed. Unfortunately, as you all know, this was not the case in some continental European countries, where those arguments in particular received little media attention. The resulting political and public opposition outside the UK was so intense that we had no option but to reconsider the disposal plan."

Dr Fay saw two main lessons for companies from the Brent Spar affair.

Shell had been slow to appreciate that the main focus of the Greenpeace campaign was not British audiences but those in other countries. This demonstrated the changing pressures on businesses in today's 'global village'. Learning to communicate across borders, to those with different cultural preconceptions and less understanding of the local context, would be a growing challenge for all multinational companies.

## 5.4.7. The environment is not a simple issue with clear rights and wrongs

But the second lesson was about sustainable development:

"The debate about how to reconcile wealth creation with environmental protection - how to achieve sustainable development - is not a nine-week affair but a continuing process of profound relevance to all people. It is vital that the business voice is heard. This requires companies to be more open about their activities, more ready to debate the issues they raise, more responsive to people's concerns, and more assiduous in demonstrating that they can be trusted to exercise their power responsibly."

And there were also lessons for the media.

"The most important is that the environment is not a simple issue, with clear rights and wrongs and easy answers. Society needs the help of open-minded journalists in unravelling its complexities if we are to make the right choices for our future."

### **Notes to Editors:**

Reporting the Environment is the fourth international conference for European editors organised by the Centre for Journalism Studies at the University of Wales in Cardiff. The Centre is the UK's oldest university institution for journalism education, and the largest faculty of its kind in the European Union.

Dr Chris Fay is the Chairman and Chief Executive of Shell UK Limited, whose oil and gas exploration and production division, Shell Expro, operates the Shell/Esso joint venture in the UK North Sea. It is the largest operator in the North Sea, responsible for some 21 per cent of the oil and around 13 per cent of gas produced from the UK's waters.

In October 1995, Shell UK announced the new Way Forward process to find a solution for the disposal of the Brent Spar. This is an open process harnessing the ingenuity of the contracting industry and ideas from over 400 entrepreneurs who have volunteered suggestions.

## 5.4.8. Shell discusses the unprecedented challenges and opportunities presented by Brent Spar

22/02/1996

**The Brent Spar is unique not only because of the exceptional events of last summer; it is a unique structure for which the main dismantling options require an exceptional feat of civil engineering, said Mr Graham Dunlop (\*\*please see footnote on speaker, a senior project engineer on the Brent Spar Decommissioning Project, at a conference in London today (Thursday 22 February, 1996)).**

Speaking on the subject "Why is Brent Spar Unique?" at the Institute of Petroleum conference Minimising the Impact of Decommissioning, Mr Dunlop said the Spar posed unprecedented challenges for Shell, but also an opportunity to learn and change. The measures Shell U.K. Exploration and Production was now taking in its search for a Spar solution could become illustrative of a new way of doing business. With initiatives for a new contracting process and a wide-ranging, international consultation, Shell was striving for the goal of a new stage in the regulation of business activity which enjoyed the popular support of hearts as well as minds.

### The Spar's Dimensions/Moving It Around

The Spar's technical features were now well known, Mr Dunlop said, but he was not convinced that there was a real understanding of the full extent of its dimensions, and what these meant as regards moving it around.

"The Spar is like an iceberg," he said. "Most of its bulk, mainly the six huge storage tanks, is beneath the water's surface. At 14,500 tonnes, the Spar weighs nearly as much as 2,000 double-decker buses, it is longer than a football field floating on its end, and its huge tanks displace 66,500 tonnes of water - a capacity that means they could hold the equivalent of almost four Big Bens. Apart from the waters north of Orkney, most of the North Sea is too shallow to accommodate it."

Because the Spar was different from any other installation in our waters, it had to that extent never represented a precedent for the disposal of other structures, the large majority of which would be brought ashore and dismantled.

"Herein lay - and lies - the fundamental issue," said Mr Dunlop. "Removing the Spar from the water or even just raising it higher, without posing undue risk to people or the environment, requires an exceptional feat of civil engineering.

"While the Spar is robust and fit for the purpose for which it designed, the most up-to-date calculations of its structural strength under various stresses have shown that the original installation process cannot readily be reversed. Raising it up out of the water in its vertical floating position, or attempting to rotate it to the horizontal, both pose a significant risk to its structural integrity. This is mainly due to its intrinsic design, and to the need to maintain, during movements of this kind, the balance of internal and external pressures which stop the tanks walls from buckling and imploding. This challenge is further complicated by the fact that two of the Spar's six storage tanks were damaged during operation. Any future solution will have to balance benefits carefully with these risks."

### Earlier Studies

With these constraints in view, detailed studies 2-5 years ago had established deepwater disposal as the Best Practicable Environmental Option (BPEO) for the Spar, a near-unique solution for which only a few other UK installations would potentially be candidates.

## 5.4.8. Shell discusses the unprecedented challenges and opportunities presented by Brent Spar

The Spar was not by any means the "toxic time bomb" alleged. Its deepwater disposal would have had negligible impact on the marine environment, confirmed by independent experts and supported in consultations. The integrity and professionalism of the original Shell inventory was later endorsed in the further independent audit by Det Norske Veritas. In comparison with deepwater disposal, the safety risks in terms of fatalities during onshore disposal would have been six times greater.

### New Way Forward

However in the exceptional events of last summer, outrage had arisen from a deeply-rooted belief in the principle of 'clean seas'. Shell had abandoned the deepwater disposal plan, and begun an open, wide-ranging initiative to find a solution to match or better deepwater disposal, with the central features of consultation, dialogue and high profile public examination. The challenges of finding a disposal solution for this unique installation remained, but Shell was committed, with the help of others, to meeting them.

"We have received some 400 letters," said Mr Dunlop, "proposing many imaginative solutions for the Spar. They have ranged from removing the topsides to shore for use as a training facility to creating a fish-ranch with the submerged tanks, or in some way using its unique dimensions to harness wave power and generate electricity. In many cases these ideas have come unsolicited from individual members of the public and have proved truly stimulating and encouraging as we set out on the new way forward."

A unique contracting process underpinned the search. "Typically, a company invites contractors to bid for a specified solution. But in the case of Brent Spar, Shell does not know what the final disposal option will be. So the process consequently requires contractors to compete to find and develop the best solutions. We will then award the implementation contract to whoever has developed the BPEO. This process will harness not only the expertise of the major contractors with all their different resources, but also the ingenuity of the many entrepreneurs who have already contacted Shell."

Shell Expro was now finalising the long-list of some 20 or so contractors from those who had responded to the PIN notice in the Official Journal of the European Communities in October. The next step would be to ask the long-list of contractors to outline their preferred disposal options and compete to get on to the short-list of some six or so finalists. A database of all the imaginative ideas received would be made available to the contractors, along with more recent studies into the Spar's structure, due to be completed soon. The short-listed contractors would then be required to work up their proposed solutions in detail for Shell's final BPEO assessment. The challenge to the contractors was to help find an alternative BPEO for the Spar's disposal. The UK Government had made it clear that the BPEO remains deepwater disposal until demonstrated otherwise.

"The two main dismantling alternatives for the Spar," he added, "would involve either raising it gradually up out of the water in its vertical floating position, so that cross-sections can be cut off and removed to a barge for scrapping onshore, or rotating the Spar on to its side so that it can be lifted horizontally on to a barge for removal to shore. Both options would need to address the unique challenges of sustaining the structural integrity of the installation. The safety implications of the time and labour intensity of such operations will be a vital consideration in the BPEO assessment.

"Alternatively, some sort of re-use option is attractive. In Norway, for example, decommissioning proposals for other installations have found considerable support for re-using parts of them as harbour facilities or in fish farm developments."

### Conclusion

Shell had also stated its commitment to wider consultation this time, with the aim that the final proposal to the UK Government would be informed by the views of many other interested and representative parties.

## 5.4.8. Shell discusses the unprecedented challenges and opportunities presented by Brent Spar

"While consultation is of course not unique in itself," said Mr Dunlop, "it is something that I imagine has been rarely undertaken by a commercial enterprise on the wide-ranging and international basis that we would like to see in place. Its implementation poses many challenges - not least who are 'the public' we are seeking to involve? There is also the question of involving Europeans in consultation on an issue which is legally the preserve of the UK Government. The organisation of such a consultation is complex, but we are currently working on plans which we hope will advance over the next few months."

In the end however Shell alone had to complete the BPEO analysis to arrive at a balanced solution to recommend to the Government for approval, and hoped to do this towards the end of this year.

### A New Climate

In many ways the events surrounding Brent Spar illustrated a new climate in which business must operate and of a new way of doing business. Shell UK had accepted that technocratic compliance with rational, science-based regulation is not in itself enough, and was committed to engaging in a wider political and public domain where the trust, confidence and 'licence to operate' from the public at large had to be won.

"The measures that we are undertaking to achieve this in our search for a solution for Spar," said Mr Dunlop, "will, I believe, become increasingly characteristic of the way business is done in today's society. In the future, I believe that Brent Spar will be seen as a forerunner of many things quite beyond what it already represents in the context of decommissioning offshore installations."

Brent Spar had posed unprecedented challenges for Shell, but also an opportunity to learn and change. It also raised issues for society as a whole. The industry had to work harder at encouraging people to think about the trade-offs between the benefits industry brings and its ultimate costs, both economic and environmental. Selecting the best environmental course would never be simple. Nature was wonderfully diverse and scientific views were constantly developing and rarely unanimous. However, decisions on cost were similarly difficult, and the notion that they could be ignored was unsustainable.

"Society faces many problems and resources spent disproportionately on one make it harder to tackle others. In a modern democracy, the whole of society has a role to play in balancing these issues. The need for wider consultation is clear, but any debate must include rational consideration of the facts. Single issue campaigners can play a valuable role in arguing for a particular point of view, but the value of this is debased if it is clouded by alarmism and exaggeration. They also have a responsibility for enabling the best practicable solutions to be chosen."

If the unique sequence of events surrounding Brent Spar had achieved a good outcome, it had surely been to place such difficult environmental choices at the forefront of many more minds.

"We will continue to defend the balanced approach to environmental decisions," said Mr Dunlop, "in the belief that abandoning it would be disastrous for our economies, our societies and for the environment. But we will also pay much more attention to listening to and consulting people about the many issues involved, and to gaining their confidence and trust. The Brent Spar is no longer just a North Sea installation, but a unique and defining event. The challenge now is to ensure that it defines a new stage in the regulation of business activity which enjoys the popular support of hearts as well as minds. Certainly, Shell is striving for this goal."

\*\* NOTE: Mr Dunlop spoke on behalf of Mr Eric Faulds, Decommissioning Manager, Shell U.K. Exploration and Production, who due to unforeseen circumstances was regrettably unable to deliver his speech in person.

## 5.4.9. Chris Fay meets Peter Melchett

09/01/1996

**Dr Chris Fay, Chairman and Chief Executive of Shell U.K. Limited, held a meeting at Shell-Mex House in London today (January 9, 1996) with Mr Thilo Bode, Executive Director of Greenpeace International, and Peter Melchett, the Executive Director of Greenpeace UK. This followed an exploratory meeting with Greenpeace UK held last September when today's follow-up meeting was proposed at Shell UK's suggestion.**

Dr Fay said:

"We had a wide-ranging discussion in a generally constructive spirit about Shell UK's plans to find a solution for the disposal or re-use of the Brent Spar and about the wider aspects of decommissioning in general. It was a useful exchange."

As announced in October 1995, Shell is undertaking an open participative process to find a new solution for Brent Spar. This will tap the ingenuity and capability of contractors and others, including the near 400 proposals received from all over the world. From a short list of these, in comparison with the currently licensed deepsea disposal plan, a new option will be determined which will balance environmental, safety, health, technological and economic considerations and widespread acceptability.

The UK Government has made it clear that the original deepsea disposal option must remain as an 'environmental benchmark' against which any alternative solution must be compared. Greenpeace has acknowledged that Shell UK must work within the Government's regulatory framework in finding an acceptable option.

## 5.5 1996 Press Releases

### 1995 Brent Spar Press Releases

Shell welcomes a new study by DNV  
Shell firmly backs Government initiative  
Shell welcomes the results of the DNV audit  
Shell unveils a combined strategy  
Shell informs of an exploratory meeting with Greenpeace  
Shell welcomes the letter of apology from Greenpeace  
Shell invites DNV to conduct an independent inventory on Spar  
Brent Spar to be temporarily moored in Norway at Erfjord  
Shell applies for Brent Spar to be temporarily moored at Erfjord  
Shell puts HeereMac study in context  
Greenpeace day of action barely occurred  
Shell refutes Greenpeace allegations  
Allegations about Smit Engineering report untruthful  
Chris Fay replies to a letter from Greenpeace  
Illegal Greenpeace occupants removed from Spar  
Shell refutes Labour Party environmental claims  
Deepwater disposal approved



## 5.5.1. Shell welcomes a new study by DNV

30/11/1995

**A new supplementary study by the internationally-recognised safety foundation Det Norske Veritas (DNV) has concluded that the Brent Spar does not contain any PCBs in light fittings or electrical items, contrary to DNV's earlier assumption that these items on the Spar might contain up to 8kg of PCBs.**

DNV raised concern about possible PCBs in light fittings at a late stage of their independent audit of the Spar, but were unable to carry out a complete inspection to check the possibility. Shell U.K. Exploration and Production (Shell Expro) therefore asked DNV to carry out further independent inspection work on the possible sources - capacitors connected to fluorescent light fittings, and electrical items.

DNV have now confirmed that any PCBs on board the Spar are no greater than the trace identified in the original detailed Shell inventory carried out in 1991-93. Mr Eric Faulds, Manager of the Brent Spar Decommissioning Project, said: "As part of our commitment to an open consultative process to find a new solution for the Spar, we believed it important that the PCBs uncertainty should be thoroughly investigated and the results shared openly, whatever was found. DNV's conclusion provides final reassurance that the original detailed Spar inventory compiled for Shell was thorough and competent. Our own inventory and DNV's work are now valuable inputs to the new way forward, in which we remain committed to care and integrity."

### Notes to Editors:

PCBs are polychlorinated biphenyls, used in the past in such applications as heat transfer fluids in large transformers and as dielectric fluids in capacitors. They have now been phased out, but can remain in old equipment. The original detailed Shell inventory identified a total residual level of 19ml of PCBs on the Spar (about one large spoonful) in two transformers.

The independent DNV audit was commissioned by Shell Expro in early July 1995 to re-check the original Shell Spar inventory carried out in 1991-93, to evaluate Shell data and methods, to evaluate Greenpeace data and methods, and to investigate allegations of toxic substances "hidden" on board. The audit, on which DNV reported in October 1995, found that the original Shell inventory of contaminants on the Spar was broadly correct. DNV endorsed Shell Expro's professionalism.

DNV found that claims by Greenpeace that the Spar contained "5,550 tonnes of oil" were grossly overestimated. They also investigated and dismissed claims made in an affidavit supported by Greenpeace that toxic waste had been "hidden" in the Spar. DNV largely confirmed the Shell figures for the heavy metals in the Spar, which were relatively very small.

In an open participative process to find a new solution for the Brent Spar, Shell Expro will now tap the ingenuity and capability of contractors and others, including almost 400 proposals received from all over the world. From a short list of these, in comparison with the currently licensed deep sea disposal plan, a Best Practicable Environmental Option (BPEO) will be determined which will balance environmental, safety, health, technological and economic considerations and widespread acceptability.

## 5.5.2. Shell firmly backs Government initiative

19/10/1995

### **Shell UK Exploration and Production has strongly backed the Government's initiative to form an independent international group of scientists and engineers to examine the scientific and technical considerations raised by the disposal of the Brent Spar.**

Yesterday, Industry and Energy Minister, Tim Eggar, announced the formation of an expert group of scientists and engineers, led by the Natural Environment Research Council. The group will start by reviewing the existing Best Practicable Environmental Option (BPEO) - the basis for Shell UK's current licence - in the light of the DNV report on the inventory of contaminants in the Brent Spar. With this established as the 'environmental benchmark', the expert group will consult widely in the scientific and technical community, and will have a continuing role in commenting on the relevant implications of the alternative disposal options which Shell Expro will be developing.

Heinz Rothermund, Managing Director of Shell U.K. Exploration and Production, operator for the Shell/Esso venture in the UK North Sea, said: "This is welcome news. With the support of the UK Government, we are committed to undertaking a systematic, open and participative process aimed at producing a widely-acceptable disposal solution for the Brent Spar. In seeking the BPEO we will consider all alternatives, tapping the ingenuity and expertise embodied in the 250 or so proposals which have been received in recent months.

"The international, expert character of Tim Eggar's group will help us greatly in this regard. As well as the value to ourselves, it should be helpful in giving the public better understanding of the scientific and technical issues."

#### **Notes for Editors:**

Shell Expro wishes to correct three errors of fact in the Greenpeace news release issued yesterday (October 18, 1995) following the announcement of the results of the independent audit of the Brent Spar by Det Norske Veritas (DNV).

#### **Greenpeace wrongly claim that DNV's study is "the first independent inventory of the contents of the Brent Spar".**

This is not the case. Shell previously commissioned a detailed inventory of the Spar's contents containing hundreds of individual items. This work was carried out by independent experts, including scientific institutions. DNV was commissioned by Shell to re-check this inventory and to evaluate Shell data and methods. DNV was also asked to evaluate Greenpeace data and methods, and to investigate allegations by Greenpeace of toxic substances 'hidden' on board the Spar. DNV have endorsed the thoroughness and competence with which Shell and its consultants prepared the original Shell inventory. DNV have also stated unequivocally that Greenpeace claims about oil on the Spar were "grossly exaggerated". They have dismissed as "virtually impossible" the claims of 'hidden' toxic substances.

#### **Greenpeace wrongly claim that when they started a campaign over the Brent Spar, "the only information to hand was Shell's estimation that it contained 100 tonnes of sludge ...and 30 tonnes of low-level radioactive waste".**

This is not correct. Detailed information about the Spar's contents and the Shell inventory has been widely available since before Greenpeace activists boarded the Spar to begin their campaign.

## 5.5.2. Shell firmly backs Government initiative

**Greenpeace state that "there is now a ban on the dumping of oil installations anywhere in the North East Atlantic and the North Sea...a legal ban adopted at the Oslo Paris Commission meeting in June this year".**

This is a misrepresentation of events at the meeting June 26-30 of the Oslo and Paris Commissions. Eleven states called for a moratorium on disposal at sea of decommissioned offshore installations. This was opposed by Britain and Norway, the only North Sea states with larger, heavier installations in deeper waters.

### 5.5.3. Shell welcomes the results of the DNV audit

18/10/1995

**Shell UK Exploration and Production (Shell Expro) has welcomed the results of the independent audit carried out by the internationally-recognised safety foundation Det Veritas (DNV) to re-check the inventory of contaminants in the Brent Spar, and has expressed satisfaction with DNV's report.**

Mr Heinz Rothermund, Managing Director of Shell Expro, operator for the Shell/Esso venture in the UK North Sea, said: "DNV have endorsed the thoroughness and professional competence with which we and our consultants prepared the original Spar inventory. We are particularly pleased with that, since care, integrity and professionalism has been the basis of our approach from the outset, and will remain so.

"The DNV results reaffirm that inventory work for such a large, unusually-shaped installation will include scientifically accepted calculations and estimations as well as sampling and measurement, and that some results will be carefully calculated ranges, not absolute figures. As DNV confirm, parts of the Spar, particularly the tanks, are difficult to access. We are reassured that any deviations between our original estimates and their own new analysis are very small in relation to the size of the task, and to any environmental significance."

DNV calculate that the most likely amount of oil on the Spar is in an estimated range of 75-100 tonnes. The Shell figure was 53 tonnes, derived from a range of 24-76 tonnes. DNV point out that the main difference in the figures is due to oil residues in the pipework.

Mr Rothermund said: "This appears to be due to residual oil migrating from the tanks to the pipework above the tanks, in the period from decommissioning in 1991 until now. We note that we overlooked the possibility of some oil migrating upwards in this way. The amount of oil in the Spar calculated by DNV is still well within an acceptable range in relation to our original environmental impact assessment."

Shell calculated a total amount of 100 tonnes of what the company described as 'sludge' in the Spar's six tanks. DNV estimate that the tanks contain a total amount of material, which they also describe as 'sludge', in the range of 260-330 tonnes.

Mr Rothermund said: "DNV conclude that there is little or no sludge in the four tanks used for oil storage, and that in the two damaged tanks open to the sea, the sludge is probably a build-up of decaying marine growth, of which 80 per cent is water and organic matter. The 80 per cent water with organic matter almost totally accounts for the higher amount of what is described as sludge."

Mr Rothermund added: "We are grateful to DNV for their thoroughness and care. Their study will form another valuable input to the new way forward for the Spar which we outlined last week. With this satisfactory conclusion to the DNV audit, we can now concentrate our efforts on finding the best solution to the Spar disposal. The open participative process which we have announced will enable us to tap the ingenuity and capability of contractors and others, including over 200 proposals which we have already received from all over the world. Our aim is to identify and formulate alternative options. From a short list of these, in comparison with the currently licensed deep sea disposal plan which Shell called off on 20 June this year, a Best Practicable Environmental Option (BPEO) will be determined which will balance environmental, safety, health, technological and economic considerations and widespread acceptability. This will involve extensive external consultation. Shell Expro will then propose the BPEO to the UK Government for final approval, and we are confident that a new solution will be found which meets the Government's requirements."

#### **Notes on the DNV Report:**

Important objectives of the DNV work were to establish the validity of the claims by Greenpeace that the Spar contained "5,550 tonnes of oil", and to investigate a sworn affidavit supported by Greenpeace which claimed that toxic waste had been "hidden" in the Spar. DNV estimate a range for oil in the Spar of 75 -100 tonnes.

### 5.5.3. Shell welcomes the results of the DNV audit

The Shell figure was 53 tonnes, derived from a range of 24-76 tonnes. DNV find that the main difference in the figures is due to oil residues in the pipework. This appears to be due to residual oil migrating upwards from the tanks to the pipework above, in the period from decommissioning in 1991 to the present, most likely due to movement of the Spar. DNV confirm that the amount of oil claimed by Greenpeace to be in the Spar was "grossly overestimated". DNV confirm that it is unlikely that the person who swore the affidavit has ever been involved in any operation with the aim of deliberately hiding hazardous waste or chemicals in the Spar, or that such chemicals are, or ever have been, on board the Spar.

DNV investigated the Shell inventory calculations for radioactive substances and sludge on board the Spar. DNV confirm the Shell estimates of total radioactivity, with only minor deviations. In line with the original Shell inventory, DNV find that the radioactive material on board is mainly Low Specific Activity (LSA) scale.

Their measurements also confirm that all the radioactivity is of natural origin. DNV find a lower amount of radioactive scale; approx. 8-9 tonnes compared to the Shell estimate of 30 tonnes. Shell calculated a total amount of 100 tonnes of what the company described as 'sludge' in the Spar's six tanks. DNV estimate that the tanks contain a total amount of material, which they also describe as 'sludge', in the range of 260-330 tonnes. However DNV conclude that there is little or no sludge in the four tanks used for oil storage, and that in the two damaged tanks open to the sea, the sludge is probably a build-up of decaying marine growth, of which 80 per cent is water and organic matter. The 80 per cent water with organic matter almost totally accounts for the higher amount. None of this material was found by Shell in 1991. It appears highly likely that marine organisms have been growing between 1991 and the present in the tanks which are open to the sea. DNV note that some of the radioactivity can be attributed to the sludge, but at a level below the limits which would require it to be internationally classified as 'radioactive'.

DNV investigated the Shell inventory calculations for the heavy metals on board the Spar. DNV largely confirm the Shell figures for the heavy metals - which are relatively very small - noting only minor deviations. Some Shell heavy metal calculations are slightly higher than DNV's and some slightly lower. Using the Norwegian quality system for classifying seabed sediments, DNV note that for the majority of metals present, the environmental quality of sediments containing the same amounts of metals as are in the sludge in the Spar's tanks would be classified as 'good' or 'fair' (with very low content). There would be no classification of 'bad' or 'very bad' for any of the metals present.

Shell commissioned Det Norske Veritas in July 1995 to carry out its independent audit. The work covered five main tasks: to evaluate Shell data and methods, to evaluate Greenpeace data and methods, to investigate the allegations of toxic substances 'hidden' on board the Spar, to investigate the contents of the Spar, and to report on the existing inventory carried out for Shell.

## 5.5.4. Shell unveils a combined strategy

11/10/1995

**Problem-solving creativity combined with technical skills and the involvement of others point the way forward to a solution for the Brent Spar, Shell U.K. Exploration and Production said at a news conference in London today (October 11), when unveiling a strategy which involves inviting contractors, and individuals, to develop proposals for the disposal or re-use of the redundant floating oil storage and loading buoy.**

The aim of the initiative is to identify and formulate alternative options for the Spar. From a short list of these options, along with the currently licensed deep sea disposal plan which Shell called off on June 20 this year, a Best Practicable Environmental Option (BPEO) will be determined which will balance environmental, safety, health, technological and economic considerations and widespread acceptability. The latter will involve extensive external consultation. Shell Expro will then propose the BPEO to the UK Government for final approval.

The Spar is a highly unusual, arguably unique, offshore installation. Its disposal has presented special challenges from the outset, and these remain today. The catalyst for the new plan, described by Shell as 'a process of matchmaking skills and capabilities that will generate new solutions', has been the receipt of more than 200 unsolicited proposals for the Spar.

Mr Heinz Rothermund, Managing Director of Shell Expro, operator for the Shell/Esso venture in the UK North Sea, said:

"Since mooring the Spar in a Norwegian fjord in late June, we have continued to work on developing an acceptable alternative. The Spar remains under our duty of care and is our responsibility - and we will find a solution. In doing so we will conduct the process constructively and openly."

He continued:

"There is a broader context to the decommissioning debate. It is not just about the Spar and Shell. It is about safety, economics and the environment. It is an issue for society at large. Solutions must be based on the pursuit of sound science, reason and the careful balancing of environmental, safety, health, technological and economic considerations. These principles must apply to decommissioning and disposal decisions just as they do to other areas of industrial activity. That is why we will be very open in sharing this problem with society. We all have much to learn from each other, and consultation and dialogue will be central to our new initiative.

"That dialogue has begun, with the receipt of more than 200 proposals over the summer providing the stimulus to seek more. They have come from 25 countries - half from the UK - and a range of sources, from major contracting organisations who work in our industry to individuals who have come up with a good idea. Suggestions include re-using the Spar for different purposes or disposing of it, specific waste management methods and other technical solutions. These contributions have inspired us to devise a process which will enable us to tap such ingenuity to the full."

### Way Forward - the Process

Within days, Shell Expro will place a notice in the Official Journal of the European Communities, in line with industry practice, inviting expressions of interest in the Brent Spar Decommissioning Project from contractors and proposal authors. This will also set out the full qualifying conditions.

An initial screening will create a longlist of 20 to 30 organisations which will be asked to meet detailed pre-qualification criteria. These will include having a workable concept showing consideration of its environmental impact, technical feasibility and other key aspects. Shell will provide substantial historical and new technical data to help with this phase, and will act as 'marriage broker' to fit innovative ideas from individuals or small companies with major contractors able to undertake the work. Mr Eric Faulds, Manager of the Brent Spar Decommissioning Project, said:

## 5.5.4. Shell unveils a combined strategy

"The disposal of the Brent Spar is a major civil engineering project. This will require a large, capable contractor with experience in on and offshore construction, structural engineering, dismantling and waste management, as well as the ability to manage large projects with a high degree of public visibility. We believe that the best proposals will come from consortia or partnerships comprising the necessary technical, creative and practical expertise."

A final shortlist of six contractors will then be invited to develop full project proposals, including all the input necessary for the essential Best Practicable Environmental Option (BPEO) evaluation. This will balance environmental, safety, health, technological and economic considerations and widespread acceptability.

Added Mr Faulds:

"We will take the new proposals, assess them closely in comparison with the currently approved deep sea disposal plan, and consult widely. What we seek is a BPEO that matches the deep sea disposal option. This will allow us to formulate a recommendation for consideration by the UK Government's Department of Trade and Industry."

### Past Studies

Shell has assembled on CDROM the large number of independent studies completed between 1991 and 1994 into abandonment options for the Brent Spar. These studies were carried out by academic, engineering, marine and materials experts who examined the options and concurred that deep sea disposal was on balance the BPEO. The actual study reports have been deposited in the libraries of the House of Commons and the House of Lords.

### Further Studies

As part of the way forward for the Spar, Shell has commissioned more studies. Said Mr Faulds:

"Although the key to disposal is likely to hinge on civil engineering issues, risks could be reduced if the oil storage tanks could be cleaned in-situ. If this was successful, a 'rigs to reefs' solution, for example, could be feasible. We have therefore undertaken further structural analysis studies along with an examination of tank inspection and cleaning techniques. In addition, the leading Norwegian verification company Det Norske Veritas (DNV) has spent several weeks conducting an independent audit of the Spar's tanks for Shell. The results will be announced on October 18."

Heinz Rothermund concluded:

"Since calling off the deep sea disposal plan, we have not hidden ourselves away, hoping the problem will resolve itself. We have used the time to develop new strategies in line with our commitment to finding an acceptable solution. That is our responsibility and we will not shirk from the task. The Spar is a highly unusual, arguably unique installation, and its disposal is a challenge for Shell, the industry and society. But we are convinced there is a way forward and we have taken a very important step on that new journey today."

## 5.5.5. Shell informs of an exploratory meeting with Greenpeace

08/09/1995

**An exploratory meeting took place at Shell-Mex House on Wednesday, September 6 between Dr Chris Fay, Chairman and Chief Executive of Shell U.K. Limited, and Peter Melchett, the Executive Director of Greenpeace UK.**

Commenting on the meeting, Chris Fay said: "It was a useful opportunity to air our differences over the Brent Spar. We also had a constructive exchange over the wider aspects of the decommissioning of redundant offshore petroleum installations. As a follow up, we have suggested a meeting with Thilo Bode of Greenpeace International, probably in October."

### **Notes for Editors:**

Shell UK has begun work on a detailed and exhaustive review of more than 200 options for onshore disposal or re-use of the Brent Spar. The purpose of this review is to identify the Best Practicable Environmental Option (BPEO), recognising that, on balance, this would need to pose no greater risk to the environment or to human safety than those calculated for the existing BPEO (deepwater disposal).

The independent analysis currently being carried out by Det Norske Veritas (DNV) in Norway to re-check the contents of the Spar, will be one of the factors taken into account in Shell UK's review of future options. (While the results of the DNV audit will be available in mid-October, the review of options is likely to take considerably longer).

Shell UK intends that its review of options and any new BPEO proposed to the UK Government for relicensing will be the subject of extensive consultations with interested parties - this to ensure that the proposed BPEO carries the wide support of stakeholders in general. Shell UK has agreed that Greenpeace will be one of a number of representative bodies consulted in this connection.



## 5.5.6. Shell welcomes the letter of apology from Greenpeace

00/09/1995

**Shell UK Limited welcomes the letter of apology from Greenpeace in which the pressure group have admitted that their sampling on board the Brent Spar was flawed, and that Greenpeace were wrong in widespread allegations that the Brent Spar "contained 5,000 tonnes of oil".**

In their letter to the Chairman and Chief Executive of Shell UK, Dr Chris Fay, Greenpeace admit that they attempted to take samples from only one of the Spar's six tanks, and have now learned that their samples were not taken from this tank at all, but that the sampling device had been lodged in a pipe.

Dr Chris Fay said:

"We welcome this development, which provides further confirmation of the care and integrity which has characterised Shell UK's approach to all aspects of the Brent Spar disposal over the last four years. We are now beginning a detailed review of new proposals for disposing of the Spar and will conduct it over many months with similar care."

In their letter Greenpeace have also continued wrongly to allege that "no inventory" or "no independent investigations" were made of the contents of the Spar before Shell UK's application for a licence from the UK Government to dispose of it. This is not the case.

During four years of planning the Brent Spar disposal, Shell UK commissioned numerous independent studies, carried out by experts in their fields including independent scientific institutions. An extremely detailed inventory of the Spar's contents was made containing hundreds of individual items, down to the last light bulb. Shell submitted this in full to the UK Government as part of its disposal licence application, and has widely published detailed information from it.

The further independent audit of the Brent Spar which has since been commissioned from the internationally-recognised certification authority Det Norske Veritas is to provide further independent verification of the Spar's contents. The aim is to allay concerns about alarmist Greenpeace claims and to assist with further work on disposal options.

Greenpeace also continue to maintain that there were "fundamental flaws" in the scientific arguments supporting Shell's plans. Shell UK believes it acted entirely responsibly, taking account of expert independent advice in depth. Further scientific advice was taken by the UK Government before granting Shell a disposal licence.

## 5.5.7. Shell invites DNV to conduct an independent inventory on Spar

12/07/1995

### **Shell UK Limited has invited the internationally-recognised certification authority Det Norske Veritas Industry A/S to conduct an independent inventory on Brent Spar.**

The aim of the audit is to provide further independent verification of the contents of the Spar, partly to allay any concerns over the alarmist claims made by Greenpeace over recent weeks, but also to provide a valuable reference point for the further analysis and comparison of disposal options. DNV will initially carry out an in-depth review of Shell UK's previous inventory work and documentation, and will establish any requirements for additional sampling and inspection of the Spar. DNV will also ask Greenpeace to provide detailed documentation to substantiate allegations they have made about the contents of the Spar.

The precise terms of reference for the project are in the final stages of agreement with DNV as the lead authority. Their work will be supported by other leading inspection agencies. The project is expected to start within the next fortnight and will take some weeks to complete.

Brent Spar arrived at its Norwegian mooring location at Erfjord in Rogaland County, east of Stavanger, at 11.30 (uk time) yesterday morning (July 11). Mooring operations were completed early this morning.

Shell uk has expressed its appreciation to both the Norwegian and British authorities for their support in ensuring the Spar can be anchored safely in a sheltered deep water haven while, over the coming months, the company undertakes the detailed work of considering again the options for disposal.

## 5.5.8. Brent Spar to be temporarily moored in Norway at Erfjord

07/07/1995

**Shell UK Limited is very grateful for the formal approval granted by the Norwegian authorities for the Brent Spar loading and storage buoy to be temporarily moored in Norway, at Erfjord in Rogaland County (east of Stavanger).**

Mr Heinz Rothermund, Managing Director of Shell U.K. Exploration and Production, said: "We are most appreciative for the support we have received at this difficult time from both the Norwegian and British authorities and for all the efforts which have been made in helping to process quickly the necessary authorisations and permits.

This was our immediate priority and will ensure that the Spar can be anchored safely in a sheltered deep water haven while, over the coming months, we undertake the detailed work of considering again the options for disposal."

The Spar is still under tow, east of Shetland, and is now moving slowly towards Norwegian territorial waters. It is expected the tow to Erfjord will take around three days. Minor maintenance work in preparation for temporary anchorage has already been carried out including the removal of the explosive charges, and two of the buoy's anchor chains which were hanging free. Detailed procedures have been agreed with the Norwegian authorities to ensure the safe navigation of Spar in Norwegian inshore waters and its subsequent anchoring in Erfjord.

The next stage in the process will involve conducting further studies on the decommissioning of the Spar and will take many months. Any decision on the technical solution to be implemented will depend on the outcome of these studies, further consultation with the UK government and extensive discussions with other external bodies. The resulting disposal plan will then have to be licensed by the UK Government. Any management or contracted services which are required to supplement Shell UK's own capabilities in developing and implementing the disposal plan will be procured in accordance with the company's normal contracting procedures.

## 5.5.9. Shell applies for Brent Spar to be temporarily moored at Erfjord in Norway

28/06/1995

**A formal application has been made by Shell U.K. Limited to the Norwegian authorities to allow the Brent Spar loading and storage buoy to be temporarily moored at Erfjorden in Norway.**

The application is aimed at ensuring the Spar can be anchored safely in a sheltered deep water haven. This is not possible at any inshore location in uk waters because of the draft of the Spar.

The Spar, still under tow, has reached a point to the north-east of Shetland where some minor maintenance work will be carried out in preparation for temporary anchorage.

## 5.5.10. Shell puts HeereMac study in context

18/06/1995

### **Reports of a lower cost onshore disposal option for the Brent Spar, based on a study carried out by HeereMac of The Netherlands, have been seized upon and distorted by Greenpeace yet again.**

In May 1994, HeereMac was asked by Shell uk Exploration and Production to review all previous studies on onshore disposal and suggest alternatives.

Their study proposed towing the Brent Spar buoy in a vertical position to a deep-water loch on the west coast of Scotland. To enable the buoy to reach the location HeereMac proposed to pump compressed gas into the oil storage tanks to reduce the Spar's draft to 80 metres to allow it to be towed through the notoriously rocky west coast channels where the water depth is believed to be as shallow as 88 metres. This water depth would have to be confirmed by rigorous sonar survey. Shell Expro has serious concerns regarding the safety of relying on compressed gas to maintain the necessary buoyancy whilst towing the Spar through an environmentally sensitive marine area with only an eight metre seabed clearance.

The report also lacked detail on how the buoy could be dismantled in a way that would reduce to the minimum the environmental, safety and occupational health risks which other independent studies had highlighted with onshore disposal.

This reinforces Shell Expro's conclusion that in the particular case of the Brent Spar, deepwater disposal is the best practicable environmental option. Onshore disposal of the Spar, as demonstrated by more detailed studies, would have cost £46 million.

## 5.5.11. Greenpeace day of action barely occurred

17/06/1995

It would appear that the so-called day of action at Shell service stations called for by Greenpeace has barely occurred. It appears that demonstrators arrived at only a handful of service stations. This has been yet another attempt by Greenpeace to alarm people with inaccurate and misleading information.

We believe our customers are capable of balancing the inaccurate and alarmist claims of Greenpeace against the facts, which are that disposal of the Brent Spar in the deep Atlantic poses negligible threat to the marine environment, and is the best all-round solution, balancing all the environmental, health, safety, engineering and economic factors.

Disposal onshore would have no environmental benefit while safety and occupational health risks would be six times greater. This solution has been painstakingly analysed by independent experts and approved by the UK Government in accordance with all its international obligations.

Shell is sympathetic to concerns which misleading allegations may have raised amongst customers and will reply and explain fully to any customer who contacts us.

## 5.5.12. Shell refutes Greenpeace allegations

17/06/1995

### **Shell UK Exploration and Production totally refutes allegations from Greenpeace that over 5,000 tonnes of oil remains in the storage tanks of the Brent Spar.**

The contents of the storage tanks on the Spar were flushed out into a tanker in 1991 when the facility was decommissioned leaving only seawater.

Samples of bottom lying silts were taken from the storage tanks through vents at the lowest deck on the Spar (M deck) and the results included in the submissions to the Government. These results have also been made public and have been widely reported.

Shell UK believes that this is yet another example of how Greenpeace are wilfully misleading the public with false and unsubstantiated information.

## 5.5.13. Allegations about Smit Engineering report "untruthful and irresponsible"

15/06/1995

**Shell UK Exploration and Production categorically rejects recent allegations that a report by Smit Engineering B.V., the internationally respected Netherlands-based engineering company, shows that the Brent Spar loading buoy and oil storage installation could have been "scrapped on land for £10 million".**

Onshore disposal of the Spar, as demonstrated by later more detailed studies, would have cost £46 million. In addition, Aberdeen University have concluded that deepwater disposal is the best practicable option from an environmental point of view, and that deepwater disposal is up to six times safer.

The 350-page Smit Engineering report, completed in August 1992, was a very early feasibility study commissioned by Shell Expro in view of Smit's experience in salvage operations. It was amongst the first of many studies into a unique disposal project, which had no precedent on which to base solutions or cost estimates. The Smit report covered only the single act of demolition, and identified many areas - environmental, safety, engineering, and the structural integrity of the Spar itself - which needed further investigation. This subsequent work, including many other decommissioning activities, entailed higher costs. Some of the solutions outlined by Smit - whilst technically feasible - were rejected by Shell Expro on safety and environmental grounds.

Mr Eric Faulds, Construction Manager for the Brent Field, Shell UK Exploration and Production, said:

"Smit made an excellent contribution with a first pass at an extremely technically complex project. Their report was of great value, not least in identifying the gaps and how much more needed to be understood and evaluated. It was certainly not, however, a conclusive basis on which to base an onshore disposal option."

Dr Richard Parker, Production Director of Shell UK Exploration and Production, said:

"Untruthful and irresponsible claims have been made about this study by Greenpeace who have circulated selected extracts, misleading people about the risks and costs of onshore disposal. It has also been claimed that the report was kept secret. On the contrary, the Smit report was in fact developed further and incorporated into the later more detailed study by McDermott Engineering (Europe) Limited. It was extensively referred to in McDermott's report, which was submitted to the Government and formed the basis of the Government's approval of deepwater disposal."

Examples of areas for further investigation, further costs, and unacceptable risks in the Smit Report:

The steel hull would be cut by gas torches. Smit Report page 52: "There will be some old crude oil stuck to the stringers and to the walls...As soon as a torch is brought into contact with this old crude, the crude will evaporate and ignite. It is not known whether it is possible for fire to spread up the walls of the Spar and continue burning. This possibility must be investigated before people are allowed to enter the Spar with open flames". **This indicated risks unacceptable to Shell Expro.**

Smit acknowledges that low specific activity radioactive scale (LSA scale) might be present on tank walls and would need to be kept wet, as it is a hazard to health if it dries to form dust which could be inhaled. **This is incompatible with the use of gas torches.**

Sections of the Spar would be cleaned on flat-top barges with reliance on bunds and oil booms to contain effluent. **This entailed environmental risks unacceptable to Shell Expro.**

The Smit Report assumed onshore disposal in Norway, but identified a major problem. Smit Report page 106: "The greatest obstacle...seems to be the regulation on export and import of hazardous waste, based on the Basel (Basle) Directive. Import and export of waste also seems to be in conflict with current Norwegian policy on handling of waste." **Subsequent enquiries by Shell Expro indicated that permission to conduct onshore disposal in Norway was highly unlikely to be obtained.**



## 5.5.13. Allegations about Smit Engineering report "untruthful and irresponsible"

### **The Smit Report cost estimate does NOT include:**

Handling of the LSA scale

Treatment of contaminated water

Offshore surveys and underwater inspections

Offshore preparation work

Client costs

Insurance

Authorities and consultants

The Smit Report also did not include contingency costs. Shell Expro's experience suggested that a 100% contingency allowance would be appropriate on cost estimates in such an early feasibility study with no cost precedent.

The costs estimated by Smit were based on an exchange rate between the Dutch Guilder and the £ Sterling of £1=3.25 Dfl. Today's exchange rate is £1=2.5 Dfl.

All the items not included in the Smit report would add approx. £9.3m to Smit's £10m estimate.

The Smit Report performed the valuable service of confirming that the Brent Spar disposal would be a major engineering project. McDermott Engineering (Europe) Ltd., a world leader in offshore engineering and marine contracting, with extensive experience in offshore platform removal in the Gulf of Mexico, were therefore commissioned to further develop the Smit study, addressing the weaknesses identified by Smit themselves and working towards a uk disposal. McDermott studied 13 disposal options, and narrowed them down to two - onshore scrapping and deepwater disposal. The McDermott study was completed in 1993.

Of onshore disposal, McDermott said:

"The evaluation has highlighted.....areas of uncertainty that may have a substantial impact on the feasibility, safety and financial aspects....At this stage of the project, none of these areas of uncertainty discount the (onshore) disposal option in its entirety, although some may do so after further detailed evaluation."

The main areas of uncertainty McDermott listed were:

The structural integrity of the Spar The ability to bring the Spar into the horizontal position

The ability to load the Spar onto a semi-submersible barge

The means of off-loading the Spar on to a quayside and cutting up its Haematite ballast.

McDermott concluded that the feasibility of the onshore option depended on being able to bring the Spar to a horizontal position, for example to load it on to a barge. Upending it would exert differential pressures on the ballast and storage tanks, which could cause the tanks to rupture and re-flood, particularly as some of the tanks were already damaged. McDermott concluded: "The least detrimental option is the deepwater dumping, as it requires reduced personnel exposure to hazardous materials or activities, maintains the hazardous materials in a structural containment and is believed to offer the lowest environmental impact of all options."

### 5.5.13. Allegations about Smit Engineering report "untruthful and irresponsible"

#### **McDermott's cost estimate for onshore disposal was £41 million.**

It included £12.7m for contingencies and £9m to cover the items not included in the Smit estimate. Major cost increases arose from the need to have heavy lift vessels and special marine transport to ensure pollution-free operations in uk waters. The specialist marine craft alone were estimated at £16.7m. The total cost of removing the Spar from the water for cleaning before onshore dismantling was estimated at £21.8m. A further £5m was added by the fabrication and installation of a manifold cover on the Spar pipeline, seabed clearance, some 15 further engineering studies, and management costs required by Shell Expro. The total cost estimate for onshore disposal was therefore £46m - quite apart from the fact that the risk of an environmental incident or fatal accident during the 19 separate operations of onshore disposal would be six times higher.

The Best Practicable Environmental Option assessed by Aberdeen University was deepwater disposal.

Mr Faulds said:

"Contrary to what has been alleged, the estimates in the Smit Report do not represent the total cost of onshore disposal. But even if the costs were equal, deepwater disposal for the Spar remains the best all-round option from an environmental and safety perspective."

#### **Notes for Editors**

The designated disposal site, more than 150 miles off the West of Scotland, is in the deep Atlantic at a location where the water is more than 1.5 miles deep. The environmental impact of disposal at such a location will be negligible.

During planned preparatory work, carried out from the multi-purpose vessel *Stadive* over recent weeks, more than 100 tonnes of material was removed from the Spar. The material removed included waste lubricating oil, batteries (which contained cadmium and lead,) light bulbs (which contained mercury,) a crane boom and loading boom, hoses, a shelter, household equipment including bedding - and 20 tonnes of items left behind by Greenpeace.

The work was inspected and audited by officials from the Scottish Office. The Spar was also visited by a representative of the Health and Safety Executive, who confirmed that the work was being carried out in compliance with the agreed safety case; by a representative of Lloyd's, the certifying authority; and by a representative of the Marine Safety Agency who, in conjunction with the warranty surveyor, gave permission for the tow to the disposal site to proceed.

## 5.5.14. Chris Fay replies to a letter from Greenpeace

31/05/1995

**Dr Chris Fay, Chairman and Chief Executive of Shell UK Limited, has replied to a letter from Greenpeace International which makes a number of incorrect and unjustifiably alarmist assertions about the Shell plan for the disposal of the redundant Brent Spar offshore storage and loading buoy.**

The Greenpeace letter, addressed to Mr Cor Herkstroter, Chairman of the Committee of Managing Directors of the Royal Dutch/Shell Group, repeats claims recently made widely public by Greenpeace.

The Shell reply rejects all the assertions made in the Greenpeace letter and demonstrates that:

The disposal plan has followed on every count the procedures, principles and standards of best international oil industry practice, within a UK regulatory regime which is amongst the most scrupulous in the world.

The disposal options have been analysed with care, rigour and independence.

The environmental, safety, health and economic considerations have been responsibly balanced.

Extensive and open consultations were held before UK Government approval was obtained.

The responsible option for the Brent Spar, an unusual installation, is carefully-managed deepwater disposal; but in accordance with the UK Government policy of case-by-case consideration, many future disposals of redundant British installations are likely to entail onshore recovery and waste management.

Numerous studies have shown that on balance there would be no environmental benefit in onshore disposal of the Spar, while safety and occupational health risks would be higher.

Environmental impact of the disposal would be negligible, localised and inaccessible to the food chain.

Specific Greenpeace statements about the contents of the Spar are overstated and irresponsibly alarmist.

The disposal plan has not become public knowledge because of a Greenpeace protest; consultations were held in 1994, the independent analyses supporting the Shell proposal were made publicly available, and all governments party to the Oslo Convention were notified months ago.

To state that "dumping of redundant oil installations is prohibited" in the USA is incorrect; the US Government has been involved in an initiative placing structures on the seabed to create artificial reefs attractive to marine life.

### **Dr Fay's letter concludes:**

"I unequivocally reject your assertion that Shell U.K. is prepared to treat the environment with 'contempt'. Such a comment ignores the facts relating to our careful and positive environmental management. It also highlights the contrast between those of us who are engaged in the painstaking process of seeking responsible balanced solutions and those, like yourselves, who focus only on the problems."

## 5.5.15. Illegal Greenpeace occupants removed from Spar

23/05/1995

### Press Release 1

Shell UK Limited advises that at 06.07 today (Tuesday 23 May) the company re-occupied its Brent Spar installation which was boarded on April 30, without permission, by a group of individuals from the Greenpeace vessel Moby Dick.

The company effected the re-occupation from the multi-purpose support vessel Stadive, utilising a crane and personnel container. The first personnel on board comprised Sheriff Officers, Grampian Police officers, and Shell Expro personnel.

The process of removing the illegal occupiers continues in a safe and controlled manner.

The Stadive had been due to start work at the Brent Spar around this time, as part of a work programme planned at least 11 months ago, to remove material from within the installation before the final disposal of the Spar in a deep-water Atlantic site. This work programme will now continue as scheduled.

### Press Release 2

Shell UK Limited can confirm that as of 1700 today (Tuesday 23 May) a total of 20 illegal occupiers had been removed from the Brent Spar and transferred to Shell Expro's multi-purpose support vessel Stadive. Two people remain on the upper levels of the Spar superstructure. A controlled search within the installation level by level continues.

Arrangements are in hand to transfer people to shore as and when transport is available. It is anticipated that the first batch of 14 people (six media and eight protestors) will arrive at Sumburgh Airport in Shetland by helicopter this evening.

At a press briefing held in Aberdeen this morning, the Production Director of Shell U.K. Exploration and Production, Dick Parker, emphasised that the re-occupation of the Spar and the removal of protestors and media had been carried out in a very safe and controlled manner. Replying to a query regarding allegations of violence, Mr Parker said: "In fact it was very peaceful and I would like to express our gratitude to the Sheriff Officers and Grampian police. One major role for the police was to act as arbiters, observe what happened and for example take statements if there was any problem. There was no real resistance, just passive obstruction."

Responding to criticism levelled at Shell Expro by Greenpeace over the disposal option chosen for the Brent Spar, Shell Expro Managing Director Heinz Rothermund said: "Many groups, like Greenpeace, raise problems rather than solutions. We have to find solutions but they are only interested in showing up the problems. We respect that; they have a purpose but we need to have compromises and evaluations."

For example Shell's disposal plan for the Brent Spar, endorsed by the Government, follows more than three years of painstaking analysis of the options. This has involved numerous separate studies on environmental and engineering aspects, taking independent surveys and advice into account. The careful weighing of all the environmental, safety, public health and economic considerations shows that the deep-water sinking of the Spar is the best option.

## 5.5.15. Illegal Greenpeace occupants removed from Spar

### **Press Release 3**

Shell UK Limited can confirm that Brent Spar is now totally clear of illegal occupiers.

Mr Jonathon Castle was removed from the Brent Spar shortly after 8.00 pm tonight, (Tuesday, May 23) after a team of workers gained access to a heavily barricaded area in one of the lower decks.

He is now being interviewed by Grampian police on the Stadvie. Mr Castle is under arrest by Sheriff Officers who are compelled to return him to Aberdeen. Once ashore he has seven days to provide the Court of Sessions in Edinburgh with the names of all those who were involved in the illegal occupation of the Spar since April 30.

The remaining two protesters who were located on the upper levels of the Spar superstructure have also now been removed to Stadvie. Arrangements are in hand to transfer them to shore when transport is available.

## 5.5.16. Shell refutes Labour Party environmental claims

16/05/1995

### Deep water disposal is environmentally responsible

Shell UK strongly refutes the Labour Party's claim that the Government-authorized plan to dispose of the Brent Spar in a remote Atlantic deep water site compromises accepted environmental standards for short term economic benefit.

Mr Frank Dobson, the Shadow Environment Secretary, has alleged that the Government has given approval to Shell to dispose of the Brent Spar "in the North Sea". Approval has been given for disposal in the deep Atlantic, some 150 miles from land and at a depth of over 6000 feet. Deepwater disposal of the Spar has been independently assessed as the best option from an environmental point of view, and in terms of several other considerations including health, safety and economic efficiency.

The Government has endorsed the plan after several months' careful consideration of the options and three years of painstaking analysis by Shell. Both Shell and independent assessments have concluded that the impact on the marine environment will be very localised, and negligible. Fishing and environmental organisations consulted have agreed with this analysis.

The Brent Spar is an unusual installation in that it is a floating oil storage terminal and buoy. The deep water disposal agreed as the best option for the Spar does not represent a precedent, and is likely to be used in very few other cases involving redundant North Sea facilities.

### Notes to Editors

The safe and responsible abandonment and disposal of UK offshore petroleum installations is a condition of all petroleum production licences. The licence conditions require the operator to evaluate the options for disposal taking into consideration environmental, safety, public health and economic factors. The disposal plan must be authorised by the Government following extensive consultations with interested parties, including the fishing industry and environmental groups.

The Government endorsed the plan for the Brent Spar after several months careful consideration of the options and more than three years of painstaking analysis by Shell, the completion of fifteen separate studies on their environmental and engineering aspects, taking independent surveys and advice into account, and the careful weighing of all the environmental, safety, health and economic considerations. Every aspect of UK law and regulation has been followed to the letter and to the spirit. The Government is entirely satisfied that it is also complying with the relevant aspects of international law and conventions. Shell UK has also spent more than £1 million on surveying alternative deep water sites for the sinking.

The independent analysis of disposal options for the Brent Spar has shown that onshore disposal would increase the risk of an accident or an environmentally damaging incident by order of six times. Much of the waste material would end up in landfill. The options would cost four times as much, but this has not been the sole consideration.

The environmental effect of the proposed deep water disposal - at a location some 150 miles out in the Atlantic where the water depth is more than 6,000 feet - is independently assessed to be negligible and very localised. There is in any event very little fish life at this extreme depth.

Before two-out further offshore work is planned in which the structure will be stripped of almost everything on board, and the residual sources of contamination will be minimised.

## 5.5.16. Shell refutes Labour Party environmental claims

The irreducible sources of possible contamination left before disposal will consist of the paints and sacrificial anodes on the structure itself and up to 100 (not 300 as has been alleged) tonnes of sludge, consisting on 90% sand and 10% oil residues containing very small quantities of heavy metals, and 30 tonnes of solid deposits of low level radioactive salts in the tanks and pipework. These occur naturally in geological structures and can deposit, from produced water associated with the oil, a scale on the inside of pipework and tanks. Altogether these represent such low levels of radioactivity that they fall many orders of magnitude within international standards. The level of radioactivity, for example, will be no more than would emanate from a group of granite buildings in a city such as Aberdeen.

The Brent Spar, a floating storage and tanker loading buoy which was decommissioned in 1991, is not typical of offshore petroleum installations. It should not, therefore, be seen as setting a precedent for deep water disposal which, in Shell's view, is foreseen as likely in only very few cases. In accordance with Government policy, future abandonment plans will be considered on a case-by-case basis in relation to environmental, safety, public health and economic considerations. Each installation is unique and the preferred options are likely to differ. For example, all installations in the shallow waters of the southern North Sea will be removed in entirety, and modules recently removed from one of the Brent platforms were brought ashore and dismantled.

However, contrary to some reports, it is established practice in some countries to permit the option of sinking or toppling offshore petroleum installation which are redundant. For example, in the United States, the Government has since the mid-eighties encouraged oil companies to use many structures as artificial reefs in place in the Gulf of Mexico, on which marine life has proliferated specifically to the benefit of fishermen.

## 5.5.17. Deepwater disposal approved

16/02/1995

**Disposal of the Brent Spar offshore storage and tanker loading facility has been the subject of extensive discussions between Shell UK Exploration and Production and the Department of Trade and Industry for many months. During that period a range of disposal options has been considered.**

Disposal of the Brent Spar offshore storage and tanker loading facility has been the subject of extensive discussions between Shell UK Exploration and Production and the Department of Trade and Industry for many months. During that period a range of disposal options has been considered.



## 6. Article for Greenpeace Business

### **article by James Smith, Country Chairman, Shell UK for Greenpeace Business, April 2005**

Public outrage at Shell plans to sink the decommissioned Brent Spar in deepwater in the Atlantic shocked the organisation. Independent experts and the government had agreed this was the best option. Yet the controversy had damaged our reputation as a responsible business.

Our understanding of the sensitivities, creativity in finding solutions and communications had been inadequate. This was shown four years later, when – after extensive public consultation – the cleaned sections of the buoy's hull were recycled as the base for a new quay in Norway.

We recognised that we needed to change our approach – not just to offshore decommissioning in the UK, but to how we conduct all our operations everywhere.

We had learned that, while good science and regulatory approval are essential, they are not sufficient. We needed to engage with society – understanding and responding to people's concerns and expectations. We had to be clearer and more transparent about our plans and actions.

So we made a commitment in our business principles to contribute to sustainable development. An annual Shell Report assesses our progress while Tell Shell provides an internet forum for people to question us and tell us what they think.

Rigorous assessment of the environmental, social and health impact is now required before commencing all our new projects and major facility developments, including decommissioning. This involves systematic engagement with stakeholders. And we will not look for oil in natural World Heritage Sites.

Working together with those with expert knowledge of the environment helps us to make better decisions. Examples include our work with the Smithsonian Institution on managing the impact of oil operations on biodiversity in African rainforest, and involving the IUCN and independent scientists on the endangered whales offshore Sakhalin.

We need to develop the fossil fuels that the world will depend on to meet expanding energy needs. At the same time, we are responding to climate change by tackling our own emissions and developing better fuels and new energy sources.

This approach – based on clear principles, standards and systems – is now an integral part of how we make and carry out our business decisions.

That doesn't mean we have nothing more to learn. Balancing diverse pressures requires difficult judgments. We have to consult as early and fully as possible and be willing to listen and change. We must admit mistakes and demonstrate both that we try to put things right and to learn.

We aim to keep on learning every day.

The companies in which Royal Dutch Shell plc directly or indirectly owns investments are separate entities. In this document the collective expressions "Shell", "Group", "Shell Group" and "Shell companies" are sometimes used for convenience where references are made to the companies, including Royal Dutch Shell plc, in which Royal Dutch Shell plc either directly or indirectly has a controlling interest either through a majority of the voting rights or the right to exercise a controlling influence over how the company is organised and managed. These expressions are also used where there is no purpose in identifying specific companies.

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Produced by Visual Media Services (London) 05/08