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10 DOWNING STREET

From the Private Secretary

29 April 1981

North West Dome Gas Field

As you may be aware, the Prime Minister was dismayed to learn during her visit to Qatar of the difficulties that Shell have been encountering with two gas pipelines for which they have been responsible there. I enclose a copy of a memorandum which our Ambassador in Qatar prepared at the request of the Prime Minister. The Prime Minister would like to be kept in touch with this story as it unfolds.

As a consequence of what she learned about Shell, the Prime Minister, in speaking to the Amir of Qatar about British interest in the North West Dome gas field, stressed the part that BP could play. HM Ambassador believes considerable advantage might be derived from a visit to Qatar by Sir David Steel. The Prime Minister is inclined to agree. I should be grateful if you could follow this up.

I am sending a copy of this letter to Francis Richards (Foreign and Commonwealth Office).

M. O'D. B. ALEXANDER

Julian West, Esq.,
Department of Energy.

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BRITISH EMBASSY
DOHA QATAR

SHELL AND THE NATURAL GAS PLANT, QATAR.

1. Background.

The facts are that:

(i) Shell have a long and honoured history in the oil business here. They were the original concessionaires for the offshore fields, which they developed (300,00 barrels a day, approximately); and they discovered the North West Dome gasfield.

(ii) However, they were the consultants and designers of the pipelines for the Natural Gas Liquids Plant, designed to make use of the associated gas from the three offshore oilfields. And they were the consultants and supervisory firm for the plant itself at Umm Said. All the engineering and design work was done in Shell's Dutch offices.

(iii) The major mistakes made in the design and testing of the two lines from the offshore fields (one 12" for the liquids, and one 24" for the gas) were that:

- the steel specified for the lines was not suitable for the wet sour gas which the fields produce; this has led to hydrogen induced cracking (HIC);

- testing was done with seawater, which in the area round Umm Said is rich in sulphide-reducing bacteria (SRB) which attacks the oxygen in the steel;

- the line was built in two sizes, between the onshore section (28 km) and the offshore (90 km).

(iv) the contractors who laid the seaward line were the Italian firm of SIPEM, working under Shell's direction: the steel came from Japan (Sumitomo)

(v) at the insistence of the Manager of the NGL Plant, Mr

/Gillatt



Gillatt, who had become suspicious about some of the aspects of the construction and testing of the line, (a more detailed account of this is attached), ultra-sonic testing was carried out on the land-line, and then, when these bore out his suspicions, sections of the line were cut out and sent to Manchester University metals unit (UMIST) for testing.

(vi) the report from UMIST showed conclusively that the line was unsafe for the passage of high-pressure gas; the liquids line had suffered HIC, and the gas line both that and sulphide stress corrosion. They firmly advised against use of the line for any other than a short period (six months at the most - and even that they would not guarantee).

(vii) Shell are already being taken to court for sub-rogation by the insurers (British) of the NGL Plant I, which suffered a split in one of the storage tanks in 1977, which caused an explosion and fire which destroyed the whole plant (It has now been rebuilt).

(viii) Shell are contesting the seriousness of the damage to the pipelines, though not the fact that they are suspect.

(All the foregoing was given to me in strict confidence by Mr Gillatt.)
Points to make.

In view of the contentious nature of the whole investigation, I recommend that the Prime Minister should go no farther than telling the Amir that ~~British expertise is second to none, around the world; that~~ we have now gained a formidable corpus of skill from our own North Sea operations; and that BP, for example, would be well-placed to undertake the development of the Dome, having already scored a world-scale success with their LNG plant in Abu Dhabi (Das Island).

C. T. Brant

C. T. BRANT

12 APR 1981

SHELL AND THE NATURAL GAS LIQUIDS PIPELINE FROM THE OFFSHORE FIELDS TO UMM SAID

1. I have had various discussions over the last week or so with Mr Arthur Gillatt, General Manager of the Qatar General Petroleum Corporation's Onshore Operations, about the major problem now emerging over the NGL pipeline, and the implications this has for Shell's reputation and standing in Qatar.
2. Mr Gillatt recalled that Shell were already at risk for compensation of \$52 million to the insurers of the first natural gas liquids plant (NGL 1), as a result of the explosion and fire there in April 1977. Apart from any liability accruing over the destruction of the plant itself, there is also a claim on the Qatar side of \$160 million, possibly, representing the consequential loss of production and hence profits. This figure may increase to as much as \$250 million according to assessments.
3. Mr Gillatt said that Shell now stood to incur liability for the sum of \$50-60 million, being the value of the NGL pipeline now found to be unusable, together with the consequential losses accruing from the prospective loss in production of the 18 months or so needed for the replacement of the line, during which period Qatar will be having to flare off as waste 40% of the offshore associated gas. Mr Gillatt speculated that Qatari disillusion with Shell over their performance here might have extended to oil companies generally.
4. Mr Gillatt recalled that the unsatisfactory state of the new gas pipeline began to be revealed in March and April of this year. It was then, on his insistence, that ultrasonic tests were undertaken on the pipeline in various places along the overland section (from Wakrah to Umm Said). These showed some alarming symptoms of cracking. On the basis of these tests, Mr Gillatt pressed for more definite tests to be undertaken on the pipeline, and in particular that sections should be sent back to the UK for analysis. Between July and September QGPC and Shell prevaricated and did nothing, protesting that it was unnecessary for such drastic surveys to be taken on a virtually new pipeline. Eventually therefore Mr Gillatt took his insistence to the point of cutting out sections with his own resources and on his own responsibility as the operator for the NGL plant. Ali Jaidah was furious. But sections of the piping were sent to Manchester University, the British Institute of Welding and to the Shell Facilities for Testing at Amsterdam.
5. The metallurgical tests undertaken by the Manchester University testing unit and the British Institute of Welding showed a horrifying situation. They reported that the inside of the pipeline was badly corroded, and there was evidence of potentially dangerous cracking of the steel itself. The Manchester University report, which Mr Gillatt showed me, advised against any use of the pipeline, even on a limited basis. This assessment was supported by photographs of the scaling on the inside of the pipe section, plus some grim-looking cracks discovered under microscope photography.

/6. Mr

6. Mr Gillatt explained that it seemed all too clear that the Shell engineering team undertaking the construction of the pipeline (based in Amsterdam) had in the first place specified the wrong type of steel for the line. They had installed mild steel, instead of pipeline for "wet sour gas service".

7. Secondly, they had built a line of two different diameters on the seaward and landward side of the line respectively. This made it impossible for any scouring etc. to be undertaken by the traditional "pigs", i.e. plastic plugs despatched through the line under gas pressure to clean or separate hydrocarbons of different types. Thirdly, and perhaps most damaging of all, Shell had filled the line with seawater to test it. Mr Gillatt said that the seawater at Umm Said was not only corrosive but was also high in "sulphate-reducing" bacteria content (perhaps due to the out-fall from the fertiliser plant?). These bacteria are most damaging to any form of steelwork, since the bacteria feeds on the SO₂ in the steel, and hence the oxygen content itself, making the steel corroded and brittle.

8. The upshot of all this was that Mr Gillatt, who had earlier this year been regarded as public nuisance No 1 as far as Ali Jaidah, Shell and the QGPC were concerned, has now turned out to be the Hero of the Hour. By insisting on the pipeline being tested, even at the risk of incurring substantial financial penalties, Mr Gillatt has ensured that the defects of the line have become known, and a second natural gas disaster - either at Umm Said or at any point along the pipeline between the offshore fields and the NGL plant - avoided.

9. I asked him how he had first been alerted to the dangers building up over the new pipeline. He told me that his suspicions had first been aroused over the construction of the new storage tank at Umm Said. The Shell team were supervising the construction, and Dr Rabi was the sole controller for the project. QPPA (Onshore) - as it then was - had nothing to do with the building of the plant; indeed there was no contact whatever between constructor and operator, much less any acceptance of suggestions from the former by the latter. However, as QPPA (Onshore) watched the work progress, and they saw things happening that they did not like, they built up a file of their own suggestions as to how the pipeline might be rendered secure.

10. Mr Gillatt said that he himself had earlier arranged some tank testing at Umm Said. But he had been determined to use fresh water, and certainly not seawater, to do so. He had in fact had a pipeline laid to get fresh water to the tank for the testing process. In the course of justifying the cost to the QPPA management, he had had samples taken of the seawater just offshore from the plant. These showed that the seawater was both corrosive and high in "sulphate-reducing" bacteria, as described above.

/11. Mr

11. Mr Gillatt then discovered that Shell had constructed the pipeline in a manner which he thought highly unsatisfactory (for one thing, it ran too near the road for comfort or safety). He had protested about this part of the design at the time, but his protests had been rejected. By the time this had taken place, Shell had completed the line, and filled it with seawater without testing the content of the seawater. Mr Gillatt was told that they had "inhibited it", and he was virtually told to mind his own business.

12. It was only when the takeover point was approaching, when QPFA (Onshore) would have to accept the plant for operational purposes, that Mr Gillatt insisted on the ultrasonic tests being undertaken - which triggered off the whole discovery of faults in the pipeline.

13. Mr Gillatt pointed out what a serious setback it was to Qatari hopes of achieving viability for the plant. By having to shut down the gas production from the pipeline, the Qatar Government would be losing some \$200,000 a day in gas alone, and at a very rough guess some \$500,000 all told. Yet it would take 18 months to re-lay the line, with safer and better engineered materials. But I had to agree with him that damaging though this discovery was to Shell's reputation and standing here, they would have suffered even greater damage had the pipeline ruptured during the course of operations, and an explosion resulted. From that point of view Mr Gillatt's action had spared them a potential major disaster.

14. At Mr Gillatt's request, I telephoned Mr Ray Sharman of the British Gas Corporation, to see whether the BGC could hurry up/give priority to the testing of the section of pipeline sent back to destruction (a "bursting test"). Mr Gillatt said that the Manchester University testing unit had booked a place in the operations schedule of one of the two available testing facilities in the UK, but had been told that the facility could not set up the test until early February. Qatar would be losing \$500,000 a day while the line was out of action; and since the experts could not finalise their report and recommendations until this test was completed, it would help greatly if the test could be undertaken quickly, rather than have to wait until February. I put this request accordingly to Mr Sharman, on the strength of Mr Gillatt's previous assistance to the BGC with drawings of the new reinforced tanks for natural gas liquid storage at Umm Said. (Relevant to BGC's operations, because of the implications for North Sea gas transmission and storage.) Mr Sharman promised to enquire into the possibility of bringing the tests on the Qatar line forward, and to let me know the answer either by telephone or telex.

29 December 1980

C T Brant