

DECOMMISSIONING, DISMANTLING and DISPOSAL of the MCP-01 INSTALLATION

MCP-A-RP-00009

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Department for Environment and Climate Control (DECC)

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1. FOREWORD

In accordance with the Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998, there is a requirement that the Operator submits a Close-Out Report on completion of those works. This report meets that requirement in respect of the installation identified as Manifold Compression Platform No.1 (MCP-01) located in block 14/9 at position 58° 49'39"N - 00° 17'12"E. This requirement was further emphasised in the letter from DECC giving approval for the submitted MCP-01 Decommissioning Programme, dated 30 December 2008.

The removal activity, whilst having safety and audit functions under control of Total E&P UK Ltd, was executed by the Frigg Cessation Decommissioning Project working out of Total E&P Norge AS, in Stavanger. This was because the related Frigg removal was perceived to offer both safety and operations synergies if the two decommissioning workscopes were done as a joint activity.

In accordance with the requirements of Part IV, Section 29 of the United Kingdom Petroleum Act 1998, this document is submitted by TOTAL E&P UK Limited, on behalf of the owners who are the parties to the Decommissioning Programme, to the United Kingdom Department for Energy and Climate Control as the Close Out Report in respect of the decommissioning of the facility:

- **14/9 – MCP-01 (Manifold and Compression Platform No. 1)**

2. INTRODUCTION

The MCP-01 Platform is a concrete gravity base structure (GBS) installed in 1976 in the UK Continental Shelf Block 14/9, 175 km north east of St Fergus Gas Terminal mid-way to the Frigg Field. The platform purpose was to serve as manifold / pigging and recompression installation for the two 32" pipelines transporting gas from the Frigg Field to the St. Fergus Gas Terminal in Scotland.

Operated by TEP UK, the Manifold and Compression Platform No 1 (MCP-01) came into service during 1977 when gas started to flow from the Frigg field. At peak, the platform handled up to 80 million standard cubic metres per day of gas (MSCMD).

By 1992 the operating scenario meant that MCP-01 was required for neither compression nor manifold functions and served solely as an interface for some third party gases. At that time the platform was converted to operate in a Not Normally Manned mode with key functions being controlled remotely from St. Fergus terminal supported by periodic maintenance visits. This continued until 2003 when, facing an increasingly deteriorating onboard condition, TEP UK determined that MCP-01 should be decommissioned. Based on the result of extensive studies, and involving all relevant stakeholders, the overall strategy for the decommissioning of concrete structure was approved by the authorities.

In parallel, the associated Frigg field, operated by TOTAL E&P NORGE AS (TEPN), was also being decommissioned and it was decided to incorporate the MCP-01 work into that larger project to optimise synergy considerations.

The offshore operations for the removal of the MCP-01 topsides facilities started in July 2006 and were finally completed in 2009 with around 13,500 tons of original material disposed, in line with the contractual scope of work and with the approved MCP-01 Decommissioning Plan.

A specific intervention was then made in 2010 to remove the external 18" Talisman Riser and the associated support steelwork.

Further works were done by TEPUK in 2010 with the seabed clearance, sampling and testing. The final activity took place during 2011 when the seabed was trawled to demonstrate that it was free of obstruction that might have effect on future fishing activity.

The concrete substructure remains in place and is fitted with a navigation aids system that notifies it to the remaining users of the sea.



MCP01 – Topside during Operated Period – 2002



MCP01 - on completion of topside removal - 2009

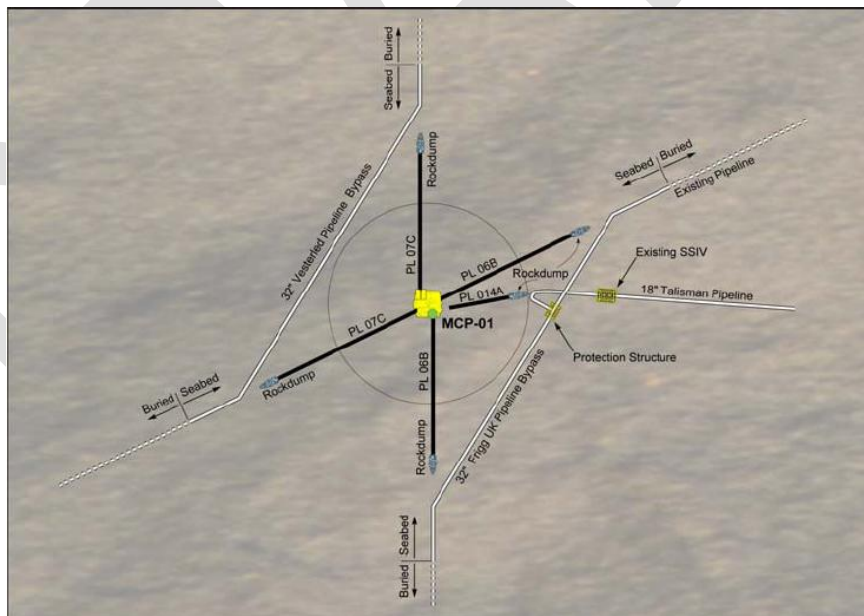
3. SUMMARY

The decommissioning of MCP-01 was split into the following main activities:

Activity	Date	Responsible
Rerouting & by pass of 2 x 32" pipelines and 1 x 18" pipeline	2004/2005	TEP UK
Make the facilities Safe & Cold	2004/2005	TEP UK
Removal of the Topside Facilities but leaving in place the concrete substructure.	2006/2009	CESSATION PROJECT/ TEP NORGE
Removal of Piper/Tartan Riser	2010	TEP UK
Post Removal activities – Seabed cleaning, Debris Removal, Trawl tests	2010/2011	TEP UK

a) Pipeline By-Pass

The pipeline bypass activity was conducted by TEP UK as a specific project during 2004 and 2005. This resulted in the 32" diameter pipelines that transport gases from the Frigg area to St. Fergus Gas terminal, being disconnected from MCP-01 and by-pass spools installed on seabed routing the pipes outside the 500m safety zone of MCP-01. A specific connection was made to allow the continued interface for the third party gases into the system. An independent report was issued in respect of this work. There was some budget growth in this activity but within acceptable levels, given the unpredictability of the offshore environment.



Bypass routes for the Frigg UK pipeline, Talisman pipeline and the Vesterled pipeline at MCP-01

b) Make Safe and Cold

The make safe and cold was executed by TEP UK as a variation on the operations and maintenance programme and utilising the same basic resources.

Carried out during 2004 - 2005, this work was defined in a Pre-Project Engineering Report and meant that all process equipment (current and former) was prepared to present it as clean, hydrocarbon free. Power generation and other utilities were shutdown, isolated and made safe. Essential access routes were

identified and made safe. A survey of the entire platform was made to identify all possible hazard materials – asbestos, HSA, mercury etc. Items of operating or domestic equipment that were considered to have use elsewhere were removed.

The operations team also removed, or otherwise controlled, those items they were aware of and that were considered likely to prove hazardous and problematic to the demolition contractor.

This work was generally achieved within the anticipated time schedule and budgets.

c) Topsides Removal

The Topsides Removal was executed between 2004 (contract award) and 2009 (Final removal of platform cranes and deck sections). This was done as a fixed price contract (with provision for reimbursement of recognised additional costs) and under the management of a single contractor – Aker Offshore Partner.

The removal of a topside deck of the type as MCP-01, where the platform development had been achieved with multiple interventions and with no specific regard to final removal, was always known to be difficult. In the event, the preparation, engineering and executed time required to safely execute the programme grew significantly from that originally envisaged or planned.

Total had encouraged the tendering companies to be innovative and the final, applied techniques for dismantling and removal were quite varied utilising piece-small, piece-medium and whole module removals. These achieved the overall objectives but with a varying level of effectiveness. They did demonstrate that the selection of work process requires to be made very carefully and that significant pre-qualification of innovative techniques is essential.

Overall, considering the complexity of the location and the work being done, the safety performance of the actual dismantling process was very carefully monitored. There were no significant injuries although the rate of small event was higher than preferred due to the quantity of airborne particulates. There was one high potential incident involving lifting and one marine incident regarding flotel positioning that warranted significant investigation.

A total of 13,500 tonnes of materials were removed in respect of the platform topsides and equipment. Recycling of the material was achieved at a rate of 98+%. In addition, approximately 1,500 tonnes of structural steel was used to facilitate the removal and to stabilise the structures prior to lifting.

External steel on the platform was removed in accordance with agreed processes. A few specific items were left where it was agreed with relevant authorities that removal represented an unacceptable level of risk and where, ultimately, these would be contained within the abandoned structure.

Finally, the abandoned structure was fitted with a remotely monitored, maintainable navigation aid that will inform users of the sea of the continued presence.

The planned duration and expenditure for this work ultimately did exceed the original estimates, requiring adjustments to the project schedule and budget. This was due to a number of factors discussed in section 13 of this report.

d) Removal of Talisman Riser

The External 18" PT Riser and its support frame was removed during 2010, by TEPUK, under a separate contract. Using a dive support vessel a combination of saturation diving and ROV work was applied to the equipment. The structures were divided into crane manageable pieces, recovered to the vessel deck and returned to shore for controlled recycling.

A total 256 tonnes weight of material of was recovered to shore with 97% of that being steel that was processed for recycle.

e) Post-Removal Activity

In 2010, after the topsides removal activity was completed, a seabed survey was conducted by the TEPN team and confirmed that a quantity of debris was located within the MCP01 500m zone. The same vessel later removed that debris – 100.2 tonnes – and this was taken ashore and processed for recycling.

The navigation aid monitoring and maintenance is in place and is executed on a schedule with relevant reports being made to the UK authorities. – Appendix 6

Once the PT Riser was removed a further series of surveys were conducted to assess the overall extent of debris removal and to make an environmental report on the site – as left. This was completed and a summary of those results can be seen as Appendix 4.

The final activity carried out was the independent trawl test to confirm that the area in and around the abandoned structure held no hazard that might be detrimental to the future use of the sea by the fishing industry. This was done by the Scottish Fisherman's Federation and a satisfactory report issued – see Appendix 5

DRAFT

4. KEY-DATA & HISTORY FOR MCP01

The MCP-01 installation is located approximately 125 miles NE of Aberdeen. Originally installed in 1976, as part of the Frigg Transportation System, MCP-01 was initially a mid-line manifold platform for pipeline operations between the Frigg field and St. Fergus Terminal. This facilitated line pigging operations and allowed manifold operations to aid pipeline maintenance.

After some years (in 1982) a compression facility was added to ensure that the contracted gas flows could be maintained. As the field outputs changed and the pipelines started to be used to transport for other fields the requirement for compression and manifold changed and MCP-01 was functioning as a tie-in for third party gases only.

This led to the decision to change operating mode to Not-Normally Manned (NNM) with control being done by telemetry from St. Fergus Terminal and maintenance and asset integrity done via campaigns. This mode was then used until 2006, when disposal started. The move to NNM mode meant that 60% of the on-board equipment and piping and 40% of the structure was redundant with fabric maintenance reduced to safety integrity only.

Block & registration	14/9 UK Sector 0119
Type	Concrete gravity platform
Function	Manifold and Compression
Quarters	Not normally manned since 1992
Water depth	94 metres
Diameter of base slab of GBS	101 metres
Diameter of JARLAND WALL GBS	62 metres
Total height of GBS base	146 metres
Dimensions OF TOPSIDES	63 x 63 metres
Weight of base	137 000 tons
Weight of sand & concrete ballast	222 000 tons
Weight of Topsides	13 500 tons
Total weight	386 000 tons
Geographical position	58° 49' 39" N 00° 17' 12" W
Largest helicopter	Sikorsky S-61 N
Process control	From St Fergus Gas Terminal
Construction of base and deck	C.G.Doris /SKANSKA
Production of base and deck	SKANSKA in STRØMSTAD
Installed	May 1976
Contractor for installation	C.G.Doris og Wimpey
Start Up of Production	August 1977
Compression start up	October 1983
Conversion to NOT NORMALLY MANNED	December 1992
Shut-in of production	September 2005
Completion of topsides removal activities	July 16 th 2009.



The platform was originally designed to accommodate 70 persons. As manning increased with the start up of the compression facilities this was increased to 120. At times of significant project activity the personnel on board was as much as 300 – achieved using temporary accommodation modules. During the NNM phase the number was limited to 40 persons.

The structure was never used for the storage of process hydrocarbons.

5. APPROVED DISPOSAL ARRANGEMENTS

The conditional approval for the disposal arrangements for the facilities installed as 14/9 MCP01 were given by DECC, on behalf of the OPSAR Commission. This was issued on 30th December 2008 under document ref: 01.08.07.08/10C. There were 7 conditional requirements imposed with that approval as follows:

- (a) The disposal in-situ of the concrete substructure of the Frigg manifold and Compression Platform facility (MCP-01) shall be implemented according to the procedures specified in the MCP-01 Decommissioning Programme dated 14 September 2007, including any approved revisions of the programme.
- (b) Before the concrete substructure of the MCP-01 facility is left in place, and following the measures mentioned in articles (c) and (d) below, an independent party shall verify that the condition of the substructure is consistent with:-
 - The terms of this permit
 - The MCP-01 Decommissioning Programme; and
 - The information upon which the "Assessment of Proposals for the Disposal of the Concrete Substructure of Disused MCP-01 Installation" (OSPAR Consultation Document) submitted by Yann Carton to Mr Graham White/Kevin Munro dated 10 February 2006 was based.
- (c) To avoid any adverse consequences from disposal at sea, including minimising the potential hazard resulting from falling corroded steel, mitigating measures shall be carried out as described below:
 - Removal of the MCP-01 topsides facilities to shore for reuse, recycling or disposal where necessary.
 - Remove as much as reasonably practical of the external steelwork, including the pipeline riser and supporting steel truss and return to shore.
 - It is recognised that the substructure has never been used for the storage of crude oil and that there are no tanks or pipes containing diesel oil, hydraulic oil or methanol within the concrete shaft. The required cleaning reflects this.
 - Following completion of offshore decommissioning work, a debris clearance operation as described in the MCP-01 Decommissioning Programme shall be conducted in the MCP-01 area. The completion and success of this work shall be verified by an independent party appointed to the parties to this programme and a report submitted covering all aspects of the debris clearance shall be submitted to the UK authorities.
 - Recovered debris shall be returned to shore for disposal.
- (d) Appropriate actions to have the location of the MCP-01 concrete substructure marked on nautical charts, in accordance with international guidelines shall be taken. In addition, the substructure shall be incorporated in the FishSAFE programme. Necessary navigation aids are to be installed on the substructure and maintained according to relevant rules and regulations to ensure the highest possible level of reliability.
- (e) Environmental Surveys, as described in the MCP-01 decommissioning Programme, including sampling of the seabed, will be undertaken after completion of the decommissioning work. A survey of the condition of the MCP-01 substructure and the adjacent seabed will also be undertaken at this time. The need for further monitoring activities will be determined based on the findings of the surveys and in discussion with the relevant UK authorities.

When the navigation aids are inspected the above water condition of the MCP-01 substructure shall be assessed and reported to the UK authorities. Deterioration of the above water condition shall be recorded and possible consequences for the safety of other users of the sea shall be assessed and required actions determined in consultation with UK authorities.
- (f) The parties to the programme are jointly and severally responsible for carrying out the measures in this permit.
- (g) Unless other arrangements are agreed with the UK authorities, the parties to the programme will retain ownership and responsibility for the MCP-01 concrete substructure. The liability for claims for future damage caused by the substructure remains with the owners and claims should be pursued against those persons under general law in the normal way.

These requirements have been fully addressed and are detailed in this report.

Copy of approval letter can be found in Appendix 1.

The approval to proceed was based upon the authorities' review of:

- a) MCP01 Decommissioning Programme dated 14 Sept 2007
- b) Assessment of Proposals for the Disposal of the Concrete Substructure of Disused MCP01 Installation

Requirements are summarised in Table 1.

Facilities	Approved Disposal Arrangements	Status
<i>Steel Platform Topsides</i>	<i>Remove and onshore disposal</i>	<i>Complete</i>
<i>External Riser Assembly</i>	<i>Remove and onshore disposal</i>	<i>Complete</i>
<i>Debris within 500m zone</i>	<i>Remove and onshore disposal</i>	<i>Complete</i>
<i>Install Navigation Aids System with monitoring</i>	<i>Provide reliable navigation aid system, to pre-agreed standard and ensure monitoring system in place</i>	<i>Nav aids installed, monitoring ongoing</i>
<i>Monitoring of abandoned structure</i>	<i>Programme for monitoring of structure, to be applied in conjunction with navigation aid maintenance</i>	<i>Programme established – to be routinely applied.</i>
<i>Concrete Substructure</i>	<i>Leave in place, removing as much external steelwork as reasonably practicable</i>	<i>Complete</i>

Table 1 – MCP01 Disposal Arrangements

c) Leaving the Concrete Substructure in place

Prior to issuing permits allowing the concrete substructure to be left in place, the DECC informed the OSPAR Executive Secretary that they were considering issuing a permit, under paragraph 3b of OSPAR Decision 98/3, for the disposal of the concrete substructures within their jurisdiction at their current locations on the Frigg Field.

By the end of the consultation period no objections had been received to issuing permits under paragraph 3b of OSPAR Decision 98/3 in respect of the MCP-01 concrete substructure subject to conditions being met.

The final status of the sub-structure was issued to DECC/OSPAR on 25/06/2012 by Total E&P UK in a specific document – *Concrete Substructure Disposal at Sea 14/9 – MCP-01*.

A specific condition of the derogation was that there should be verification by an independent party to confirm that the undertakings of the reviewed documents and the permit letter were met. This has been carried out by DNV, contracted as an independent body. Their report is summarised in Section 12 of this document

6. ORGANISATION OF THE WORK

a) Contract Arrangement

The main decommissioning work, whilst having TEPUK continuing as Duty Holder for MCP-01, was managed by TEPN who had formed the Cessation Project team to manage the Frigg field removal and MCP-01 removal. Engineering, Safety and Management personnel from within TEPUK were part of that Cessation Project team.

The Cessation team then led a process of pre-engineering study, FEED study, contract tender and contract award. Ultimately the Engineering, Preparation, Removal and Disposal (EPRD) contract was awarded, in its entirety, to Aker Kvaerner Offshore Partners (AKOP) now trading as Aker Offshore Partners and part of Aker Solutions Group.

To achieve the execution of the project AKOP had numerous sub-contractors (approved by Total) with the significant ones relating to MCP-01 being that for heavy lifting crane services via Saipem plus onshore disposal services by Aker-Stord (Norway) and Greenhead Base (Shetland). *Note: The original intent was that the entire MCP01 inventory would be shipped to Shetland for processing. However, the removal of large modules by and onto the Saipem S7000 HLCV prevented this as the vessel could not operate in the shallow waters there. As a substitute, the main support frame from the TCP2 platform in Frigg was processed there, being transferred off a transport barge onto the dockside for demolition.*

All the preparatory work (pipeline by-passes and Make Safe and Cold) and the final completion activity (debris removal, seabed cleaning, environmental sampling and trawl testing) was carried out by contractors working directly under the management of TEPUK.

b) Specific responsibilities

TEPUK, as the Duty Holder, maintained responsibility for the installation throughout the entire process. Specifically, until the abandonment of the sub-structure was achieved in 2011, there was a Safety Case in Place, an OIM appointed and relevant PFEER and DCR considerations maintained as appropriate for the actual installation status.

The Abandonment Safety case for MCP-01 decommissioning was prepared by TEPUK and submitted the HSE for their review / approval. This document was based on the Method Statement produced by the successful contractor as a result of the FEED and which formed the basis of the tender. This document was subject to review and update as the requirements of the work developed.

As part of the topsides removal contract, the title for the removed materials passed to the EPRD contractor. In this they had responsibility for transportation to agreed processing stations, ensuing the reuse / recycle / disposal traceability was fully transparent.

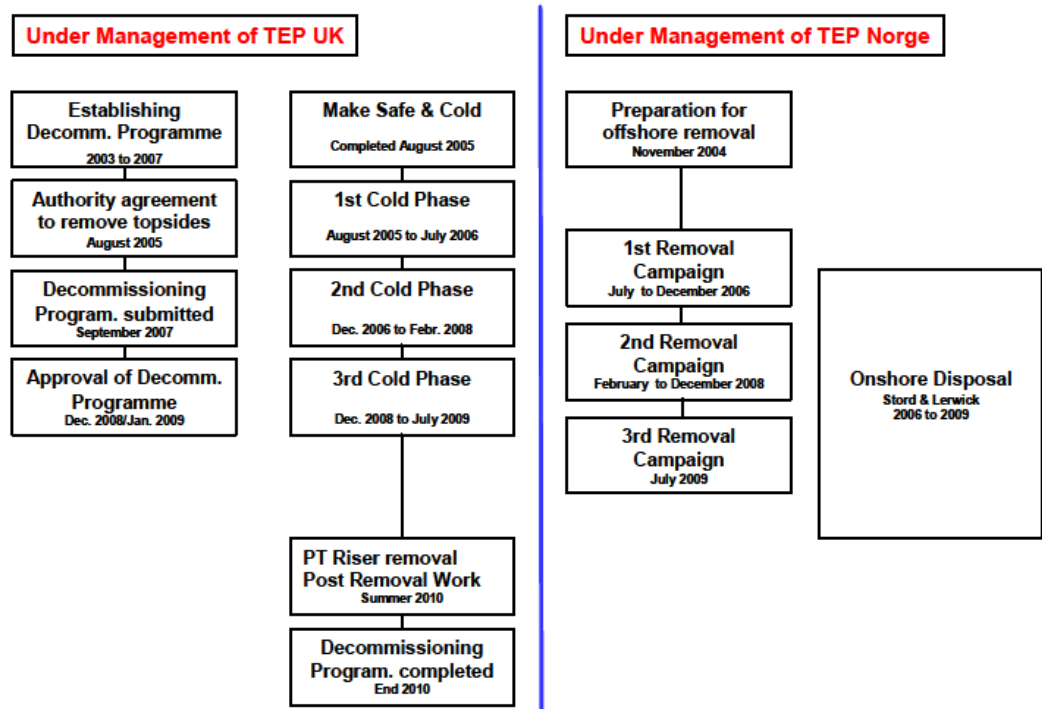
The contractor also was required to fully detect and process the hazardous materials within the removed materials. Surveys had been conducted as preparation for decommissioning but further materials became evident once work was in progress. Specialist contractors were engaged to deal with the hazards. This was done as a fully reimbursable activity, distinct from the contract.

All waste processing was subject to close monitoring by Total throughout.

Throughout the execution of the topsides activity offshore a full PFEER verification scheme was maintained and updated regularly to reflect the changing structure. This was overseen and verified by Det Norske Veritas, directly to TEPUK.

The final responsibility for the ongoing sub-structure monitoring, along with the navaid maintenance, is with TEPUK who have the activities included in their various logistics and asset integrity divisions.

Activities split between TEP UK and TEP Norge during the decommissioning of MCP-01 can be illustrated as follows:



Management responsibilities relating to MCP-01 Decommissioning

7. SCOPE OF WORK

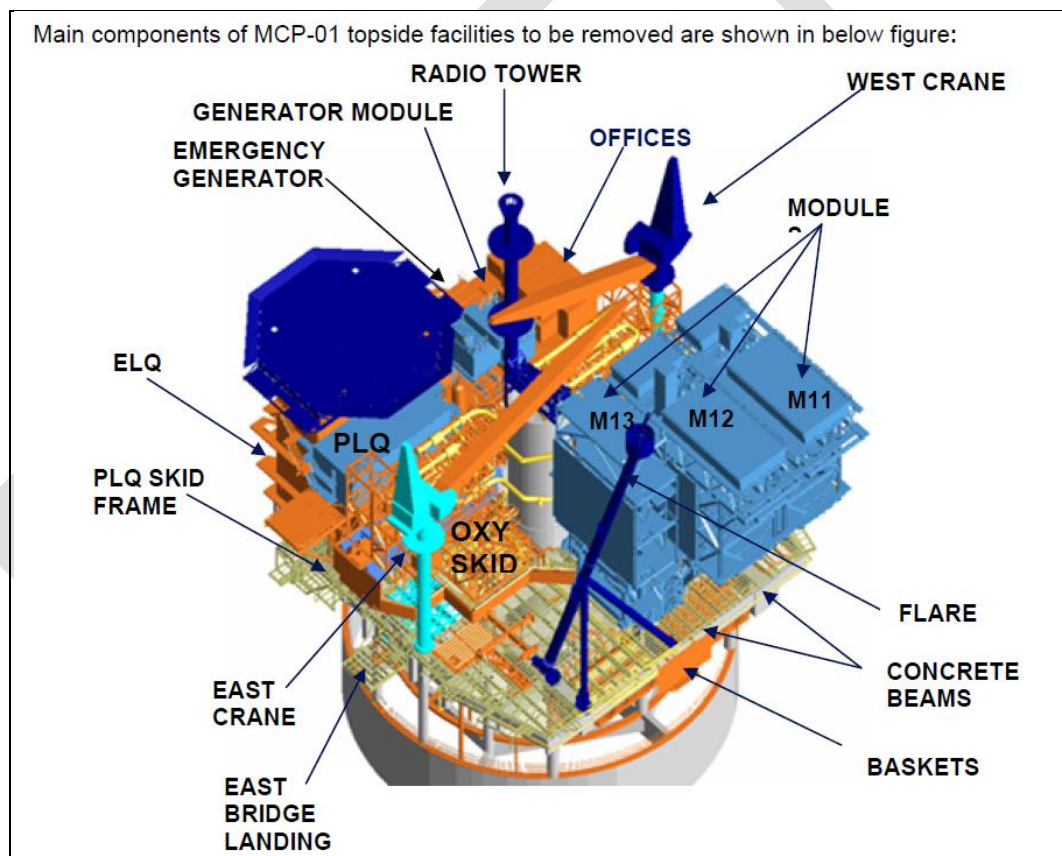
a) Removal of Topsides

This work, done in conjunction with Total E&P Norge (Frigg Field decommissioning), was executed by Aker Kvaerner Offshore Partner (AKOP) who were awarded the contract after an extensive competitive tendering and review process. A primary driver in the award decision was the indication by AKOP that the work could be achieved with minimised exposure of individuals to significant hazard. This involved the use of some alternative methods that required a significant engineering input in advance of implementation.

The topsides removal had been subject to a remunerated Front-End Engineering and Design (FEED) study by all the tendering companies that outlined the techniques to be applied along with estimate of effort and hazard control measures. The FEED report submitted by AKOP for MCP-01, and the derived method statement, formed the basis of their programme of work.

An Abandonment Safety Case was prepared and submitted by TEPUK to the HSE on this basis. The approved ASC was subsequently updated and reapproved to reflect changes to the programme.

The permission for topsides removal was granted as a recognised precursor activity to any future decommissioning of the concrete sub-structure, it being subject to review in accordance with the OSPAR requirements. There were however some specific conditions in place to ensure that, on completion of the topsides removal activity the installation was left optimised for whatever future decision was made.



The requirement was that all the non-concrete parts of the installation, above sea level, should be removed. The topsides had a weight of 13,500 tonnes of which most of that was made up of steel structural and machinery components. There were some exemptions from the removal requirement, due to the hazard that would be involved in its removal e.g. steel that was within the central shaft, steel in the splash zone, the reinforcement within the concrete and embedded plates that had a protrusion of less than 1 metre.

The base case engineering, by Total, had previously assessed the likely techniques required and the quantities and types of materials involved. On-board facilities that could be of assistance to a removal contractor were identified and steps were taken to ensure availability. It was known that there would be a

considerable period of engineering and preparation requiring a flotel to accommodate personnel along with work by a heavy lift vessel to remove large components.

b) Removal of External Steel

Within the dispensation, allowing the platform sub-structure to be disposed of at sea, there was a condition to “Remove as much as reasonably practical of the external steelwork, including the pipeline riser and supporting steel truss, and return to shore”.

A number of fixtures were recognised as being very unlikely to present any future problem to other users of the seas and to present very significant hazard to individuals during the removal process.

These have been left in place with the agreement of the authorities. These include the large skid beams located immediately on the breakwater wall and the future collapse of which will be fully encompassed within the jarlan wall structure. Similarly there were some small attachment pieces that, when they fail will remain captive within the platform scour walls at seabed.

c) Seabed Cleanup

On completion of the topsides removal activity there was a requirement to remove both debris that may have inadvertently been lost during the decommissioning and those items that had been lost during the operations period between 1977 and 2005. It was known that there some items that had been lost during the operations period but this was not expected to be significant in either size or quantity.

8. EXECUTION OF THE TOPSIDES REMOVAL

a) Removal Methods

Reverse Installation – using the original lifting methods for individual modules that could be confirmed to have structural integrity. In some cases we were able to unite several units to reduce the total number of heavy lifts. This approach also required installation of guide structures and bumpers to facilitate transfer onto transportation vessels. Careful engineering study and sometimes modification was necessary to allow old structures to come out this way. Over the period our confidence grew with this approach.



Saipem7000 manoeuvring alongside MCP-01



MCP-01 - Flare ready for heavy lift



790 tonne M13 'on hook'



MCP-01 - 3 piece helideck as single lift 1

Piece Small – a concept where structures were cut down into pieces that were small enough to be lifted to vessel by platform cranes or, more often, reduced in size to allow transport in scrap containers. For much of MCP01 this was perceived as the only feasible approach. A total of 45% of the topsides

was removed this way. Where possible we used large demolition excavators armed with hydraulic shears to reduce the manual intervention but, given the complex configuration of a platform that had been subject to heavy local modification over a 30 year operation, a lot of manual work was ultimately required. The excavator machines required specially designed deck sections to work from. The manual work was done using a predominance of rope access techniques in conjunction with good discipline skills.

b) Offshore Work

For the preparation for heavy lift and for the piece small the workforce were accommodated on a flotel moored alongside MCP-01 platform and bridge linked for access. In 2006 the vessel Port Reval was used and in 2008 the MV Regalia was in attendance. The two units used different location methods – Port Reval was moored on anchors whilst Regalia operated on a DP system with thrusters units maintaining position. Both approaches had limitations and benefits but, in general, the downtime due to weather was less than might have been expected from either configuration.



MV Regalia in position at MCP-01 in 2008

The final intervention in 2009 used the crane vessel, Saipem7000, alongside MCP-01. All personnel were accommodated on the vessel and transferred to the worksite by personnel basket. The number of persons involved was strictly limited.

The process of dismantling and decommissioning requires the use of skilled and experienced tradesmen. During 2006 the availability of personnel was limited – the annual offshore maintenance period was in progress and the duration offered by the decommissioning work was relatively short. The consequence was that many persons involved during that period were new to the offshore industry requiring additional supervision. For the 2008 programme there was more time to prepare, the duration was for almost a full year and there were more experienced persons available since the

previous year decommissioning work on Frigg had been substantially completed. A critical component in the dismantling

work was the use and availability of onboard cranes, irrespective of the primary removal method. AKOP elected to install one new crane and to use the only remaining operational crane on MCP-01. Ultimately this did not prove to be an optimum arrangement and considerable delay was experienced at key times. The on board cranes ultimately made in excess of 16,000 recordable lifts during the dismantling period at MCP-01.

In the original FEED it was promoted that the use of large demolition excavators could improve efficiency and very significantly reduce risk by eliminating the need for personnel working in the hazard areas. In reality, when the machines were able to work they were indeed very efficient – processing up to 80 tonnes of materials per day. However the effort to be able to have them working required an inappropriate level of labour. The specific support decks that they required involved complex engineering and a lot of fabrication work. To meet the revised time schedule the quantity of decommissioning removal achieved using traditional manual work grew by around 300%.



MCP-01 - Piece Small Demolition in progress with excavators

Access and elevated working was addressed by the use of tradesmen using rope access techniques. There was still the traditional use of scaffolding but the abseil approach meant that the complexity of required scaffolding was significantly reduced but safety was maintained.

The external 18" Talisman PT Riser and support frame structure was removed in 2010, by TEPUK, under a separate contract from the topsides removal. The contractor was Subsea7. This was successfully completed and all parts recovered to shore for recycling.

c) Disposal and Waste Management

The disposal of the topsides of MCP-01 has been divided between the Greenheads Base, Lerwick, Shetland and the Eldøy Site at Aker Facility, Stord, Norway.

Initially the intention was that 100% of the topsides would be sent to Shetland. However, the decision to remove the large modules using the Saipem 7000 and transporting them on deck to shore meant that Shetland could not be used for that purpose as the water depth at quayside is insufficient. In the final accounting some 5400 tons went to Shetland and the remainder – 9600 tons – went to Stord.

At each site the materials were carefully screened to ensure that any hazardous substances were identified, items segregated until processed by specialist teams, and the hazardous materials disposed of in designated landfill or other predefined facilities. Any remaining base materials were then included in the quantities for recycling.

The intention was to achieve a 98% recycling of steels and other metals – this has been achieved.

The quantities and locations of hazardous wastes within the spoil was more than anticipated (by both Total and the Contractor) and added significantly to the disposal effort and costs.

Total had personnel in attendance at both disposal sites to monitor activity throughout.

9. AS LEFT SITUATION

a) As Left Status at end of topsides removal

MCP-01 had the final visit by S7000, during July 2009, to remove the cranes, pedestals and the work decks. As can be seen in the picture below is that, all the topsides steel and relevant external steel on the PLATFORM has been removed.

Apart from specific, noted, exceptions the platform has been left as specified in the contract.

- The topside steel structure has been removed
- A concrete core cap with a Nav-Aid has been installed
- Agreed steel on the breakwater has been left in place
- All stairs and ladders from sea up to break water have been removed, as have staircases and ladders from break-water and further up to main deck.



MCP-01 - All topsides removed

b) Deviation from contract requirement

Deviations from the contract requirements were as follows:

- Half of the concrete manifold support beams were removed by AOP to allow access for the large excavators. This was not required by the contract. The concrete was dealt with and recycled via the AKER facility at Stord.
- The openings in the Centre Core were not 100% blocked off. Everything at the lower elevations was dealt with but concerns for safe work access meant that some of those at the highest elevations on the core were only partially filled. This was proposed by AOP and accepted by Total.
- A large pipe support attachment on the upper centre core was not removed. This was with the agreement of Total based on safe access concerns. In the event that the item finally detaches it will fall within the enclosed moon pool area.
- A large sheave block assembly at breakwater level, attached to Centre Core, was not removed. This was with the agreement of TOTAL UK on the fact that the work to do so would have required a much extended work period in exposed conditions at breakwater. In the event that the item finally detaches it will fall within the enclosed moon pool area.
- The handrails at the breakwater level, left in place in 2008 to facilitate application of the moon pool rescue system in 2009, were not recovered for onshore disposal. In consultation with, and agreement of, TOTAL these were disposed of within the enclosed moon pool area.

c) Debris Clearance and Survey

On completion of the topsides removal activity a debris removal exercise was carried out by the Total Cessation project using DOF as the contractor to clean up the entire area around the immediate platform, out to the 500m limit. This was to remove both debris that may have inadvertently been lost during the decommissioning and those items that had been lost during the operations period between 1977 and 2005.



Recovered seabed debris awaiting recycling in Stord

For MCP01 the initial survey identified 164 potential targets. Ultimately, 100.2 tonnes of debris was recovered being a total of 641 individual items. Some small items, originally flagged were not ultimately recovered due to the object not being relocated in the recovery phase or having broken up when being handled by the ROV manipulator.

Subsequent to the removal of the external PT Riser, executed as a distinct contract by Subsea7 for TEPUK, a further check was made of the immediate work area as completion of that activity. No items of significance were detected.

A detailed environment survey was then carried out by Subsea7 and comparison made with the pre-project inspection that was done in 2002. No issues nor areas of concern were reported. A summary of the 2010 survey is found in Appendix 4

d) Trawl Test

During May 2011 a trawl test of the area immediately around MCP01 installation and incorporating the entire 500m safety zone was carried out. This was organised through the Scottish Fishermans Federation (SFF), who had previously conducted similar testing for Frigg.

On this occasion the vessel used was the MV Rebecca, using representative bottom trawl equipment. Initially a pass of the entire zone was done using a 'chain net' since such would be less impacted by any significant debris that might be present. During the test several items were located with the most significant being two sets of fishing gear obviously lost by earlier vessels in the area. No significant debris attributable to the platform activity was located or recovered. Finally a significant trawl was conducted using a standard twin trawl rig. No problems were encountered.

The work is reported in L4-MCP-01-001 Trawl Test Report – see Appendix 5

Subsequent to this, a statement was issued by the SFF indicating the seabed to be clear. The statement by the SFF is considered to be the final offshore activity required by the Permit Conditions set in the Letter of Permit of 30th December 2008.

e) Environmental Surveys

In conjunction with the debris clearance a detailed survey of the seabed around MCP01, within the 500m zone, was carried out, by Fugro for Subsea7. The findings of that survey are available within Total, as pages 840 to 1078 of Report No – MCP01 Riser Truss Removal As Built report – ET017-0001-EA-RP-0034. A brief summary of those results can be found in Appendix 4 of this document

f) Navigation Aids

A navigation aids system has been installed onto the top of the abandoned sub-structure at MCP01 to ensure its continued marking on behalf of marine users. The particular system was developed in parallel with the similar installations on the Frigg field, albeit that there are some specific modifications at MCP01 taking account of its isolated location.

The system was designed on behalf of the cessation project, in conjunction with the Northern Lighthouse Board and the Norwegian Coastal Directorate, and incorporates a level of redundancy that allows the target of 99.8% reliability to be met for the indicator lamps. In addition, the system has a radar responder (RACON) installed allowing it to identify itself to marine radar systems. The entire system is designed to preclude any necessity to access the MCP01 sub-structure for maintenance purposes – all works being achieved by helicopter under-sling load techniques. The system is designed, and tested, to have a 4 year maintenance period.



AtoN awaiting installation



MCP-01 with AtoN on Centre Core Cap

The Northern Lighthouse Board is contracted to store, and maintain in readiness, the spare MCP01 navigation unit. There is a requirement for them to mobilise the unit to a suitable location for transfer to a vessel, at short notice. TEPUK have in place an agreement with the current helicopter aviation operator to call off a helicopter lift service for offshore activities – flare change etc. An extension of this facility is the service to change out the aid to navigation (AtoN) at MCP01. This arrangement will continue to be applied with whatever helicopter contractor TEPUK has their arrangements in the future. The change intervention is supported by the contracted marine logistics.

The following documents are relevant to the management and operation of the nav aids on MCP01:

- Operations and Maintenance Manual for AtoN Module Frigg Field including MCP01
- MCP-01 Aids to Navigation Emergency Intervention -L2-MCP-EI-001

g) FishSAFE

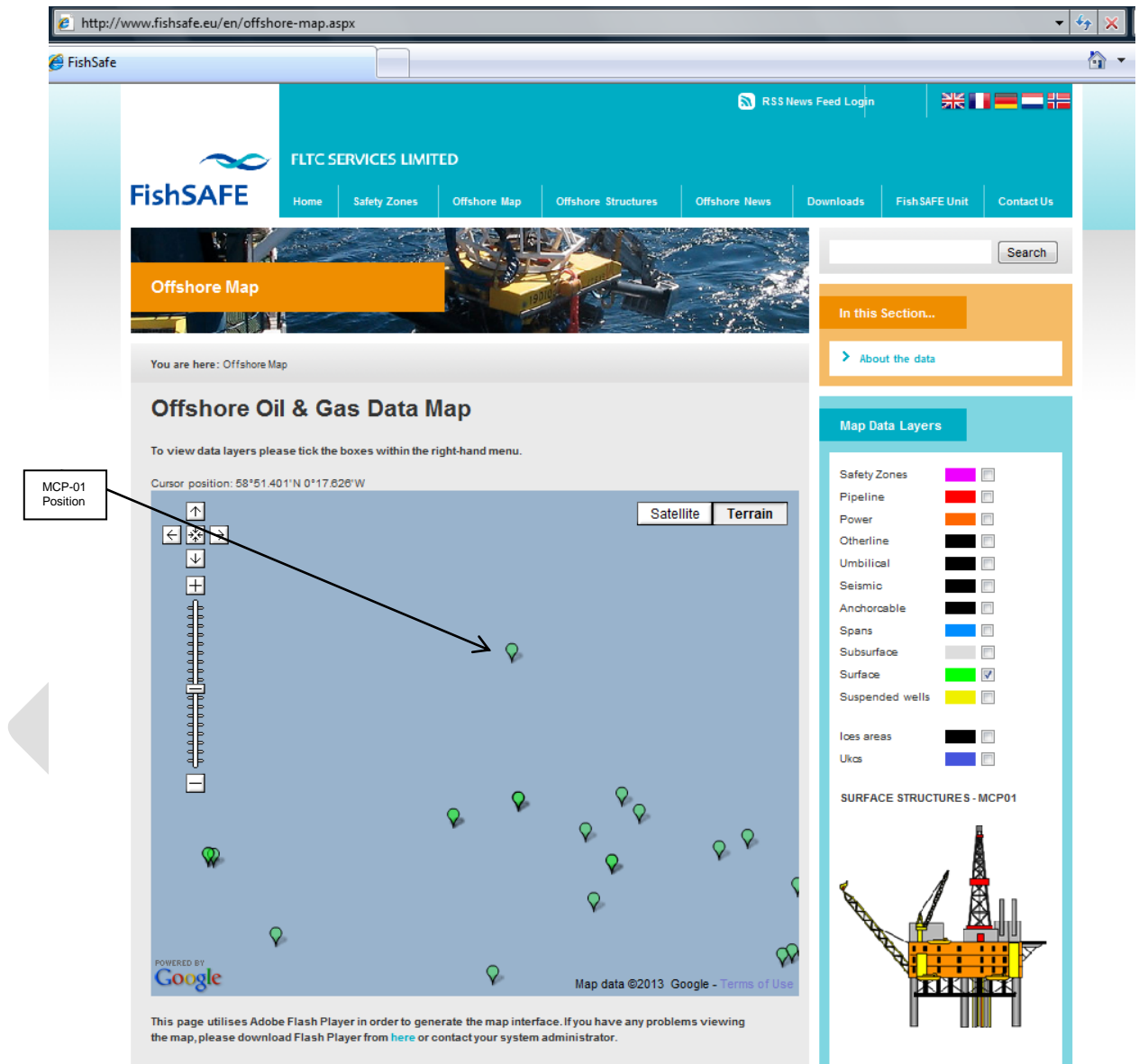
The **U.K. Fisheries Offshore Oil & Gas Legacy Trust Fund Limited ("FLTFC")** was established to manage interactions between the offshore oil and gas and fishing industries and an endowment fund set up to offset negative legacy issues, in particular issues concerning the safety of fishermen.

The FishSAFE Information project, operated by FLTC, is a system ensuring provision of digitised data to fishermen about oil and gas related surface and sea bed structures is part of this.

MCP01 with its considerable concrete substructure and associated pipelines had already been registered in the FishSAFE system during the operations period.

The new status, as abandoned, has been communicated to Kingfisher Information Services – the organisation that undertakes update of the FishSAFE information.

At present they are unable to reflect the precise status of the structure i.e. topsides removed and AtoN installed on the remaining sub-structure and the site continues to show the position and exclusion zone. They are also unable to show the light pattern and racon signal associated with the MCP01 site.



Screen dump from FishSAFE

This position is confirmed by Kingfisher Information Services, who act on behalf of the FLTC. In respect of the decommissioned MCP-01 structure Total E&P UK have made the decommissioning payment to the Endowment Fund that is administered by FLTC for the benefit of the overall fishing industry. The UK Hydrographic Office has also been formally notified of the revised status for MCP-01 and have the relevant information posted on their charts.

h) Structure Assessment

In advance of the debris removal activity a GVI was carried out by ROV of the sub-sea platform structure. This is reported along with the original debris survey report

- AKOPS-Z-0066 Final Debris Survey at Frigg and MCP01

and will provide a reference for future use along with the historic records from the operations period.

For the future, GVI of the sub-sea structure will be triggered by observations of the changing conditions above the waterline. In such instances TEPUK would report to and discuss the options / requirement with DECC.

For the section of MCP01 structure above the waterline a visual assessment procedure has been prepared. This makes reference to photo sets captured soon after the completion of the topsides removal and has specific guidance drawings / images of the various aspects of the structure to facilitate observations in condition and changes that might occur. TEPUK structural specialists will, in the first instance, make an assessment and report of the observed status of the visible platform elements. The intention is to apply this process at each intervention where the MCP01 structure is visited for the purpose of maintenance of the Aid to Navigation (AtoN).

The studies of the potential 'life' of the platform sub-structure that were made as part of the original application for dispensation indicated that the deterioration of the MCP-01 structure would be, initially in any case, slow with little discernable change for many years. Considering this, the intention is to make a formal report to DECC in respect of each visit to MCP01 and not simply to report significant change. This will ensure that the authorities are properly informed of the ongoing conditions.

The formal assessment and reporting procedure is produced as a Level 3 CMS document that will sit within the Total E&P UK Ltd. Management & control documents suite. There are expert personnel within the organisation who are charged with ensuring the requirements are followed and appropriate reports duly made. – See Appendix 6

i) Future Activity and Monitoring

There is no planned intervention to conduct routine sub-sea assessment of structure or its surrounding environment. The initiation of such will be based on observed / reported significant changes that might have source sub-sea or if damage from other components is considered likely. Any course of such action will be in conjunction with advice from DECC.

We do envisage that, since the MCP01 location is to be utilised as a intersection point for future developments by Total, there will be environmental survey and monitoring conducted in conjunction with those works and that this will incorporate the MCP01 zone.

10. PROJECT SCHEDULE

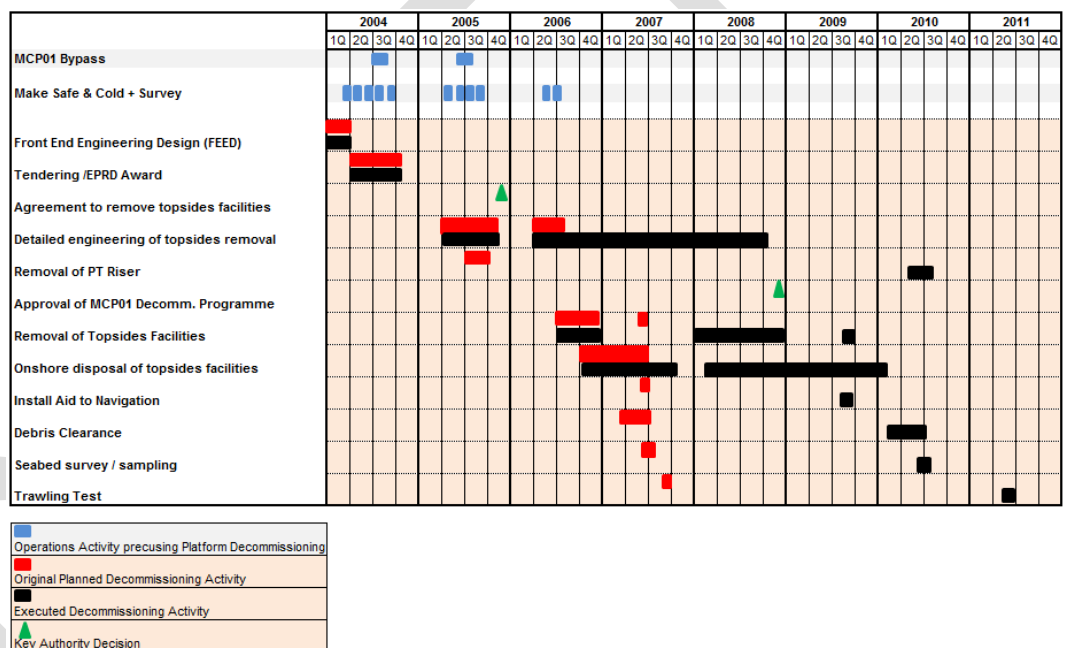
a) Schedule

The offshore decommissioning and removal activity for Frigg and MCP-01 was set to be completed before end of 2012. This has been achieved but neither in the sequence nor the timeframe expected.

For MCP-01, the concerns about the deteriorated condition led to the contractor scheduling the work at the front end of the project period. The proposal was that the removal of the topsides could be achieved by the end of 2006 with the onshore disposal, the debris clearance and the final seabed survey and trawl test done within 2007.

To have met the ambitious time targets AKOP would have required to have made a very comprehensive survey and engineering effort before starting work on the platform topsides. Some was carried out during 2005 but it was attempted to do much of this activity in parallel with starting the work on board in 2006. They had also elected to use some innovative techniques for the demolition works, again requiring a big engineering input.

The technical and logistics difficulties encountered in the work meant that the original schedule could not be achieved. Engineering was required continuously to the end of 2008 and the final topsides pieces were taken in 2009. Availability of suitable accommodation flotel and the programme being followed by the Heavy Lift contractor also had influence on this. The final trawl testing should have been done in 2010 but severe weather at the end of that period meant it was deferred until 2011.



MCP-01 Schedule - Actual vs. Planned

b) Manpower and Logistic

For the original planned schedule AKOP had intended to source most of their personnel via their affiliate company based in Aberdeen. In the event, the short projected duration and the fact that the annual offshore shutdown season was happening at the same time, it was very difficult to contract enough experienced and skilled labour. The concurrent technical problems, and lack of completed engineering, meant that the 1st intervention completed in December 2006 with only 9% of materials removed.

For the subsequent return, in 2008, the manpower was sourced from a much wider (European) base and this, with the availability of more experienced team-leaders (they had completed the work on Frigg) meant that a more robust manpower was in evidence.

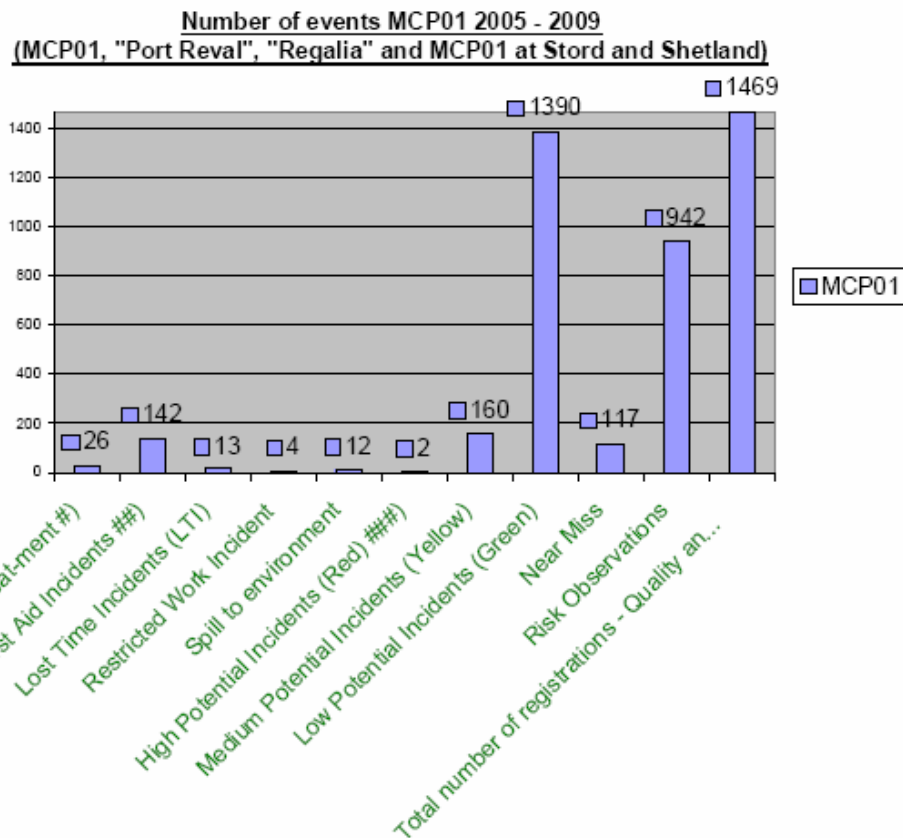
The logistics also benefitted from the enforced extension of programme. In 2006 the available marine and aviation logistic were under pressure for the entire campaign period but, with the benefit of better preparation, 2008 saw a more balanced service, sourced over a larger area that was able to be more flexible and reactive as required.

11. SAFETY

The SYNERGY software package was used to record, action, monitor and trend all safety reporting within the contract. TEPN team had an access portal to the AKER SYNERGY. During 2008 TEPUK started to use STREAM as a replacement for SYNERGY.

Throughout all the preparations periods the need to recognise the significant hazards represented by the MCP-01 installation – deteriorating condition, possible hazardous materials trapped or present – and the nature of the work to be performed was emphasised. Whilst the contractor, and his sub-contracted companies, had a primary duty of care to their employees, Total were in place to provide installation duty-holder safety supervision. The OIM, with support from Safety Superintendent (SSI) made a safety review of all Permit to work and gave authorisation for the work to be executed – with relevant conditions filled. Total also provided a round the clock safety monitoring – via the SSI and Safety Supervisor (SSV).

AKER put in place, offshore, Safety Advisers to provide the formal authority for their organisation. These were supported by Safety Coaches – individuals with specific duties to monitor works as executed and to provide instruction 'in-the-field'. This arrangement, after some initial problems, proved to be very robust and generally worked well. There was also a continuous support from the onshore AKER HSEQ organisation.



During both 2006 and 2008 there were incidents, resulting in lost-time, but there was neither severe nor incapacitating occurrence. Problems with lifting operations or lifting equipment were the most significant type of event.

12. INDEPENDENT VERIFICATION

The permit issued by United Kingdom department of Energy and Climate Change (DECC) in respect of the MCP-01 decommissioning required that an independent verification should be applied to the activity to confirm that it had been carried out in accordance with the agreed MCP-01 Decommissioning Programme, the Permit Conditions and the OSPAR document.

Det Norske Veritas (DNV) was appointed to conduct the verification activity in an agreement made via their office in Oslo, Norway. They were contracted by the Frigg and MCP01 Cessation Project to peruse all pertinent documents and to extract from those a listing of the relevant undertakings and requirements. Thereafter independent actions have been applied to both TEPN and TEPUK requiring that demonstration or explanation of the status of each undertaking was made. Relevant correspondence, reports and other evidence materials have been provided to DNV to allow their verification of the requirements.

DNV identified 26 requirements for verification for the MCP-01 installation. These related to seven different categories. The result of that verification is summarised for each category in the following table:

Category	Identified Requirements	Compliant requirements	Comments
Topside	4	4	
External Steel	1	1	
Concrete Substructure	5	5	
Navigation Aids	6	6	
Nautical Charts & FishSAFE programme	3	3	
PT Riser	1	1	
Seabed	6	5	Relates to future environmental monitoring of abandoned structure
SUM	26	25	

Results of DNV Independent Verification

As above, there is one item that remained as open in the DNV review. This related to future environmental monitoring of the MCP01 site. Total are of the opinion that, having conducted thorough and acceptable testing there is no further requirement for environment testing relative to the MCP-01 substructure unless local conditions or uses change.

Subsequent to the DNV report being issued there is now a programme of activity agreed, in conjunction with the monitoring and maintenance of the navigation aid, that provides for both periodic visual monitoring of the structure and reporting of findings.

Unless there is a recognised problem or defined requirement there is no other planned environmental survey. It is however intended that survey of the structure and surroundings will be a natural inclusion in future projects that are expected to utilise the pipelines that now bypass the MCP-01 site, outside the 500m zone.

See Appendix 2.

13. COST SUMMARY

The various activity phases associated with the overall MCP01 decommissioning have been conducted by different parties, using significantly different contractors and methods. In some cases the activities were carried out in conjunction with other works and consequently costs there were shared.

Activity	Original Estimate	Final Cost	Variation +/- %	Explanation
Make Safe & Cold	£6,63M	£4,85M	-27%	Planning efficiencies allowed reduction in the applied manhours and reduction in specialist assistance
Removal / Disposal of Topsides Facilities	£68M	£196.25M	+290%	Significant growth in expended manhours over estimate, due to technical difficulties and presence of more asbestos materials within the topsides , requiring extended hire period for flotels and increase in visits by heavy lifting vessel.
Removal of PT Riser	£5,98M	£5M	-16%	Efficiency in execution of the subsea works gave good results and costs saving.
Post removal Activities	£5.4M	£5.4M	0%	

MCP-01 - Cost Summary

Preparatory and close-out works, being of relatively small scale, were able to be closely controlled and improvements in both technique and planning gave benefits.

The original budget figures for the removal and disposal of the topsides were arrived at following internal study, using industry standard assessment tools, to estimate durations and efforts. The nature of the work – large scale offshore decommissioning – however is a relatively new activity and ultimately there were many unknown factors that generated cost growth.

The main reason for the increase in the expenditure to remove and dispose of the topsides was the;

- additional engineering required to ensure a safe and stable removal activity
- the additional manhours required to execute the significantly larger workscope
- presence of hazardous materials not previously recorded on register gave increased activity both offshore and onshore
- additional time at site required additional flotel attendance
- more visits by heavy lift vessel required than had been estimated
- the decision by the contractor to use the 'piece-small' removal process on a large scale.

Regarding the final point above regarding the use of 'piece-small' demolition.

It was calculated in the project overall summary that the final offshore manhours expended to process MCP-01 topsides, considering all manhour sources (direct/indirect, offshore engineering and management) was in the order of 88 manhours per tonne removed.

The additional time on site to effectively deploy the 'piece-small' programme contributed significantly to that figure.

14. FEEDBACK

Before reviewing the lessons learnt it is probably suitable to take consideration of the achievements of the work done at MCP-01 site:

- Around 1,933,400 of offshore working man hours were spent during the decommissioning operation of MCP-01 TOPSIDES with no serious LTI.
- The scope of work in line with cessation plan was completed with 15 000 tons of material process (including weights of work decks and steel added to facilitate lifting

Lessons Learned

- Operations experience should be retained and utilised in a correct and positive manner. As the operators of the facilities Company had the greatest level of knowledge of what was there and how it might be dealt with.
- Preparation of the platform for removal is an Operator responsibility. The requirement for a very robust preparation has to be done prior to hand over of the platform for decommissioning.
- There is a requirement for engineering and investigation that is on a par with that required for construction – this is especially so in the heavily legislated North Sea environment.
- The records for the entire installation have to be maintained even when the structure and equipment is substantially unused. In the case of MCP-01 the catalogue for the redundant elements had been allowed to lapse and the reliability of information gave rise to problems and extra work. All the information was probably there but could have been more accessible.
- Some pre-qualification of 'new' techniques should be conducted. The additional engineering that might be involved in using such can outweigh the perceived benefits
- Irrespective of the contractual arrangements, it is essential that the participants provide a comprehensive reporting of all technical, contractual and safety matters.
- Planning is a major issue. The essence of decommissioning planning is a clear understanding of the local environment and how the various stages of the work relate to each other. The sequence is not as logically obvious as most constructs and so it cannot be done as a remote activity. This is especially so for the older installations.
- The availability and reliability of cranes is something that was recognised from the outset as critical to progress. Despite this awareness they were a source of problem throughout the topsides work
- The problems of lay down and storage places on any offshore installation should be understood. Given the large quantities of equipment, materials handling and additional emergency equipment needed for a removal project such as this almost all current installation offshore will have this as a problem. The solution has to be engineered 'up-front'
- Any offshore project has to be worked around the availability of the most significant tools. In this case it is offshore crane facilities - 'the heavy lifters'. This is a very limited market in terms of available players. In the next few years when we start to see more of these installations being considered for removal the market for heavy lift services will become even tighter. The planning will revolve around them.
- The labour pool is limited. Despite the potential attraction of decommissioning as a 'nice to have' on the CV few engineers have shown that they want to make a career of it. The real problem of decommissioning is that it needs genuine multi-skilling.
- Under the Step Change in Safety banner there was a very useful document produced 'Offshore Decommissioning Learning'. This was produced directly on the back of the 2006 intervention at MCP01 and captures many of the experiences. Some of the points made are self-evident but all are relevant See Appendix 3

15. PHOTOFILE



MCP-

2006 at start of topsides removal – flotel “Port Reval” in attendance



“Port Reval” – bridge in place



2008 – Start of Campaign Period



2008 – Removal of PLQ (Quarters) module



2008 – After Heavy Lifting campaigns completed



Large Demolition Excavators dismantling Turbine Hall



Laydown and Storage Space is always in demand



Demolition Excavator processing architecture and fittings

Small



2008 - Piece Small Demolition of Platform South in progress



2009 – Prior to final Heavy Lifting Campaign



2009 – All Topsides removal activity complete

16. APPENDICES

DRAFT

APPENDIX 1 – LETTER OF APPROVAL FOR DECOMMISSIONING PROGRAMME

Original → E Hjelde
cc: R Festor

Ref: 01.08.07.08/10C

Total E & P UK Limited
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 Department of Energy
and Climate Change

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www.berr.gov.uk
jennifer.claxton@berr.gsi.gov.uk

30 December 2008

For the attention of the Managing Director

Dear Sir

**PETROLEUM ACT 1998: ABANDONMENT OF THE
FRIGG MANIFOLD & COMPRESSION PLATFORM FACILITY (MCP-01)**

I enclose approval, by the Secretary of State, of the programme for the abandonment of the Frigg Manifold & Compression Platform facility (MCP-01 Decommissioning Programme) submitted to him under cover of Mr Festor's letter of 5 October 2007. I am writing in similar terms to all persons who submitted the said programme.

The approval of the abandonment programme for the MCP-01 facility by the Secretary of State imposes a duty upon each person who submitted the programme to ensure that it is carried out.

You are reminded that the programme for the MCP-01 facility requires the completion of an environmental survey, including seabed sampling, as soon as offshore decommissioning activities are complete. The timing and scope of this survey should be discussed with the Department. The condition of the concrete substructure and the adjacent seabed is also to be surveyed upon completion of decommissioning activities. The results of these surveys should be discussed with the Department in order to determine appropriate post-decommissioning monitoring requirements.

In addition, the programme also provides for pre- and post-debris removal surveys following completion of the decommissioning work. The results of these surveys should also be submitted to the Department together with independent verification of seabed clearance.

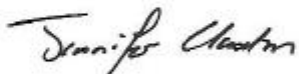
You are also reminded that the navigational aids installed on the concrete substructure should be maintained on a regular basis to ensure a high level of reliability. When the navigational aids are inspected the condition of the concrete substructure should be monitored and a report submitted to DECC in line with condition 'e' of the permit attached to this approval. Any proposal to change the inspection interval should be agreed with DECC.

The enclosed approval is given only for purposes of section 32(1) of the Petroleum Act 1998 ("the Act") and not further or otherwise. Accordingly, it should not be taken as constituting or implying any further approvals or authorisations which may be required, whether under the Act or any further legislation, in connection with the carrying out of the programme.

You should note that, if your company is not registered in the United Kingdom, but you have a branch office here, this notification and the attached notice will be made available to the UK office for their information.

I should be grateful if you would confirm, in writing, receipt of this letter and approval.

Yours faithfully



Jennifer Claxton
Senior Manager
Offshore Decommissioning Unit

**PETROELUM ACT 1998 SECTION 32(1)
APPROVAL OF A PROGRAMME FOR ABANDONMENT**

Total E & P UK Limited
33 Cavendish Square
London
W1G 0PW

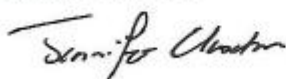
Reg. No: 811900

WHEREAS

- (1) By written notices served in accordance with section 29 of the Petroleum Act 1998 ("the Act") on Total E&P UK Limited, Petoro AS, Statoil ASA, Norsk Hydro Produksjon AS, Total E&P Norge AS, ExxonMobil Exploration and Production Norway AS, Mobil Development Norway A/S, Norske Shell Pipelines AS, Norsea Gas A/S, Norske ConocoPhillips AS, Eni Norge AS on 30th June 2004 and A/S Norske Shell and DONG E&P Norge AS on 31st January 2007 (together "the companies"), the Secretary of State required the companies jointly to submit to the Secretary of State a programme setting out measures proposed to be taken in connection with the abandonment of the Frigg Manifold & Compression Platform facility ("MCP-01").
- (2) A programme for the abandonment of MCP-01 was submitted to the Secretary of State in accordance with the said notices by the companies on 5 October 2007.

The Secretary of State, in exercise of the powers conferred on him by section 32(1) of the Act, **HEREBY** approves the programme submitted by the companies on 5 October 2007 subject to the conditions stated in the attached permit for the disposal in situ of the concrete substructure of MCP-01.

Jennifer Claxton



For and on behalf of the
Secretary of State

30 December 2008

PERMIT TO LEAVE IN PLACE THE CONCRETE SUBSTRUCTURE OF THE FRIGG MANIFOLD AND COMPRESSION PLATFORM FACILITY (MCP-01) IN ACCORDANCE WITH OSPAR DECISION 98/3

PERMIT CONDITIONS

- a. The disposal in-situ of the concrete substructure of the Frigg Manifold and Compression Platform facility (MCP-01) shall be implemented according to the procedures specified in the MCP-01 Decommissioning Programme dated 14 September 2007, including any approved revisions to the programme.
- b. Before the concrete substructure of the MCP-01 facility is left in place, and following the measures mentioned in articles (c) and (d) below, an independent party shall verify that the condition of the substructure is consistent with: -
 - The terms of this permit; and
 - The MCP-01 Decommissioning Programme; and
 - The information upon which the "Assessment of Proposals for the Disposal of the Concrete Substructure of Disused MCP-01 Installation" (OSPAR Consultation Document) submitted by Yann Cartron to Mr Graham White/ Mr Kevin Munro dated 10 February 2006 was based.
- c. To avoid any adverse consequences from disposal at sea, including minimising the potential hazard resulting from falling corroded steel, mitigating measures shall be carried out as described below:
 - Removal of the MCP-01 topsides facilities to shore for reuse, recycling or disposal where necessary.
 - Remove as much as reasonably practical of the external steelwork, including the pipeline riser and supporting steel truss and return to shore.
 - It is recognised that the substructure has never been used for the storage of crude oil and there are no tanks or pipes containing diesel oil, hydraulic oil or methanol within the concrete shaft. The required cleaning reflects this.
 - Following completion of offshore decommissioning work, a debris clearance operation as described in the MCP-01 Decommissioning Programme shall be conducted in the MCP-01 area. The completion and success of this work shall be verified by an independent party appointed by the parties to the programme and a report covering all aspects of the debris clearance shall be submitted to the UK authorities within 4 months of completion of the work.
 - Recovered debris, shall be returned to shore for disposal.

In the event that it proves necessary to modify the above-mentioned measures, revised proposals shall be presented to the relevant UK authority for approval to ensure the best possible solution.

- d. Appropriate actions to have the location of the MCP-01 concrete substructure marked on nautical charts, in accordance with international guidelines, shall be taken. In addition, the substructure shall be incorporated into the FishSAFE programme. Necessary navigation aids are to be installed on the substructure and maintained according to relevant rules and regulations to ensure the highest possible level of reliability.
- e. Environmental Surveys, as described in the MCP-01 Decommissioning Programme, including sampling of the seabed, will be undertaken after completion of the offshore decommissioning work. A survey of the condition of the MCP-01 substructure and the adjacent seabed will also be undertaken at this time. The need for further monitoring activities will be determined based on the findings of the surveys and in discussion with the relevant UK authorities.

When the navigation aids are inspected the above-water condition of the MCP-01 substructure shall be assessed and reported to the UK authorities. Deterioration of the above-water condition shall be recorded and possible consequences for the safety of other users of the sea shall be assessed and required actions determined in consultation with UK authorities. If necessary the authorities can require that specific actions be undertaken by the parties to the programme.

Reports covering the above mentioned activities shall be submitted to the relevant UK authorities within four months of the completion of the work. These reports may be circulated to interested parties who will be given the opportunity to comment. The reports, or relevant parts, may be subject to publication.

- f. The parties to the programme are jointly and severally responsible for carrying out the measures in this permit.
- g. Unless other arrangements are agreed with the UK authorities, the parties to the programme will retain the ownership and responsibility for the MCP-01 concrete substructure. The liability for claims for future damage caused by this substructure remains with the owners and claims should be pursued against those persons under the general law in the normal way.

APPENDIX 2 – VERIFICATION REPORT BY DNV

Verification Report by DNV in respect of the MCP-01 Disposal Arrangements

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DET NORSKE VERITASTM

REPORT

VERIFICATION OF THE MCP-01
DISPOSAL ARRANGEMENTS:
FINAL REPORT

TOTAL E&P UK LIMITED

REPORT NO./DNV REG NO.: 2012-0869 / 14IO3D9-2
REV 0.1, 2012-06-20

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Report for Total E&P UK Limited
Verification of the MCP-01 Disposal Arrangements: Final Report



MANAGING RISK

Verification of the MCP-01 Disposal Arrangements: Final Report				Det Norske Veritas AS P.O.Box 300 1322 Høvik, Norway Tel: +47 67 57 99 00 Fax: +47 67 57 99 11 http://www.dnv.com	
For: Total E&P UK Limited Marathon House AB15 6FZ ABERDEEN United Kingdom					
Account Ref.: Alex Harvey					
Date of Current Issue:		2012-06-20		Project No.: PP040790	
Revision No.:		0.1		Organisation Unit: BDL Enterprise Risk Management	
DNV Reg. No.:		14IO3D9-2		Report No.: 2012-0869	
<p>Summary: United Kingdom Department of Energy and Climate Change (DECC) issued in 2008 permits to leave in place the MCP-01 concrete substructure. According to the permit, an independent party shall verify that the status of the substructures upon completion of the approved MCP-01 Cessation Programme is consistent with the permit conditions, the Cessation plan and the OSPAR document. Total E&P UK Ltd (TEPUK) has commissioned Det Norske Veritas (DNV) to carry out this independent verification.</p> <p>DNV has identified 26 requirements for verification for the MCP-01 installation. The DNV verification concludes that 25 out of 26 requirements for leaving the concrete substructure in place are met. Item 26 is evaluated to be non-compliant: "The need for further monitoring related to the environmental conditions is determined and documented". There exists no communication or documentation on this issue at this point in time, but it is communicated that this will be part of the OSPAR close out report. Since this report is a sub report of the close out report DNV set this to no compliant. This will have no impact on the environment and the leave in place condition.</p>					
Prepared by:		<i>Name and Position</i> Anna Kye Borsheim Senior Consultant		<i>Signature</i> 	
Verified by:		<i>Name and Position</i> Kathrine M. Tangen Senior Consultant		<i>Signature</i> 	
Approved by:		<i>Name and Position</i> Sture Olav Angelsen Business Development Manager		<i>Signature</i> 	
<input type="checkbox"/> Unrestricted distribution (internal and external) <input checked="" type="checkbox"/> Unrestricted distribution within DNV <input type="checkbox"/> Limited distribution within DNV after 3 years <input type="checkbox"/> No distribution (confidential) <input type="checkbox"/> Secret				Keywords Cessation, Decommissioning, MCP-01, Verification, Frigg Field	
Rev. No.	Date	Reason for Issue	Prepared by	Verified by	Approved by
0.1	2012-06-20	First Draft	Anna K. Borsheim	Kathrine M. Tangen	
Reference to part of this report which may lead to misinterpretation is not permissible.					

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1 EXECUTIVE SUMMARY

The Frigg field started up production in 1977, and after 27 years of successful operation the field was shut down in 2004. Decommissioning of MCP-01 was originally not planned to commence until 2024, when all fields connected to the transportation system were expected to have terminated their productions. However, environmental and safety studies indicated that it would be less risky and costly to carry out decommissioning work sooner.

United Kingdom Department of Energy and Climate Change (DECC) issued in 2008 permits to leave in place the MCP-01 concrete substructure. According to the permit /4/, an independent party shall verify that the status of the substructures upon completion of the approved MCP-01 Cessation Programme /9/ is consistent with the permit conditions /4/, the Cessation plan /7/ and the OSPAR document /10/. Total E&P UK Ltd (TEPUK) has commissioned Det Norske Veritas (DNV) to carry out this independent verification.

DNV has identified 26 requirements for verification for the MCP-01 installation. These are related to seven different categories. The result of the verification is summarized for each category in the following table:

Category	Identified requirements	Compliant requirements	Items commented
Topside	4	4	
External steel	1	1	
Concrete substructure	5	5	
Navigation aids	6	6	Item 12, 13 and 16
Nautical charts & FishSAFE programme	3	3	
Talisman Riser	1	1	
Seabed	6	5	Item 26
SUM	26	25	

The DNV verification concludes that 25 out of 26 requirements for leaving the concrete substructure in place are met. Item 26 is evaluated to be non-compliant: "The need for further monitoring related to the environmental conditions is determined and documented". There exists no communication or documentation on this issue at this point in time, but it is communicated that this will be part of the OSPAR close out report. Since this report is a sub report of the close out report DNV set this to no compliant. This will have no impact on the environment and the leave in place condition.

Even though all requirements related to installation and maintenance of navigation aids (AtoN) are all compliant, DNV would like to emphasize that formal contract between TEPUK and NLB to execute the maintenance is still being formulated. But as TEPUK states: "as a UK government representative for Coastal Monitoring and Protection the Northern Lighthouse Board (NLB) are duty bound to cooperate with Total in this responsibility."

Also, there is no formal acceptance given by the authorities for the AtoN, but as TEPUK states that NLB is the government representative for Coastal Monitoring and Protection, and the NLB was the principal design body associated with the development of the AtoN, hence the authorities has indirectly approved the system.

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2 INTRODUCTION

The Manifold and Compression Platform no. 1 (MCP-01) operated by Total E&P UK (TEPUK) was installed in 1976 to serve the two 32" pipelines transporting gas from the Frigg Field to the St Fergus Gas Terminal in Scotland. Other nearby fields are also connected to the same transport system. The Frigg field started up production in 1977, and after 27 years of successful operation the field was shut down in 2004.

Decommissioning of MCP-01 was originally not planned to commence until 2024, when all fields connected to the transportation system were expected to have terminated their productions. However, environmental and safety studies indicated that it would be less risky and costly to carry out decommissioning work sooner. Therefore the two 32" pipelines was rerouted during the summer 2004 and 2005 and offshore removal of the topside facilities began in 2006 as part of the Frigg & MCP-01 Cessation Project managed by Total E&P Norge (TEPN). Removal of Piper/Tartan Riser and post removal inspection were done by TEPUK in 2010.

Various alternatives for disposal of the facilities were considered and analysed in the cessation plan /9/ and accompanying impact assessment. It was finally decided that the concrete substructure of MCP-01 was to be left in place.

A condition for leaving the installation in place was, according to the issued by the United Kingdom Department of Energy and Climate Change (DECC) (30.12.2008) /4/, that an independent party should verify that the status of the substructures upon completion of the approved MCP-01 Decommissioning Programme /9/ was according to Permit Conditions.

Det Norske Veritas (DNV) was commissioned to carry out this independent verification.

2.1 Verification scope

DNV's scope has been to verify whether the condition of the MCP-01 concrete substructure is consistent with:

- The OSPAR-document jointly presented by the governments of Norway and UK to the OSPAR Contracting Parties in February 2006:
"An Assessment of Proposals for the Disposal of the Concrete Substructures of Disused MCP-01 Installation" /10/
- The approved Cessation Plan for MCP-01 issued by TEPUK dated 14th of September 2007:
"MCP-01 Decommissioning Programme" /9/
- The permit to leave in place the MCP-01 concrete substructure issued by DECC in December 2008:
"Petroleum Act 1998 Abandonment of the Frigg Manifold & Compression Platform Facility incl. Petroleum Act 1998 Section 32(1) Approval of a programme for Abandonment and Permit to leave in place the concrete substructure of the Frigg Manifold and Compression Platform facility (MCP-01) in accordance with OSPAR decision 98/3" /4/
- The permit to leave in place the concrete substructure of MCP-01 issued by MPE in January 2009:
"Decommissioning of MCP-01 incl. parliamentary bill no 9 (2008-2009)" /6/

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DNV has not verified the quality of the measures implemented to meet the individual requirements but verified that the requirements are fulfilled by reviewing available documentation.

2.2 The MCP-01 subject to verification

The MCP-01 is situated in the UK sector of the North Sea and is part of the Frigg Transport System. It was constructed and installed in 1976 to serve the two 32" pipelines transporting gas from the Frigg Field to the St Fergus Gas Terminal in Scotland.

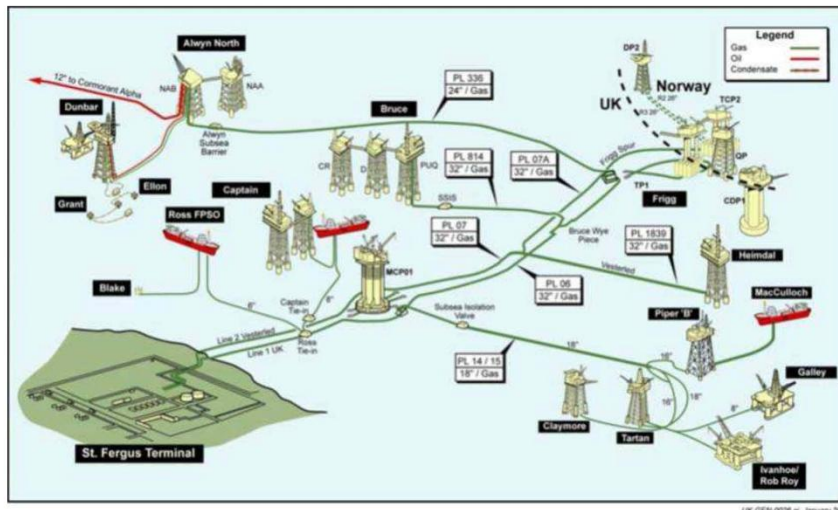


Figure 1: MCP-01 in the gas transportation system /9/



Figure 2: MCP-01

The Manifold Compression Platform is a concrete gravity base structure. It consists of concentric cylindrical concrete walls connected by the base slab and radial concrete walls. A central concrete shaft runs from the base slab to the deck level. The deck supporting the topsides modules consists of concrete beams supported on the central core and concrete filled steel columns from the top of the external wall. The concrete substructure has never been used for storage of crude oil nor drilling operations.

The topsides and steelwork attached to the external concrete wall on MCP-01 are removed. The condition of the remaining MCP-01 concrete substructure and the adjacent seabed has been subject to verification.

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Figure 3: MCP-01 before /10/ and after /122/ the cessation project

3 ASSUMPTIONS AND LIMITATIONS

Additional clarification of scope:

- The verification does not cover any evaluations of the appropriateness/quality of background decisions made for how the installations were to be disposed of.
- The *execution* of the MCP-01 Cessation Project is not subject to verification. Compliance with requirements related to the execution of the project is not verified, for instance requirements relating to operational discharges during cleaning, de-mobilization of the topsides and other decommissioning activities.
- The verification does not cover communication with the Authorities regarding quality of completed surveys or related needs for future activities. The submission of reports covering cessation activities to relevant authorities is not subject to verification.

The verification work is based on the following assumptions:

- Procurement and approval procedures in TEPUK secure quality of equipment, and the specification of the equipment is according to prevailing national and international rules and regulations. Thus, “As-left” documentation is considered adequate as a basis for verification of requirements related to equipment installed on the substructures.
- TEPUK’s plans, systems and procedures hold adequate quality, and the company is in compliance with prevailing national and international rules and regulations. Thus, DNV only verifies the existence of required plans, systems and procedures.

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4 METHODOLOGY

A defined methodology is used to secure a systematic and appropriate execution of the verification work, and to secure independence. The verification method is based on a DNV standard for risk based verification¹. The risk based verification philosophy is based on that the level of verification activity should be differentiated according to the risk to the asset or element or phases thereof. If the risk is high, the level of verification involvement is higher. Conversely, if the risk is low, the level of verification activities can be reduced, without any reduction in their effectiveness.

4.1 Stepwise description

The method used in the verification work consists of five steps as illustrated in Figure 4.



Figure 4: Illustration of method used for planning and execution of verification

Step 1 Prepare verification project:

First step is to identify documentation needs and resource needs for identification of requirements and to establish communication directions and a detailed project plan.

Step 2 Identify requirements:

Requirements to be verified are identified through document study and consultation with experts. These requirements consist of requirements from authorities and requirements specified by TEPUK in their documents to the authorities. The acceptance criteria for each requirement are discussed with TEPUK. Acceptance criteria is a concretization of the requirement to a level that make it possible for a “yes / no” answer whether the requirement is fulfilled or not

Step 3 Prepare verification plan

Acceptance criteria for each requirement are established based on the discussion with TEPUK in step 2. All acceptance criteria are approved by TEPUK. Verification level for each requirement is determined based on a risk assessment carried out by the DNV project team and relevant experts. The verification plan table given in Appendix 1 is a catalogue over all identified requirements with belonging acceptance criteria's and verification levels. The plan indicates how the verification shall be executed and the result of the verification.

Step 4 Carry out verification activities:

The verification activities are executed according to the verification plan, see Appendix 1 and reference document /180/. A specific requirement is registered as compliant if 1) DNV has found it documented in a report or email or 2) seen a picture documenting the outcome. All verification in this project is done by studying reports and communication or pictures taken during and after the decommissioning. The results from the verification are sequentially logged in the verification plan.

¹ DNV-OSS-300 (Offshore Service Specification), April 2004

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Step 5 Prepare final report and presentation:

The final step is to prepare the final report and a presentation.

4.2 Securing independency

The verification work is performed in a manner which ensures conclusions that are independent of TEPUK and other stakeholders. Development of methodology and assessment of compliance are done without participation from TEPUK or other DNV units that have delivered consultancy services earlier in the Frigg Field Cessation Project. Input material for the verification produced by DNV (reports, assessments and evaluations) are used on the same level as documentation produced by others. Verification of the presented documentation is not part of the scope. DNV assumes that documentation holds adequate quality according to TEPUK's management system.

All conclusions can be tested. Conclusions of the verification are logged in the verification log for each of the requirements and the basis for the conclusions is stated either by reference to a report or to pictures.

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5 RESULTS

5.1 Verification categories

26 requirements have been identified for the MCP-01 substructure and the adjacent seabed. The identified requirements have been split into seven categories as described in the Table 1.

Table 1: Verification categories

Category	Description	Motivation
Topside	Requirements are related to removal of topside facilities. Topside facilities include all topside modules and steel deck components, incl. skid beams, basket modules, deck panels, deck extensions, skid beams and the modules between the concrete deck beams.	<ul style="list-style-type: none"> Recycle material
External steel	Requirements are related to removal of external steel on the outside of the concrete substructure, e.g. talisman riser and support structure, umbilical caisson, ladders, mooring devices, ballasting seawater loading pipes and pump bumpers and other miscellaneous steel work. In general, steel work was planned to be removed "as much as reasonably practical" /9, p 152/.	<ul style="list-style-type: none"> Avoid potential hazards to users of the sea Recycle material Make the structures more inaccessible to intruders
Concrete substructure	Requirements are related to the physical condition of the concrete substructures left in place, and include measures related to condition surveys and existence of systems, procedures and plans related to future inspection and monitoring of the substructures.	<ul style="list-style-type: none"> Monitor deterioration which may result in consequences for users of the sea
Navigation aids	Requirements are related to measures TEPUK has initiated to ensure that navigation aids are installed and have a high level of reliability. In addition to physical installation of the navigation aids, the category includes requirements related to existence of systems, procedures or plans for monitoring, regular surveillance and back-up.	<ul style="list-style-type: none"> Ensure safety for users of the sea
Nautical charts & FishSAFE programme	Requirements are related to measures TEPUK has initiated to make sure that the substructures are marked on relevant nautical charts and incorporated into the FishSAFE program managed by the U.K. Fisheries Offshore Oil and Gas Legacy Trust Fund Limited (FLTC).	<ul style="list-style-type: none"> Ensure that mariners and other users of the sea will know where the remaining structures are located
Talisman Riser	Requirements are related to the cutting and capping of the Talisman pipeline.	<ul style="list-style-type: none"> Avoid potential hazards to users of the sea

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Category	Description	Motivation
Seabed	Requirements are related to the condition of the seabed within the 500m safety zone of the installation. This category includes debris removal, completion of trawling tests and environmental surveys.	<ul style="list-style-type: none">• Keep the seabed clean• Avoid potential hazards to users of the sea• Make the area available for fishing activities• Document the environmental conditions of the seabed at the time when the field is closed down

The full list of all identified requirements is given in the Verification Plan Table in Appendix 1.

5.2 Verification level

The verification level for each requirement is a result of a simplified risk assessment as described in Chapter 4. The assessment is based on DNV's evaluation of the probability and consequences related to that TEPUK will not comply with the requirements and that unwanted events occur from non-compliance. For 4 out of 26 requirements the verification level was determined to be 2 (medium), the remaining was determined to be 1 (low). The requirements with risk level 2 are requirements from the Navigation aids category. The rationale for the higher risk level is due to new technology and new operations with respect to installation and maintenance, in combination with possible fatal safety consequences if the system fails. For the remaining of the requirements, DNV's evaluation is based on that compliance implies minor challenges for TEPUK combined with no fatal consequences related to health, safety and environment.

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5.3 Verification results

The DNV verification concludes that 25 out of 26 requirements for leaving the concrete substructure in place are met. The number of identified requirements within each category and results from the verification are summarized in Table 2.

Table 2: MCP-01 verification results

Category	Identified requirements	Compliant requirements	Relevant comments from DNV
Topside	4	4	
External steel	1	1	
Concrete substructure	5	5	
Navigation aids	6	6	<p>Regarding item 12 "Navigation aids maintenance programme exists":</p> <p>Operation and maintenance procedure exist (document /77/) but a formal contract with NLB to execute the maintenance is still being formulated. It is from TEPUK side not expected that this will be completed until the first AtoN exchange has been completed. As stated by TEPUK: "as a UK government representative for Coastal Monitoring and Protection the Northern Lighthouse Board (NLB) are duty bound to cooperate with Total in this responsibility."</p> <p>Regarding item 13: "Navigation back up systems are incorporated and accepted/approved by UK authorities" and item 16 "The authorities have been consulted in review of the navigation aid system design before fabrication"</p> <p>Backup system exist, but no formal acceptance and review are given by the authorities, but as TEPUK states that NLB is the government representative for Coastal Monitoring and Protection, and the NLB was the principal design body associated with the development of the AtoN, hence the authorities has indirectly approved the system.</p>
Nautical charts & FishSAFE programme	3	3	
Talisman Riser	1	1	

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Seabed	6	5	Regarding item 26: <i>"The need for further monitoring related to the environmental conditions is determined and documented"</i> : Per today, there exists no communication or documentation on this issue. TEPUK states that this will be part of the OSPAR close out report. Since this report is a subreport of the close out report DNV cannot verify this, thus this item is non-compliant.
SUM	26	25	

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APPENDIX

1

VERIFICATION PLAN

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REQUIREMENTS						ACTIVITIES	COMPLIANCE		
Item No.	Verification Requirement	Acceptance Criteria	References	Other references	Risk level	Verification activities	Compliance (Y/N)	Page number in document	Comments
	<i>What requirement is addressed, including main reference for requirement?</i>	<i>Concrete the requirement to a level that make it possible for a 'yes' or 'no' answer whether the requirement is fulfilled or not</i>	<i>In which document has this been specified?</i>	<i>In which additional documents has this been specified?</i>	<i>H/M/L</i>	<i>e.g. Document Review, Independent analysis, Visual inspection, Site Visit, Audit, Testing, Other...</i>	<i>Yes/No</i>	<i>The page number where compliance is documented</i>	<i>Comments related to compliance</i>
TOPSIDE									
1	"The steel topsides of MCP-01 (...) will be removed..." /10, p13/ Including: - topside modules, steel deck, skid beams and basket modules (...) /9, p226/ "The additional steel items in the deck would be removed including the deck panels, deck extensions, skid beams and the modules between the concrete deck beams" /9, p144/ "The gratings at the breakwater level will remain in place (...) The steel rails on top of the radial walls inside the breakwater will be used to support the diving module to facilitate diving inside the breakwater wall will remain..." /9, p124/	MCP-01 topsides are removed including: - topside modules - steel deck - skid beams - basket modules - deck panels - deck extensions - modules between the concrete deck beams Exceptions: - Gratings at the breakwater level - The steel rails on top of the radial walls inside the breakwater wall used to support the diving module to facilitate diving inside the breakwater wall Remaining steel works protruding more than 0.5 m will be evaluated case by case. The potential hazard to other users of the sea that the steel left in place will constitute will be considered.	/H/ /B/	/10, p 51/ /A, p 4/ /B, p 1/ /B, p 2/ /B, p 72, 121, 124, 133, 154, 195/	L	Review document(s)	Yes	/60, p 8, 14/ /122, p 1-14/ /85/	Some items are not removed according to the contract. These are items that AOP have applied for and given acceptance by TEPUK could be left (/85/ and /60, p 14/). The negative consequences for leaving these items are assessed to be negligible by AOP.
2	"The stairs leading down to the top of the breakwater wall as shown on Figure 7.5 will be removed" /9, p124/	The stairs leading down to the top of the breakwater wall is removed Remaining steel works protruding more than 0.5 m will be evaluated case by case. The potential hazard to other users of the sea that the steel left in place will constitute will be considered.	/B/		L	Review document(s)	Yes	/122, p 1-8/	
3	"Handrails on breakwater elevation will be removed" /9, p124/	Handrails on breakwater elevation is removed Remaining steel works protruding more than 0.5 m will be evaluated case by case. The potential hazard to other users of the sea that the steel left in place will constitute will be considered.	/B/		L	Review document(s)	Yes	/122, p 1-8/	According to TEPUK some handrails close to the central core are left in place. But as these handrails will fall inside the structure DNV cannot see that this will be a potential hazard to users of the sea.
4	"Various caissons and the 18° Talisman riser from the topsides will also be removed approximately down to top of the breakwater wall" /9, p124/	All caissons and the 18° Talisman riser from the topsides is removed approximately down to top of the breakwater wall Remaining steel works protruding more than 0.5 m will be evaluated case by case. The potential hazard to other users of the sea that the steel left in place will constitute will be considered.	/B/		L	Review document(s)	Yes	/122, p 1-8/	According to TEPUK the caissons for the Talisman riser was cut at the lowest possible point with regards to work being performed at a later stage. Due to this it is out approximately 1.1 m above the breakwater level – not at the breakwater level. DNV does not see this as a potential hazard for users of the sea, as the steel will fall inside the structure.

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REQUIREMENTS						ACTIVITIES	COMPLIANCE		
Item No.	Verification Requirement	Acceptance Criteria	References	Other references	Risk level	Verification activities	Compliance (Y/N)	Page number in document	Comments
EXTERNAL STEEL									
5	"The steelwork on the outside of the concrete substructure will be removed as much as reasonably practical so there will be no risk of corroded steel items falling into the seabed where they could be a hazard to fishermen" /9, p152/ "Removal of steel items outside the external wall including: - 18° talisman riser and its support structure - Umbilical caisson - Access ladders - Mooring devices - Bumper ladders - Ballasting seawater loading pipes - Ballasting seawater pumps bumpers" /9, p226/ "The extension of the supporting steel structure located in the compartment between the external wall and the lower exterior wall, is planned to be left in place as this part will not represent any hazards (see Figure 8.8) /9, p144/	External steel works protruding more than approx. 1 meter under water and 0.5 m above water has been removed as far as reasonably practicable, including: - 18° talisman riser and its support structure - Umbilical caisson - Access ladders - Mooring devices - Bumper ladders - Ballasting seawater loading pipes - Ballasting seawater pumps bumpers Exception: The extension of the supporting steel structure located in the compartment between the external wall and the lower exterior wall Remaining steel works protruding more than 1 meter under water and 0.5 m above water will be evaluated case by case. The potential hazard to other users of the sea that the steel left in place will constitute will be considered.	/B/	/10, p 13, 51, 60/9, p 154, 157/	L	Review document(s)	Yes	/128, p 117/122, p 1-8/85/60, p74/155/166/170/	Exceptions communicated with the authorities /165/ and /166/ Mooring devices are not removed and according to TEPUK this was never the intention. Remaining steel works protruding more than 1 meter under water and 0.5 m above water will fall within the concrete base and pose no hazard to users of the sea.
CONCRETE SUBSTRUCTURE									
6	"The condition of the concrete substructure (...) is also to be surveyed upon completion of decommissioning activities" /A, p1/ "The condition of the concrete substructure will also be recorded" (at the end of the decommissioning work) /9, p165/	1) A survey of the condition of the concrete substructure is completed upon completion of decommissioning activities. 2) The condition of the concrete substructure at the end of the decommissioning work is documented	/A/ /B/	/A, p 5/ /B, p 80, 178/ /10, p 16, 67/	L	Review document(s)	Yes	/43, p 8, 42-49, 70, 77-89/ Videos (video-log in 43)/ /170, p 4/	
7	"The scope for these (...) condition surveys will be discussed with the DBERR" /9, p179/ (ref item no 6.)	The scope for the condition survey was discussed with DBERR (ref item no 6.)	/B/		L		Yes	/130, p 23.13/	
8	"The need for further monitoring activities will then be determined based upon the findings of the surveys and discussions with the relevant parties" /10, p87/ (ref item no 6.)	The need for further monitoring related to the condition of the concrete substructure is determined and documented	/H/ /M/	/A, p 5/ /B, p 179/	L	Review document(s)	Yes	/85/ /170, p 4/	
9	"A visual check on the above water condition of the concrete substructure will be undertaken and recorded when the aids to navigation are being checked by helicopter" /10, p16/ "When the navigational aids are inspected the above-water condition of the MCP-01 substructure shall be assessed and reported to the UK authorities. Deterioration of the above-water condition shall be recorded and possible consequences for the safety of other users of the sea shall be assessed and required actions determined in consultation with UK authorities" /A, p5/	There exist procedures or system for: 1) visual inspection of the above-water condition of the concrete structure (related to inspection of the navigational aids by helicopter). 2) reporting the above water condition to the UK authorities. 3) recording observed deterioration of the above-water condition and assessing its safety implications related to safety of the users of the sea. 4) determining required actions in consultation with the UK authorities.	/H/ /M/	/10, p 67/ /B, p 82, 165, 193/ /A, p 2/	L	Review document(s)	Yes	/85/	
10	"The UK Hydrographic Office will be informed of any deterioration which may result in falling debris causing an obstruction" /9, p165/ (ref item no. 9)	There exist procedures or system for reporting deterioration which may result in falling debris causing an obstruction, to the UK Hydrographic Office	/B/	/B, p 180, 321/ /10, p 67/	L	Review document(s)	Yes	/65, p 1-8/	

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REQUIREMENTS						ACTIVITIES	COMPLIANCE		
Item No.	Verification Requirement	Acceptance Criteria	References	Other references	Risk level	Verification activities	Compliance (Y/N)	Page number in document	Comments
18	"Measures will be taken to ensure that (...) relevant information will be circulated to mariners." /10, p61/	Measures are taken to ensure that relevant information is circulated to mariners <i>Measures to be specified by TEP UK and UK Hydrographic Office</i>	<i>/10/</i>		L	Review document(s)	Yes	75/ 117/	
19	"The substructures shall be incorporated into the FishSAFE programme" /4, p5/	The FLTC has been provided with the correct positioning and status of MCP-01	<i>/4/</i>	/10, p 14, 61, 67/9, p 82, 164, 169/	L	Review document(s)	Yes	/75/161/	
TALISMAN RISER									
20	"The 18" Talisman pipeline will be cut and capped just outside the lower external wall of MCP-01 when removing the 18" riser attached to the platform." /8, p101/	The 18" Talisman pipeline is cut and capped just outside the lower external wall of MCP-01	<i>/8/</i>		L	Review document(s)	Yes	/128, p 17/	
SEABED									
21	"All debris on the seabed forming a hazard to other users of the sea will be removed within a 500-meter zone around MCP-01. A pre-debris removal survey will be carried out first to identify the location of the debris." /10, p62/	1) A pre-debris removal survey is undertaken and the results are documented 2) Debris on the seabed is removed within the 500-meter zone so that the seabed is over-trawlable	<i>/10/</i>	/10, p 51/ /8, p 80, 81, 177/ /4, p 1, 4/	L	Review document(s)	Yes	68, p 24, 402-547/ /40/ /169, p 14/	
22	"At the end of the debris clearance operation, a post clean up survey will be undertaken by sonar sweep, to confirm and document that the seabed is free of debris." /10, p62/	A post-debris removal survey is undertaken and the results are documented	<i>/10/</i>	/8, p 80, 81, 177/ /4, p 1, 4/	L	Review document(s)	Yes	48/	
23	"The test programme will be established in co-operation with the fishermen's federations in the UK to ensure that representative equipment is used in the test." /10, p62/ "Independent trawling tests carried out by the fishermen's organisations will then be performed as part of the effort to open up the area around MCP-01 for fishing activity. Such tests will verify that no obstructions remain in the area that would impede fishing operations." /10, p62/	1) The fishermen's organisation has been involved in establishing the trawling test programme and in the decision regarding equipment to be used in the trawling test. 2) Trawling tests are completed and the results are documented 3) The seabed is over-trawlable	<i>/10/</i>	/10, p 14/ /8, p 178/	L	Review document(s)	Yes	75/ /106, p 33/ /169/	
24	"... the programme requires the completion of an environmental survey, including seabed sampling as soon as offshore decommissioning activities are complete" /4, p1/	An environmental survey, including seabed sampling, is undertaken and the environmental conditions are documented	<i>/4/</i>	/4, p 9/ /8, p 61, 165, 179/ /10, p 16, 67/	L	Review document(s)	Yes	/178/	
25	"The scope for these environmental (...) surveys will be discussed with the DBERR." /8, p 179 (ref. item no. 24)	The scope for the environmental survey was discussed with DBERR (ref. item no. 24)	<i>/10/</i>	/4, p 1/	L	Review document(s)	Yes	/109/ /110/	

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REQUIREMENTS						ACTIVITIES	COMPLIANCE		
Item No.	Verification Requirement	Acceptance Criteria	References	Other references	Risk level	Verification activities	Compliance (Y/N)	Page number in document	Comments
NAVIGATION AIDS									
11	"Aid to navigation will be installed on top of the central shaft on the concrete substructure (...). The navigation system will be built in accordance with the specification established by the UK Northern Lighthouse Board (Ref. /4, 11"/ /8, p179/ (Ref. 14, 1. Specification to "Aid to Navigation Engineering for MCP-01 Decommissioning", issued by the UK Northern Lighthouse Board, dated 4 October 2005)	Navigation aids are installed on top of the central shaft according to specifications in /79/	<i>/10/</i> <i>/8/</i>	/4, p 1, 5/ /8, p 7/ /10, p 51, 67/ /8, p 154, 293, 333/	M	Review document(s)	Yes	/81, p 14/ /92/ /76/ /81/ /79/ /174/ /178/ /181/ /183/	
12	"(...) The navigational aids installed on the concrete substructure should be maintained on a regular basis to ensure a high level of reliability." /4, p2/	Navigation aids maintenance programme exists	<i>/4/</i>	/4, p 5/8, p 7/10, p 14, 67/9, p 80, 228, 293, 333/	M	Review document(s)	Yes	/77, p 19-35/ /93/ /171/ /172, p 16/ /173/ /174/	A formal contract, to cover the long term requirement, is still being formulated. It is expected that this will not be completed until the first AtoN exchange has been completed. However as a UK government representative for Coastal Monitoring and Protection the Northern Lighthouse Board (NLB) are duty bound to cooperate with TEP UK in this responsibility
13	"Back-up systems will be incorporated (...)" /10, p14/	Navigation aid back up systems are incorporated and accepted/approved by UK authorities	<i>/10/</i>	/8, p37, 62/ /10, p61/	M	Review document(s)	Yes	/93/ /89/ /99/ /174/ /182/	The NLB are the principal design body associated with the development of the AtoN, and hence indirectly approved by them
14	"Regular surveillance will be carried out to check that the navigation aids are operational." /10, p16/ "A prototype system was installed early 2005 on the Frigg Field for testing over a period of six to eight months." /10, p16/ "Its performance was monitored via satellite from onshore as would be the case when the actual system has been installed." /8, p179/	Procedure or system exists for regular surveillance of the Navigation aids via satellite from onshore	<i>/10/</i> <i>/8/</i>	/10, p61, 67/ /8, p61, 165, 180/	M	Review document(s)	Yes	/77, p 38-42/ /89/	
15	"The basis for the design will be based on the experience from a full scale test offshore on the Frigg Field where performance and availability will be tested" /8, p164/	A full scale test offshore on the Frigg Field has been performed before fabrication of the navigation aids, where performance and availability has been tested	<i>/8/</i>		L	Review document(s)	Yes	/76, p 18/ /91/	
16	"After the test period TOTAL E&P UK and the authorities will review the design before fabricating two systems for MCP-01, with one stored onshore as a back up." /8, p179/ (ref. item no. 15)	The authorities have been consulted in review of the navigation aid system design before fabrication Two systems exist, with one back up onshore	<i>/8/</i>		L	Review document(s)	Yes	/78/ /99/ /89/ /91/	The NLB are the principal design body associated with the development of the AtoN
NAUTICAL CHARTS AND FishSAFE PROGRAMME									
17	"The UK Hydrographic Office will be notified of the position and status of the concrete substructure to enable the relevant Admiralty charts to be updated." /10, p14/ "... have the location of the MCP-01 concrete substructures marked on nautical charts, in accordance with international guidelines (...)" /4, p5/	The UK Hydrographic Office has been notified of the position and status of the concrete substructure	<i>/10/</i> <i>/4/</i>	/10, p 67/ /8, p 6/ /8, p 93, 148, 154, 165, 321, 333/	L	Review document(s)	Yes	/133/ /133/ /134/ /135/	

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Item No.	Verification Requirement	Acceptance Criteria	References	Other references	Risk level	Verification activities	Compliance (Y/N)	Page number in document	Comments
26	"The need for further monitoring activities will then be determined based upon the findings of the surveys and discussions with the relevant parties." /10, p27/ (ref. item no. 24)	The need for further monitoring related to the environmental conditions is determined and documented.	N/A	/5, p 173/	L	Review document(s)	No	/15, p 14/	<p>Per today, there exists no communication or documentation on this issue. TEP UK states that this will be part of the OSPAR close out report. Since this report is a sub report of the close out report DNV cannot verify this, thus this item is non-compliant.</p> <p>"There are no further surveys intended to be conducted, relative to the MCP01 Topside Removal activity. TEP UK do plan to utilize the location as a tie-in point for future developments. In conjunction with that work it is expected that seabed survey and sampling will take place before and after the activity."</p>

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DOCUMENT LIST

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A common document list has been used in verification of the Frigg Field and the MCP-01 disposal Arrangements. Only documents relevant for MCP-01 are in the list below, hence some numbers are missing.

Doc Id	Author	Description of document
4	DECC	Letter to Total E&P UK Limited: "Petroleum Act 1998 Abandonment of the Frigg Manifold & Compression Platform Facility", dated 30.12.2008 (incl. "Petroleum Act 1998 Section 32(1) Approval of a programme for Abandonment" and "Permit to leave in place the concrete substructure of the Frigg Manifold and Compression Platform facility (MCP-01) in accordance with OSPAR decision 98/3")
5	MPE	Letter to Total E&P UK PLC: "Disponering av overbygningen på MCP-01", dated 29.11.2005 (incl. Kongelig Resolusjon: Disponering av overbygningen på MCP-01)
6	MPE	Letter to Total E&P UK Limited: "Decommissioning of MCP-01", dated 06.01.2009 (incl. St.prp.nr.9)
9	TOTAL E&P UK Ltd	MCP-01 Decommissioning Programme, dated 14.09.2007
10	TOTAL E&P UK PLC	MCP-01 Concrete Substructures. An Assessment of Proposals for the Disposal of the Concrete Substructures of Disused MCP-01 Installations, dated 10.02.2006
11	TOTAL E&P NORGE AS	Summary of Major Commitments made in the Frigg Field Cessation Plan, doc.no.755145
12	TOTAL E&P NORGE AS	Presentation: Frigg and MCP-01 Decommissioning, Verification of end results, date 06.07.2010
39	Aker Solutions AKOPS	"Final debris survey at Frigg & MCP01", GEN-AKOPS-Z-0066, Rev.01, dated 09.04.2010
40	Aker Solutions AKOPS	"Debris recovery at Frigg/MCP-01 - Final report", GEN-AKOPS-Z-0065, Rev.02, dated 19.05.2010
43	DOF Subsea	Debris and remaining structure survey report: "600065 GVI at Frigg/MCP-01", 600065-SBER-O15-90002, Rev.02, dated 26.03.2010
46	DECC	E-mail from Keith Mayo, DECC, to Erik Hjelde and Jean-Claude Berger, Total E&P Norge, regarding Frigg pipeline ends at platforms, dated 01.07.2009
55	DOF Subsea	Drawing:"Bathymetry and shaded relief MCP-01", 600065-010, Rev.02, dated 31.01.2010
56	DOF Subsea	Drawing:"Bathymetry, shaded relief and targets MCP-01", 600065-011, Rev.02, dated 31.01.2010
57	Sonsub, Saipem	"Frigg DP1 debris removal procedure", DP1J-SUKL-PRO-1800, Rev.06, dated 10.09.09
60	Aker Solutions AKOPS	Completion Report, Frigg and MCP-01 Cessation Project: "Contract Package 9 - MCP01T Topsides", MCP01T-AKOPS-Z-0001, Rev.03, dated 30.04.2010
66	D.P.F.V. Sandpiper Boskalis Offshore AS	Drawing: Rockdumping at North East Frigg Pipeline & Rockdumping at East Frigg Pipeline, GEN-AKOPS-Z-0081, Rev. C2, dated 27.04.2010
68	D.P.F.V. Sandpiper Boskalis Offshore AS	Drawing: Rockdumping at North East Frigg Pipeline & Rockdumping at East Frigg Pipeline, GEN-AKOPS-Z-0081, Rev. C2, dated 27.04.2010
72	TOTAL E&P NORGE AS	Feedback report for "Make Safe / Cleaning (hydrocarbon free) of Frigg and MCP-01 process and utility systems after production stop (DM925140)
74	TOTAL E&P NORGE AS	Printout of Cessation BE-WEB Hazardous Materials - related to HALON on MCP-01
75	TOTAL E&P NORGE AS	Minutes of meeting (dated 11.06.2010) with FishSAFE regarding Trawl test within the 500 m zone of the Frigg Field
76	Northern Lighthouse Board	Frigg Field AtoN Module - Engineering report
77	Northern Lighthouse Board	Operation and Maintenance Manual for AtoN Module Frigg Field including MCP-01
78	Northern Lighthouse Board	Specification to Total EAP AS "Aid to Navigation Engineering for MCP-01 Decommissioning", dated 04.10.2005
83	DTI	Letter to Total E&P UK PLC from DTI, "Interim Pipeline Regime", dated 14.09.2004. Approval of leaving in place temporary disused pipelines at MCP-01.
84	MPE	Letter to Gassco AS from MPE, "Samtykke til søknad om å utsette innsendelse av avslutningsplan", dated 04.02.2005
85	Aker Solutions AKOPS	MCP-01, Technical Note - Sheave blocks and openings on central core, dated 17.09.2008
86	Aker Solutions AKOPS	Mail from AKOPS to Total E&P Norge AS, "Application for leaving the grating at MCP01 breakwater in place" with attachments, dated 07.08.2008
87	TOTAL E&P NORGE AS	Reply-mail from Total E&P Norge AS to AKOPS, "Re: EPRD Contract 4100P04.001MCP01-MAT-3410 MCP01 - Handrails at the BreakWater Level", dated 01.12.2008
88	TOTAL E&P UK PLC	Minutes of meeting (dated 16.07.2009), "Future responsibility for navais on MCP-01"
89	TOTAL E&P UK PLC	Letter from Total E&P UK to DECC, "Permanent Aid to navigation on MCP-01 concrete substructure", dated 17.04.2009
90	DECC	Letter from DECC to Total E&P UK, Reply and approval of letter "Permanent Aid to navigation on MCP-01 concrete substructure" (dated 17.04.2009), dated 22.05.2009
91	Liaaen Teknologi AS	Final documentation for Design and Construction of Aid to Navigation for MCP-01, dated 30.08.2007
92	Aker Solutions AKOPS	MCP-01, Technical Note - Documentation of correct installation of AtoN unit, dated 14.07.2009
93	TOTAL E&P NORGE AS?	AIDS to NAVIGATION - MCP01, Emergency Intervention - Management Procedure
94	TOTAL E&P UK PLC	Presentation of MCP-01 - Lifting Seminar 2008 - Alex Intro
95	TOTAL E&P UK PLC	MCP01 Substructure Inspection & Reporting Procedure
96	TOTAL E&P UK PLC	Presentation to Scottish Fishermens Federation
99	TOTAL E&P NORGE AS	E-mail from Einar Høydal, Total E&P Norge, to Marte Aaberg Midtsund, DNV, "Frigg and MCP-01 Cessation Verification - Structural Inspection Frigg", dated 02.09.2010
108	TOTAL E&P NORGE AS	Contract for the Trawl Test between TEPN and SFF Service Limited
109	TOTAL E&P NORGE AS	E-mail correspondence between TOTAL and DECC, Post Environmental Survey at MCP01
110	DECC	Letter from DECC to Total MCP-01 survey scope, dated 08.07.2009
112	TOTAL E&P NORGE AS	SPECIFICATION FOR FLUSHING AND CLEANING DECOMMISSIONING

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Doc Id	Author	Description of document
116	TOTAL E&P NORGE AS	Presentation to Norges Fiskalag on Status of Frigg and MCP-01 Cessation Project, dated 20.01.2010
117	TOTAL E&P NORGE AS	Presentation to SFF and NFFO on Status of Frigg and MCP-01 Cessation Project, dated 03.03.2010
120	TOTAL E&P NORGE AS	Email from Einar Høydal, Total E&P Norge, to Anna Bersheim, DNV, "Nav Aid contract with NLB", dated 28.09.2010
122	TOTAL E&P NORGE AS	Variety pictures for MCP-01 used in verification work
129	Subsea 7	MCP1 Riser Truss Removal As Built Report
130	TOTAL E&P UK PLC	Presentation of Post Removal Activities for DECC 22th of May 2010
131	TOTAL E&P NORGE AS	Exhibit from decommissioning contract with AKOPS
132	TOTAL E&P NORGE AS	Email between TOTAL and UK Hydrographic Office and btconnect (?), Information MCP-01 Decommissioning - Completion of work, dated 13.07.2009
133	TOTAL E&P NORGE AS	Email between TOTAL and UK Hydrographic Office, Information MCP-01 Decommissioning - Completion of work, dated 17.07.2009
134	TOTAL E&P NORGE AS	Email between TOTAL and NLB, Information MCP-01 Decommissioning - Completion of work, dated 17.07.2009
135	TOTAL E&P NORGE AS	Email between TOTAL and UK Hydrographic Office, Information MCP-01 Decommissioning - Completion of work, dated 17.07.2009
165	TOTAL E&P UK PLC	Request letter from TOTAL to DECC concerning leaving of bumpers (PTR-GEN-0001), dated 05.01.2010
166	DECC	Reply from DECC to Request letter concerning leaving of bumpers (BUS-100118-49511), dated 18.01.2010
167	TOTAL E&P UK PLC	Email correspondence between Total E&P UK PLC and Kingfisher, dated 15.03.2012
168	FISHSAFE (webpage)	Extract from FISHSAFE Webpage, sent on mail from Total E&P UK PLC, dated 27.04.2012
169	TOTAL E&P UK PLC	Trawl test MCP01, dated for issue 11.11.2011
170	TOTAL E&P UK PLC	MCP-01 Decommissioning concrete condition assessment, authorised 06.06.2012
171	TOTAL E&P UK PLC	Service order to NLB "Upgrade replacement MCP01 Rig Watcher", dated 10.04.2012
172	TOTAL E&P UK PLC	Helicopter operator Agreement, dated 15.05.2012
173	TOTAL E&P UK PLC	E-mail from Alex Harvey, Total E&P UK Ltd, to Anna Kyte Bersheim, DNV, dated 18.05.2012, Regarding NLB to maintain and upgrade the Aton units.
174	TOTAL E&P UK PLC	E-mail from Alex Harvey, Total E&P UK Ltd, to Anna Kyte Bersheim, DNV, dated 06.06.2012, Regarding Agreement/ Arrangements with NLB regarding MCP01
175	TOTAL E&P UK PLC	Email correspondence between Total E&P UK Hydrographic office, dated 17.07.2009, Informing UK Hydrographic about final installation and status of Aton on MCP-01 (1)
176	TOTAL E&P UK PLC	Email correspondence between Total E&P UK Hydrographic office, dated 17.07.2009, Informing UK Hydrographic about final installation and status of Aton on MCP-01 (2)
177	TOTAL E&P UK PLC	Email correspondence between Total E&P UK Hydrographic office, dated 17.07.2009, Informing UK Hydrographic about final installation and status of Aton on MCP-01 (3)
178	Subsea 7	"ENVIRONMENTAL POSTDECOMMISSIONING SURVEY MCP-01 UKCS BLOCK 14/9" Appendix XI - Seabed Sampling (Environmental Report) of MCP1 Riser Truss Removal As Built Report
179	TOTAL E&P UK PLC	Draft of Concrete Substructure 14/9 MCP01 Disposal at Sea Close out report to OSPAR
180	DNV	Verification of the MCP-01 Disposal Arrangements: Verification Plan, v2.0, doc. no. 12QFK9T-3, dated 28.09.2010
181	NLD	Test certificat for the installed AtoN unit from NLB, dated 24.06.2009
182	NLD	Test certificat for the backup AtoN unit from NLB, dated 26.06.2009
183	TOTAL E&P UK PLC	Email correspondence between Total E&P UK and NLB, dated 18.06.2012, Regarding acceptance of Navigation aid installation and backup

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ABBREVIATIONS

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Abbreviations

AOP	Aker Offshore Partner
AtoN	Aid to Navigation unit
DECC	Department of Energy and Climate Change, United Kingdom
DNV	Det Norske Veritas
DBERR	The UK Department of Business, Enterprise and Regulatory Reform
FLTC	U.K. Fisheries offshore oil and gas Legacy Trust Fund Limited
MCP-01	Manifold and Compression Platform no. 1
NLB	Northern Lighthouse Board
OSPAR	The Convention for the Protection of the Marine Environment of the North East Atlantic 1992
TEPN	TOTAL E&P Norge AS
TEPUK	TOTAL E&P UK Ltd
UK	United Kingdom of Great Britain and Northern Ireland
UKCS	United Kingdom Continental Shelf

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Det Norske Veritas:

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Our technology expertise, industry knowledge, and risk management approach, has been used to successfully manage numerous high-profile projects around the world.

DNV is an independent organisation with dedicated risk professionals in more than 100 countries. Our purpose is to safeguard life, property and the environment. DNV serves a range of industries, with a special focus on the maritime and energy sectors. Since 1864, DNV has balanced the needs of business and society based on our independence and integrity. Today, we have a global presence with a network of 300 offices in 100 countries, with headquarters in Oslo, Norway.

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APPENDIX 3 – OFFSHORE DECOMMISSIONING LEARNINGS – STEP CHANGE IN SAFETY

PRE-MOBILISATION PLANNING
<p>Upmanning should be phased to only mobilise personnel who can be gainfully occupied in preparing the installation for deconstruction activities.</p> <p>Do not allow the 'Flotel time on contract' to dictate the immediate full upman. Work parties without access to sites are unnecessarily exposed to risk, can create risk and resultant low production and performance has a knock on effect on morale and safety.</p> <p>Planning must be realistic and recognise the impact of adverse weather on logistics, flotel bridge crossing status, overboard and work aloft and crane use.</p>
<p>Operating Procedures need to be drawn up and submitted to the Client for approval well before mobilisation. This process should be owned by one person and it should be formally documented and all amendments tracked.</p> <p>Procedures to be formally reviewed with lessons learnt and issued on time. These are to be read and understood by key personnel – this should be considered as an element of competency.</p>
<p>Workpacks should be made available for the site supervision prior to mobilisation. Job cards must be comprehensive with respect to recognition of the main hazards associated with the tasks e.g. lifting operations, the potential for dropped objects, windblown debris and hot work fumes exposure.</p>
<p>Put in place project specific lifting procedure that shows clear lifting categories and control measure for each category of lift. Describe examples to avoid misinterpretation as varying interpretations can occur in a deconstruct mode and complicated lifts can become regarded as routine.</p> <p>Ensure 24 hour LOLER Competent person cover.</p>
<p>Consider use of netting or other methods to avoid the overboard work precautions which can result in excessive downtime due to weather.</p>
<p>Poor planning of work, inadequate or late job card reviews leads to lack of foresight to get materials on site. Reactive planning results in equipment always being on the 'next boat'. This leads to frustration and improvisation which could result in safety issues.</p>
<p>A 'floating deck' supply vessel on station is a must because of deck laydown constraints. The materials controller must diligently track all materials on the vessel, at onshore sites and on the installation and flotel. This is to avoid double handling of equipment and to know exactly where any essential equipment is at any time. Plan for a continuous supply of refuse skips.</p>
<p>Put in place a scheduled plan of senior management visits with commitment right through all phases of the project – to include involvement in HSE activities and feedback sessions to the workforce during their visits.</p>
<p>Bring together, onshore, all site supervisors and foremen before the main workforce upman commences in order to forge good working relationships and understanding of work methods, procedures & practices.</p>
<p>Identify those requiring supervisory training with respect to the basic requirements of Safety Leadership. Conduct this supervisory training for those who do not have an acceptable level of competence.</p>
<p>Ensure a 'core' number of Safety Representatives are identified and given the approved training.</p>
<p>Establish Area Co-ordinators to control the work and avoid work conflicts. They should attend daily offshore Foreman Co-ordination and Permit meetings to identify potential conflicts.</p>
<p>Define Roles & Responsibilities of the Permit to Work Co-ordinator to include worksite visits to verify no conflicts and check that barriers are in place etc.</p>
<p>Early training and implementation of a common permit to work system is essential and it should not be underestimated how long it takes to become competent in the use of a new system.</p> <p>Identify training requirements and carry out prior to mobilisation or have training requirements in place at site and build into site specific induction programme.</p>
<p>Plan sufficient pre mobilisation inductions of one day's duration to provide an overview of the project and to cover all H, S & E aspects. This should be introduced by senior project management.</p>

Define roles, responsibilities and reporting of Temporary Systems personnel to ensure that there is a robust process for control of the safe supply of diesel to generators, lighting of escape routes, lighting repairs, testing of klaxon, issue of radios. Lighting must be fit for purpose so that it is unaffected by the elements. Service lines and power cable runs to generators, compressors and air manifolds etc must be well planned, secured and tagged to avoid being damaged or tampered with.
A project specific HSEQ Plan should be in place to cover the normal elements of any safety management system. This should be produced as a simple, user friendly document which can be posted on the installation and updated monthly.
Ensure health surveillance measures are put in place and communicated to the workforce during the Pre Mobilisation Induction, e.g. organisation of urine samples to check for isocyanate exposure.
Despite the fact that the installation is undergoing a deconstruction program, specific equipment remains Safety Critical and still requires a documented maintenance regime with certain verification requirements. This should be clearly scoped and responsible persons identified. Routine testing of equipment such as PA and emergency lighting must be put in place.
A thorough check of installation critical equipment, which has been in situ during platform life and is required for the decommissioning phase, such as cranes, pumps and generators is important. Check history of reliability, logbooks, drawings, certification – do not assume that it will be in order.
MOBILISATION
Meet & Greet introduction to all flight arrivals, not just 'new starts', works well when led by Senior Management and supported by the HSE Advisor.
Preparation work to be suitably planned to have all systems in place i.e. power, emergency plans, temporary refuge, mechanical equipment, compressors, generators, fire fighting and rescue equipment, lighting and other utilities Planning of work scope to be practicable and achievable with planning tools to monitor progress.
Preferably install or utilise a temporary PA system to prevent communications problems especially with lifting operations / cargo movements. Alternatively put in place a robust radio PA procedure but allocate dedicated PA channel and carry out training for correct use of radios. Ensure that there are plenty of portable radios with sufficient working channels and that controls are in place to manage distribution to all essential supervision, workforce and emergency response personnel. Promote the use of headsets.
The Mapping of Areas must always be carried out by approved personnel and recorded by the Field Engineers. The Safety Coach is to ensure that only mapped areas are accessible and that all unmapped areas are hard barriered off with appropriate signage. Field Engineers to be proactive with temporary laydown mapping and posting of 'fit for purpose' weather resistant notices, indicating load restrictions, on site.
The implementation of Daily Focus Meetings with both day and nightshift Foremen, Field Engineers, Supervision, Construction Manager & Superintendent works well in reviewing the work in progress plus the 24 hour lookahead. It should include a review of any HS&E issues, and take cognisance of weather forecasts and any other operational constraint or conflict.
To avoid concerns and debate about whether the flotel bridge link should be open or closed during 'marginal weather' ensure that all personnel understand the operating procedures and parameters.
Introduce a formal Handover Process for shift and trip handovers for all key roles. Introduce an audit of the process to ensure that proper handovers take place.

Schedule regular Town Hall Time Outs For Safety sessions by Senior Management to address safety issues. In case of downtime if the bridge link is closed, have a program of TOFS topics and training ready for use.
Ensure that there is a good Toolbox Talk Risk Identification Card (TRIC) or similar Toolbox Talk process in place. Provide training in its use as required.
Put a simple Behavioural Safety Program in place, train personnel and promote involvement by the workforce through Supervision leading by example. Consider use of the Step Change Personal Responsibility for Safety in lieu of a company program. Install card collection boxes and review daily. To have credibility, the process must include the publication and actions on findings within a timely period.
A formal audit plan should be in place to cover PTW, area inspections and behavioural programs.
Redundant safety equipment should be removed or, if left, appropriate signage put in place to indicate that it cannot be used.
Put emergency response equipment and plans in place as soon as possible. Identified ERT members must become familiar with the installation and equipment. Draw up ER exercise plan. Whenever deconstruct activities dictate changes and relocation of equipment, this should be planned and communicated in a timely manner.
Identify a temporary refuge on the installation in case personnel become stranded. Equip appropriately and place containers of emergency food rations on board.
If temporary teapoint / smoking facilities are to be appointed on the installation, these must be fit for purpose and in a suitable location.
WORK PRACTICES
Hotwork & paint fume hazards - personnel tend not to be familiar with the health risks caused by the release of isocyanates from specific (polyurethane based) paints during hotwork and impact of this on a deconstruction project can be extensive with respect to exclusion zones. The procedure must be clear and specific with respect to the RPE to be used, the training required, precautions etc. It is suggested that this should be defined in a simple table made available to the workforce. Alternative cutting methods (HP jetting) should be considered. A good supply and effective control of spares of specific RPE is essential to prevent downtime. Ensure that resources to conduct RPE Face Fit Testing are available.
Due to extensive shot blasting and other debris creating activities which had a high potential for foreign bodies entering eyes, normal safety glasses proved to be, in some cases, inadequate. Ensure that an adequate supply of suitable goggles and specialised safety glasses for the scopes of work to be performed are available on site from the outset.
Dropped objects are high risk so ensure fully effective barrier/signs cover of drop zones when setting up work sites. Inform the Permit Control office and Area Authority and communicate with adjacent work parties. Consider posting sentries. Barrier discipline is essential, including removal on completion of task.
Lifting operations are another high risk during deconstruction, especially as there can be 3 or 4 cranes in operation. A zero tolerance of poor lifting discipline should be in force from the outset. If the flotel crane is used for platform lifts, a risk assessment must be carried out and all involved included. If tower, palfinger or other temporary cranes are utilised, they must be subject to a formal risk assessment, deemed fit for purpose, authorised and tested. Operators must be competent to operate and maintain specific cranes. Lifting operations' control barriers can severely restrict other activities so they must come under the control of the Area Authority to prevent unnecessary restrictions. Barrier discipline is important and must be well controlled.
A high standard of housekeeping is essential – not easy during demolition – to prevent injuries. Apart from avoiding the obvious slips, trips & falls incidents, shot blast has to be contained and cleaned up immediately to prevent it becoming windblown and causing eye injuries and deconstruct material has to be removed continuously to prevent dropped objects. Ensure a continuous supply of skips.
Offloading and backloading of unusual lifts from supply vessels must be planned and risk assessed so that these operations are completed safely i.e. the lifts are landed safely and securely on either the installation or the vessel. This should be supervised by a competent person.
HEAVY LIFT OPERATIONS
The SIMOPS interface document must be comprehensive, covering a clearly defined organisation across all installations. Good, effective communication is the key to preventing incidents. It must be absolutely clear who is responsible for clearance of lifting operations and the lifting barge cranes should not be allowed to manoeuvre above the lift until it is ready as this can create pressure on the personnel making the lift safe. It cannot be emphasised strongly enough how important it is to double check that there are no loose objects or that there is potential for

equipment to break off and fall.

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APPENDIX 4 – BRIEF SUMMARY OF ENVIRONMENT SURVEY RESULTS – MCP-01 (2010)**Geodetic Datum ED50, UTM Zone 31N, 3°E****MCP-01 Location:**

Latitude: 58° 49' 38.84" N Northing: 6 525 647 m

Longitude: 00° 17' 11.49" E Easting: 310 277 m

Study Area:

A 1100 m diameter circle centred upon the MCP-01 installation.

Environmental Survey Strategy:

A total of 16 sampling stations, with four sampling stations on each of four concentric circles located at increasing distances from the MCP-01 installation (100 m, 150 m, 350 m and 550 m range). Stations located at 100 m and 150 m range had been sampled as part of a 2002 monitoring survey.

Underwater video and still photography data were acquired from each sample station with a Kongsberg oe14-208 camera system mounted upon a Hercules work-class ROV.

Camera stills and continuous footage were acquired before grab sampling, during grab sampling operations and after grab sampling.

Bathymetry:

No tidally corrected bathymetric data were available for the survey area, but non-tidally corrected single beam echo sounder data for the sampling locations indicated water depths ranging between approximately 93 m and 96 m.

Seabed Features:

Interpretation of environmental grab sampling and photography data revealed that the seabed sediments comprised medium to coarse sand. The four stations in close proximity to the installation had visibly higher levels of large bivalve shells and shell fragments on the seabed.

Sediment Granulometry:

Sediments observed throughout the survey area consisted predominantly of moderately to moderately well sorted medium sand, with station 5 having moderately sorted coarse sand. Three statistically different sediment types were determined by multivariate analysis.

Organic Carbon:

Total organic matter (TOM) was consistent throughout the survey area, ranging between 1.1% and 2.1%. Stations in close proximity to the installation had slightly higher levels of TOM, probably as a consequence of the high shell content observed at these locations, however there was no significant correlation between TOM and proximity to installation.

Hydrocarbons:

All stations were characterised by low concentrations of total hydrocarbons (THC), ranging between 1.1 µg.g⁻¹ and 2.9 µg.g⁻¹.

Heavy / Trace Metals:

Six of the heavy metals (arsenic, chromium, copper, lead, vanadium and zinc) found within the sediments had mean concentrations above normal background levels. Copper, chromium, lead and zinc levels were all slightly higher near the installation, with lead levels most noticeably higher. Four heavy metals (barium, cadmium, mercury and nickel) recorded concentrations below Northern North Sea background levels.

Epifauna:

Two epibenthic communities were present within the survey area, with faunal community composition determined by seabed sediment type.

The heterogeneous medium/coarse sand and shell habitat close to the structure had moderate diversity, but high abundance. A more diverse, but less dense faunal community was observed within the more homogenous, fine sand habitat, however this may be a consequence of an increased survey effort (12 stations) in this habitat.

Infauna:

A total of 118 discrete macrofaunal taxa were recorded during the course of the survey, excluding meiofaunal, damaged, colonial, juvenile and piscine taxa. Of the taxa observed, 61 (51.7%) were annelid, 23 (19.5%) were crustacean, 21 (17.8%) were molluscan and 5 (4.2%) were echinoderm. Representatives of the Cnidaria, Sipuncula, Nemertea, Phoronida and Tunicata made up the remaining 8 taxa (6.8%). In terms of abundance the annelids were dominant, representing 62.6% of the fauna.

There are no further surveys intended to be conducted, relative to the MCP01 Topsides Removal activity. Total do plan to utilise the location as a tie-in point for future developments. In conjunction with that work it is expected that seabed survey and sampling will take place before and after the activity.

APPENDIX 5 – TRAWL TEST REPORT

DRAFT

TOTAL E&P UK

PJ – MCP01



TOTAL

MCP01 DECOMMISSIONING


Final Seabed Trawl Test

L4-MCP-01-001

PURPOSE

The purpose of this report is to record and confirm the activity carried out as the final trawl test as part of the decommissioning of the MCP01 platform facility.

Rev	Date	Reason for Revision
0	11-09-2011	Draft for discussion
1	11-11-2011	For Issue

Authorisation Record		Company Representative	Decommissioning Project Engineer	
				
1	11-11-2011	A Atkinson	A Harvey	
Rev	Date	Prepared by	Recommended by	

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1. REQUIREMENT

A decision was made to decommission and remove the steel topsides of the MCP01 installation. As part of the formally placed MCP-01 Decommissioning Programme there is a commitment that, on completion of that work there will be a clearance of seabed debris and that a confirmation 'trawl' will be made of the seabed to confirm that it is suitable for future marine / fishing activity.

The seabed clearance activity was carried out in 2010, when almost 60 tonnes of debris were recovered and taken ashore for recycling. After allowing for settlement and finding the appropriate availability of vessel, along with suitable weather window, it was arranged that the Scottish Fisherman's Federation (SFF) would conduct the survey on Total's behalf.

SFF have conducted such work previously for Total at the Frigg field site, so were already familiar with the work requirement and reporting.

2. DESCRIPTION OF THE WORK

- MCP01 is a concrete, gravity based structure sitting in 93metres water depth in UKCS block 14/9. Position Coordinates are 58°49'N, 00°17'W.
- The gravity base consists of 280,000 tonnes of pre-stressed /reinforced concrete with circa 90,000 tonnes of ballasting gravel. The structure sits on a 101m diameter base slab and breaks surface with a 60m diameter support wall.
- Originally a manifold and compression station serving the two 32" diameter pipelines that extend between Frigg field and St. Fergus Terminal, MCP01 finally became unused in 2005 when the pipelines were bypasses around the facility. Thereafter the topsides were fully removed, with work completing in 2010.
- The seabed area immediately around the platform extending out to the 500m radius has to be checked to confirm that there was no remaining material or debris that might cause damage to fishing equipment, or represent danger to other user of the seas.
- Previously, a campaign to detect debris items (using side scan sonar and ROV) was conducted and, based on the findings, a removal operation was carried out that recovered 641 individual findings – mainly scaffold materials, wires, some fishing nets and numerous metal debris pieces – with a combined weight of 58.150 tonnes.
- The contracted Fishing Vessel would make adequate sweeps of the defined zone, using normal trawl fishing nets, to satisfy themselves that there was no remaining debris or undefined items that would cause damage or hazard to future fishing operations. The structures on the seabed, as part of the pipeline bypass works are all designed to be over-trawlable, most pipelines lengths in the area have been either trenched in or have rock-dump covering. The location of these are known.
- Finally, a certificate would be issued, by the SFF, that clearly attests to the considered integrity of the site in relation to future use of the location.

3. CONTRACTOR

The contract was awarded to:

Scottish Fishermen's Federation (SFF)
24 Rubislaw Terrace
Aberdeen
AB10 1XE

Tel: 01224 646944

Primary Contact: Michael Sutherland

The Scottish Fishermen's Federation was formed in 1973 to preserve and promote the collective interests of Fishermen's Associations. The Federation plays an active role in advancing the interests of Scottish fishermen at national and international levels by lobby government officials in Edinburgh, London and Brussels. The Federation also plays an important role in helping to inform: fisheries science; marine environment management; inshore fisheries management; marine safety regulations; and industry training/recruitment programmes

4. SCHEDULE

Based on existing experience it was considered that duration of seven (7) full days would be appropriate to carry out this work. The actual timing and execution would depend upon the prevailing weather conditions and the findings of the survey. In the event the work took a total of 9 days to complete.

5. MANAGEMENT / COMPANY REPRESENTATION

It is necessary that the Company interests are fully served during such activity. Accordingly the vessel would have a representative on board.

In this instance the individual concerned was previously approved as RSES for this work and had taken the role of representative on board for similar works.

The individual engaged was Alan Atkinson, contracted to Total and previously a direct employee of Total E&P Norge.

PERMIT TO WORK

There was no specific permit to work issued for this activity. The MCP01 site is no longer considered operational.

INFORMATION TO TOTAL DUTY TEAM

Details of the vessel, POB/ Next of Kin/ projected work programme and anticipated duration were passed to the Total Emergency Room for their retained information.

On arrival in the 500m zone a communication was made onpass to the Total Duty manager to make him aware that the vessel was in position alongside the structure and that work was commencing.

Any transactions / changes were updated to total Emergency room as relevant.

DAILY REPORTING

Due to limitation of available communications the daily report from the vessel was made via SFF. On-pass of relevant information was then made to Total management.

6. EMERGENCY RESPONSE

- The nearest adjacent installation to MCP01 site is the Claymore platform some 23 nm to the south of the location.
- Any emergency arising at MCP01 would have to be, in the first instance, dealt with by the vessel themselves. Via their communication with SFF and standard contact with coastguard etc they would report issues or seek assistance directly.
- The Company Representative on board would make contact with Total Duty manager, as relevant.
- Any major incident would be dealt with by the Total Emergency response team, in the normal manner, albeit that the vessel primary contact would be via the SFF.

7. WORK REPORT

The work was carried out between 10th and 18th May 2011 by the fishing vessel Rebecca - FR143, sailing out of Fraserburgh.

Initial 'fishing' passes were made using a specifically designed and constructed chain net, provided by the SFF. This allowed the vessel to establish the presence of possible items without endangering their expensive trawl gear.

A very comprehensive pattern of passes was made, based on instructions given by Total Operations and Pipelines Section. See Appendix 1. These were recorded using the vessel plotter equipment. It has to be accepted that whilst these coordinates are very exact the actual net may be following a slightly varied routing due to sea currents, seabed conditions etc.

Once assured that seabed conditions were favourable then a set of 'normal' trawl nets were deployed and numerous confirmation passes made until vessel skipper fully satisfied.

The final outcome was that some items of debris were located, and recovered, but that fishing Vessel Rebecca reported that the conditions were suitable for future trawling activity.
See report from Total Representative in Appendix 2.

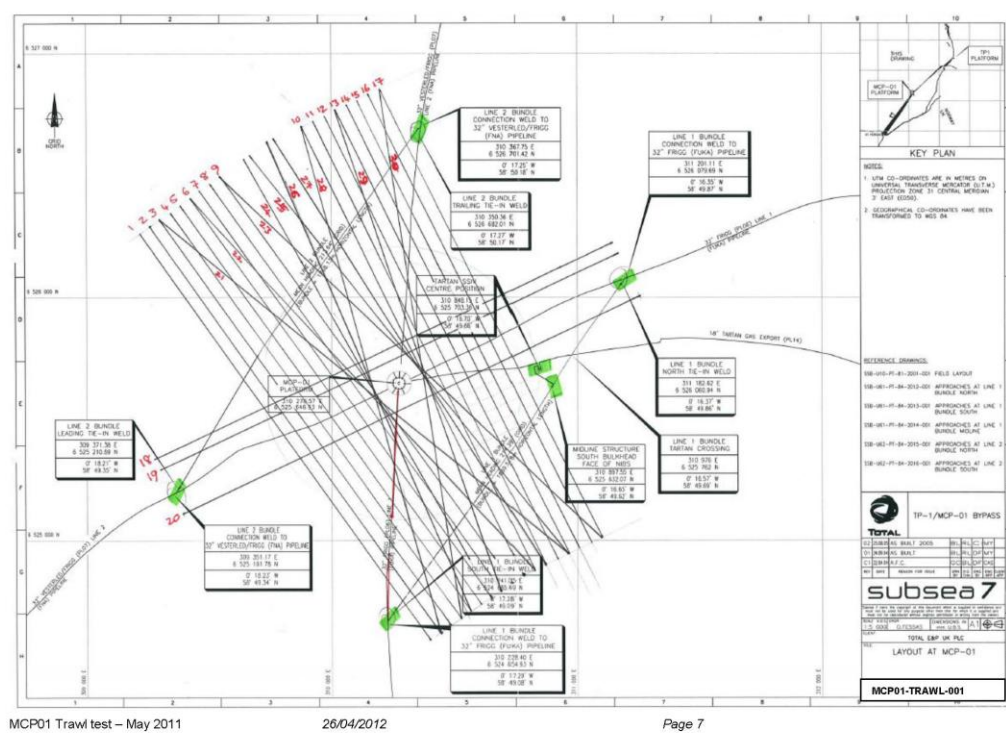
Certificate from SFF appended as Appendix 3.

8. APPENDIX 1**Line Coordinates for Seabed Trawl tests at MCP01**

Chart reference : WGS 84 see also sketch - MCP-TRAWL-001

Trawl Line	Start of Line	End of Line
1	58° 49.91'N 00°18.42'W	58°49.05'N 00°17.11'W
2	58° 49.93'N 00°18.38'W	58°49.06'N 00°17.07'W
3	58° 49.95'N 00°18.34'W	58°49.08'N 00°17.03'W
4	58° 49.96'N 00°18.30'W	58°49.10'N 00°16.99'W
5	58° 49.98'N 00°18.26'W	58°49.11'N 00°16.95'W
6	58° 50.00'N 00°18.22'W	58°49.13'N 00°16.91'W
7	58° 50.01'N 00°18.17'W	58°49.15'N 00°16.87'W
8	58° 50.03'N 00°18.13'W	58°49.16'N 00°16.82'W
9	58° 50.05'N 00°18.09'W	58°49.18'N 00°16.78'W
10	58° 50.17'N 00°17.76'W	58°49.20'N 00°16.73'W
11	58° 50.18'N 00°17.71'W	58°49.21'N 00°16.68'W
12	58° 50.19'N 00°17.67'W	58°49.23'N 00°16.64'W
13	58° 50.21'N 00°17.62'W	58°49.24'N 00°16.59'W
14	58° 50.22'N 00°17.58'W	58°49.25'N 00°16.55'W
15	58° 50.23'N 00°17.53'W	58°49.27'N 00°16.50'W
16	58° 50.24'N 00°17.48'W	58°49.28'N 00°16.46'W
17	58° 50.26'N 00°17.44'W	58°49.28'N 00°16.41'W
18	58° 49.42'N 00°18.32'W	58°49.95'N 00°16.43'W
19	58° 49.40'N 00°18.30'W	58°49.92'N 00°16.41'W
20	58° 49.30'N 00°18.20'W	58°49.83'N 00°16.30'W
21	58° 49.95'N 00°18.34'W	58°49.25'N 00°16.55'W
22	58° 50.00'N 00°18.22'W	58°49.21'N 00°16.68'W
23	58° 50.05'N 00°18.09'W	58°49.29'N 00°16.41'W
24	58° 50.09'N 00°18.00'W	58°49.15'N 00°16.87'W
25	58° 50.10'N 00°17.97'W	58°49.25'N 00°16.55'W
26	58° 50.13'N 00°17.90'W	58°49.11'N 00°16.95'W
27	58° 50.14'N 00°17.87'W	58°49.23'N 00°16.64'W
28	58° 50.17'N 00°17.76'W	58°49.06'N 00°17.07'W
29	58° 50.21'N 00°17.62'W	58°49.16'N 00°16.82'W
30	58° 50.26'N 00°17.44'W	58°49.10'N 00°16.99'W

<u>Additional Information</u>	
Centre of MCP01 Platform	58°49.61'N 00°17.29'W
Tartan SSIV	58°49.66'N 00°16.70'W
Midline Structure	58°49.62'N 00°16.65'W
Line 1 Bundle - Tie In North	58°49.86'N 00°16.37'W
Line 1 Bundle - Tie In South	58°49.09'N 00°17.28'W
Line 2 Bundle - Tie In North	58°50.17'N 00°17.27'W
Line 2 Bundle - Tie In South	58°49.35'N 00°18.21'W



9. APPENDIX 2**Trawl Test
MCP01 Safety Zone****10th – 18th May 2011**Alan Atkinson
Total E&P UK

Total E&P UK had contracted the Scottish Fishermen's Federation (SFF) to perform a trawl test of the 500 metre Safety Zone of MCP01 to check for debris left from the platform's operations over the years and to 'certify' the area as safe for trawl fishing. The SFF allocated the fishing vessel 'Rebecca' (FR 143), registered in Fraserburgh to perform the test, with a mobilisation on 9th May 2011.



The fishing vessel 'Rebecca'

The SFF performed an audit of the vessel on the afternoon of 9th May and approved it for the test. The SFF also supplied a special metal chain trawl net specifically to perform the trawl test.



The metal chain net supplied by SFF

The audit was followed by a meeting with the SFF representative, Total E&P UK's representative, (Alan Atkinson) and the Skipper of the vessel, Adam Tate to go through the procedures necessary to perform the trawl test. Whilst the vessel and Skipper had not performed this type of trawl test previously, the procedure was considered very similar to 'normal' trawl fishing and no problems were expected. In addition, the Total E&P UK representative had performed a similar trawl test from the fishing vessel 'Soltice' (sailing from Fraserburgh) over the Safety Zone of the Frigg Field for Total E&P Norway, in August 2010. The estimated time to complete the trawl test on MCP01 was 6-7 days. Mobilisation of the crew onboard the vessel was set for 20:00hrs. the same evening and the vessel left Fraserburgh harbour at 20:40hrs. with 6 persons onboard, including the Total representative. The sailing time to MCP01 was estimated at between 10 – 11 hours.

Tuesday 10th May 2011:

The fishing vessel 'Rebecca' arrived at MCP01 at 09:00hrs. and preparations were made to begin the trawl test. The first trawl with the metal chain trawl net was started at 09:45 and was planned to last for 3-4 hours, roughly following a grid pattern across the safety

zone. The 'tracking' of the grid pattern was recorded by the vessel to show where the vessel had been and the area of the safety zone that had been successfully trawled. At the end of the trawl period, the steel chain trawl net was hauled onboard the vessel and inspected for any debris that it had trawled up. A small amount of debris was found – small pieces of steel, stainless steel wrapping band, small pieces of plastic and short lengths of cable.

The steel chain trawl net was again set onto the sea bed and trawling commenced again. In total, three trawls were performed and small amounts of debris recovered. All debris was kept onboard for disposal onshore. The last trawl of the day was completed at approx. 20:00hrs.

Wednesday 11th May 2011:

Trawling commenced at about 08:00hrs. and at 09:20hrs. the vessel came to a stop. The trawl was 'held fast'. After a short delay, the vessel moved again and the skipper surmised that the chain net had become stuck in mud on the sea bed. Three trawls were completed during the day, again following the grid pattern and recording the positioning of the vessel. When the last trawl was hauled onboard at 19:50 it was discovered that the chain net had entangled what appeared to be a complete trawl net from a fishing vessel. The net looked as though it had been on the sea bed for some time due to the organic growth on it. The assumption is that a fishing vessel had got too close to the platform and had entangled their net on the base of MCP01 and subsequently lost it.



Trawl net recovered from the sea bed around the base of MCP01

Thursday 12th May 2011:

Trawling commenced at 08:00hrs. and continued until 11:50hrs. when the vessel came to a stop. Again, the trawl was 'held fast'. After some manipulating of the vessel's position, the metal chain net came free and was hauled onboard for inspection. A second trawl fishing net was discovered entangled in the chain net. This was brought onboard, together with a small amount of metal debris. Trawl operations were again commenced at 12:30hrs. and continued until about 20:00hrs. following a further two successful trawls, recovering a small amount of debris.

Friday 13th May 2011:

Following the three days of trawling with the chain net it was concluded that the sea bed was fairly clear of platform related debris, so the decision was taken to perform fish trawling to establish if there were fish in the area of the Safety Zone and if there were, to give an indication of the variety of species. The fish trawl was started at 08:00hrs. and hauled onboard about 11:30hrs. The trawl net showed some damage, possibly caused by platform debris or stones on the sea bed. Several varieties of fish had been caught, even though the net was damaged.



'Rebecca's' damaged trawl net on the quayside at Fraserburgh

Following discussions between the vessel, the SFF and Total, it was decided to revert back to using the chain net for the rest of the day in an attempt to discover if there was further platform debris still in the area of the Safety Zone. In addition, it was decided as the two trawl fishing nets that had been brought onboard, occupied half the aft deck and prevented using twin trawl nets for fishing, the vessel would return to Fraserburgh overnight, following the completion of the day's trawling. This would allow the trawl nets and other debris to be unloaded onto the quay side and the vessel would then return to MCP01 to continue trawling for fish, including the use of twin trawl nets. The use of twin trawl nets gives a much wider coverage of the sea bed. On completion of the day's trawling and after another large section of trawl net had been found and brought onboard, the vessel set course for Fraserburgh.

Saturday 14th May 2011:

The 'Rebecca' arrived into Fraserburgh harbour just before 08:00hrs. and started to unload the debris, including the trawl nets that had been found. In addition, the damaged net belonging to the vessel was repaired. As the vessel would only be returning to MCP01 to fish, it had been agreed between the SFF and Total, that the Total representative did not need to be on the vessel and so he demobilised at this point. The 'Rebecca' was due to sail out to MCP01 overnight and arrive in the field on the Sunday morning.



Fishing nets unloaded from the 'Rebecca'



Platform debris, including stones, wire rope and diver's flippers.

The Rebecca returned to Fraserburgh on the morning of Wednesday, 18th May, following three days of using regular trawl fishing nets, to determine the variety of fish living close to MCP01. They recovered some further platform related debris including quite a number of stones, (probably from the 'rock dumping' operation following the by-pass of the pipelines around MCP01), some wire rope and diver's flippers. Several species of fish, including haddock, lemon sole, monk fish and turbot had been caught.



The crew of the Rebecca in Fraserburgh



Sunset over MCP01

10. APPENDIX 3



Our Ref: MJS / amg

20 July 2011

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Aberdeen, AB10 1XE
Scotland UK

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E: sff.services@sff.co.uk

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**TOTAL E & P UK PLC : MCP01 DECOMMISSIONING PROGRAMME :
POST DECOMMISSIONING CLEARANCE / VERIFICATION TRAWL SWEEPS**

This is to certify that the MV "Rebecca" FR143 has carried out a post decommissioning sea bed / trawl verification sweep of the MCP01 Field concerning the area marked on the attached Chartlet (Appendix 1) and has found to the best of our knowledge and belief and using best endeavours and best practice available that there are no MCP01 related oilfield obstructions remaining that will affect current and future fishing activity in the defined area and that in all respects the MCP01 Field has been successfully cleared of all Subsea Equipment / Infrastructure.

Signed for on behalf of the Owners of the MV "Rebecca" FR143


Adam Tait

Signed on behalf of SFF Services Limited


Michael J Sutherland, Director of Operations

Appendix 1 Refers

Note: MCP01 Structure Still in Place



A company wholly owned by the Scottish Fishermen's Federation VAT Reg. No: 498 420 807
Registered in Scotland Company No: SC 098563 Registered Office: 24 Rubislaw Terrace Aberdeen, UK, AB10 1XE



APPENDIX 6 – CONCRETE CONDITION AND FUTURE MONITORING

Copy of CMS Document

SUB-STRUCTURE INSPECTION and REPORTING PROCEDURE
L3-MCP-11-001

DRAFT

TOTAL E&P UK

COMPANY MANAGEMENT SYSTEM - LEVEL 3

MCP-01

Sub-structure Inspection Instruction



TOTAL

SUB-STRUCTURE INSPECTION & REPORTING PROCEDURE

L3-MCP-11-001

PURPOSE

As part of the Cessation Project applied to the MCP-01 platform between 2005 and 2010 a required duty for Total is ensure that the concrete substructures that remain shall be monitored and that all damages or observed changes are recorded, analysed and reported to the relevant parties.

It has been decided that the installation shall be subject to periodic assessment to capture any integrity issues that might arise with the structure. The decommissioning programme included intensive studies of the platform design and sampling of the materials of construction. These allowed determinations to be made that would indicate that the rate of deterioration of the remaining structure will be slow with anything up to 100 years+ before significant change might be noted. This however is speculative and based on limited areas of sample and direct survey.

During periodic visits to the platform, for maintenance of the navigation aids, inspections shall be carried out to ascertain or monitor any change in platform structure conditions. This procedure gives guidance on this process.

SCOPE

The inspection will be applied to the following elements of MCP-01:

- Breakwater Wall
- Support Columns (14 off)
- Concrete Main Support Frame (MSF)
- Centre Core
- Centre Core Cap (with AtoN)
- Manifold Beams

Authorisation Record		Decommissioning Project Engineer	Structural Technical Authority	Marine Operations Superintendent
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Rev	Date	Prepared by	Recommended by	Approved by

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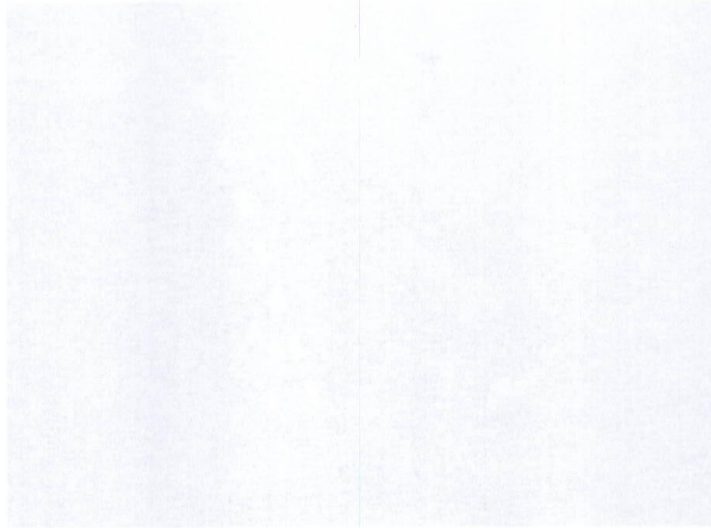
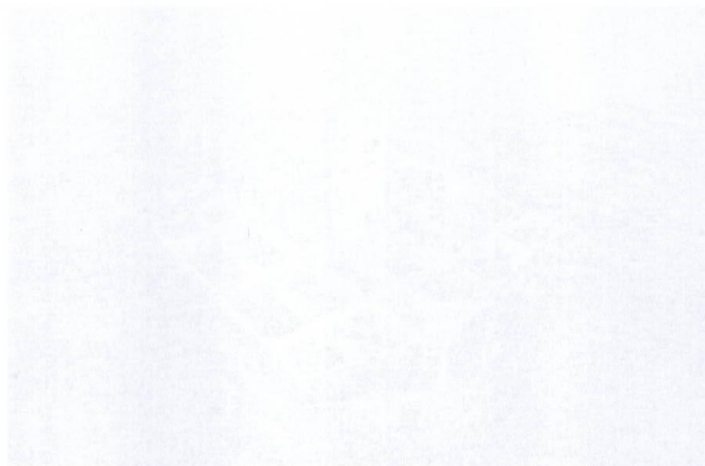


Fig 1.1 MCP-01 prior to deconstruction

It has been decided that the remaining structure shall be subject to periodic inspection to ensure any structural issues are identified and the structure is maintained in a safe condition. The decommissioning programme included extensive studies of the structure and sampling of a number of construction materials. These allowed determinations to be made that would allow the rate of deterioration of the remaining structure will be slow with anything up to 100 years before any major changes might be noted. This however is speculative and based on limited areas of sample analysis. There is no need for a credible method in place to support direct material access to MCP-01. To avoid the deliberate policy during cessation and abandonment was to minimise any possibility of such access.



1. INTRODUCTION

1.1 REQUIREMENT

As part of the Cessation Project applied to the MCP01 platform between 2005 and 2010 a required duty for Total is ensure that the concrete substructures that remain are monitored and that all damages or observed changes are recorded, analysed and reported to the relevant parties.



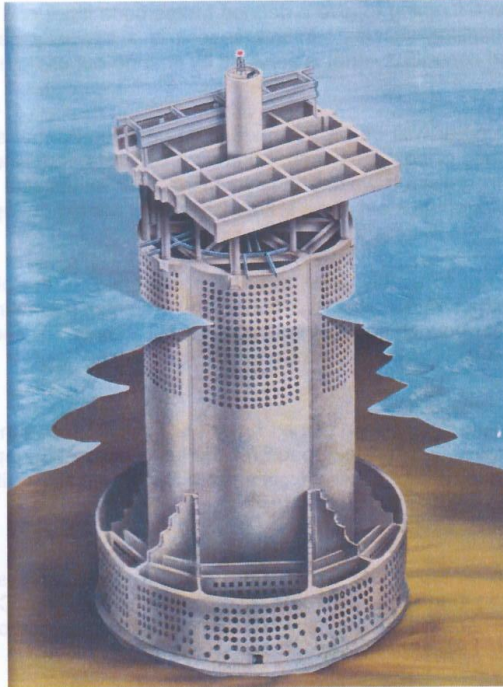
Fig 1.1 MCP01 prior to topsides removal

It has been decided that the remaining atmospheric parts of the installation shall be subject to periodic assessment to capture any integrity issues that might arise with the structure. The decommissioning programme included intensive studies of the platform design and sampling of the materials of construction. These allowed determinations to be made that would indicate that the rate of deterioration of the remaining structure will be slow with anything up to 100 years+ before significant change might be noted. This however is speculative and based on limited areas of sample and direct survey. There is no remaining credible method in place to support direct, manned access to MCP01. In fact, the deliberate policy during cessation and abandonment was to minimise any possibility of such access.



Fig 1.2 MCP01 – ‘as-left’

It is necessary that a survey should be conducted whenever the site is attended for the purpose of maintaining / changing out the navigation marking system. Initially using the baseline report, given in Appendix 1 of this document, and thereafter using the most recent report, analysis and evaluation can be made of any changes in the perceived condition. The priority for this procedure is to capture the information. The analysis can be carried out, onshore, later by specialists.

**Figure 1.3 Artist Impression of Decommissioned Platform**

1.2 DEFINITIONS

Aspect

Whilst based on a cylindrical design the platform is considered to have 4 aspects (faces) that are linked to the closest geographic headings – N, S, E, W. These are used as reporting references. It should be noted that the platform has a noted heading of 32° East of North.

AtoN

AtoN is an abbreviation for Aid to Navigation – might also be referred as a navigation aid. It consists of a dual lamp configuration – flashing to give a defined Morse code letter and a Racon unit that will respond to radar signal from passing vessels. In this case it is a specially designed unit – solar powered, remotely monitored and controlled – that is serviced by change-out using helicopter lift.

Breakwater Wall

That part of the visible outer wall on MCP01 extending between normal seal level (93.00m) and visible top (105.00m). It is made of post-tensioned, reinforced concrete perforated with so called Jarlan holes. This wall is intended to break up waves, thus reducing their forces and protecting the main inner leg (Centre Core). There are some steel items still attached to or placed on top of the breakwater wall.

Centre Core

Atmospheric design down to seabed level this is the main 'leg' of the platform providing the principal support for the upper structure. Originally contained and protected the main gas pipeline risers. The shaft will probably flood in future when seals at seabed level fail. There are some steel items left attached at different levels on the outside of the Centre Core.

Support Columns

Consist of 14 individual steel tubular columns that extend from the top of the Breakwater Wall for a height of approximately 15 metres to provide support for the large concrete support frame. Consist of a steel outer sleeve with reinforced concrete internal. Some lighting fittings, installed during the decommissioning works, were left in place

Core Cap

A concrete lid installed on top of the Centre Core during the decommissioning project. In addition to preventing access to the Centre core the primary purpose for the Core Cap is to give a stable support position for the AtoN. There are two installation posts installed on the top of the core cap.

Main Support Frame

The Main Support Frame (MSF) consists of pre-tensioned, reinforced concrete beams that make up a lattice that originally supported the topsides structures. There are no significant protrusions remaining but there are numerous embedded plates that are to be seen throughout the surface.

MCP-01

MCP-01 is a concrete gravity platform designed by C G Doris and was one of the original concrete designs utilised in the North Sea. A post-tensioned concrete "island" the structure and design typically consists of a large volume caisson based on the sea floor merging into a monolithic structure, which is offering the base for the deck. The single main leg (termed Centre Core) is surrounded by an outer breaker wall perforated with so called Jarlan holes. This wall is intended to break up waves, thus reducing their forces. The wall then has 14 equi-spaced columns that, with the main leg, support a concrete framework that bore the former weight of the topsides structures. The 13,500 tonnes of topsides (steel) was removed during the cessation / decommissioning project between 2006 and 2009. The structure sits on the seabed by virtue of its own weight (250,000 tonnes) assisted by some 90,000 tonnes of sand/gravel ballast. The remaining structure carries an Aid to Navigation.

Radial Beams

Concrete Beams that provide structural connection between the Centre Core and the Breakwater Wall. These originally carried access walkways (removed) as well as providing support for the dive system rails that remain.

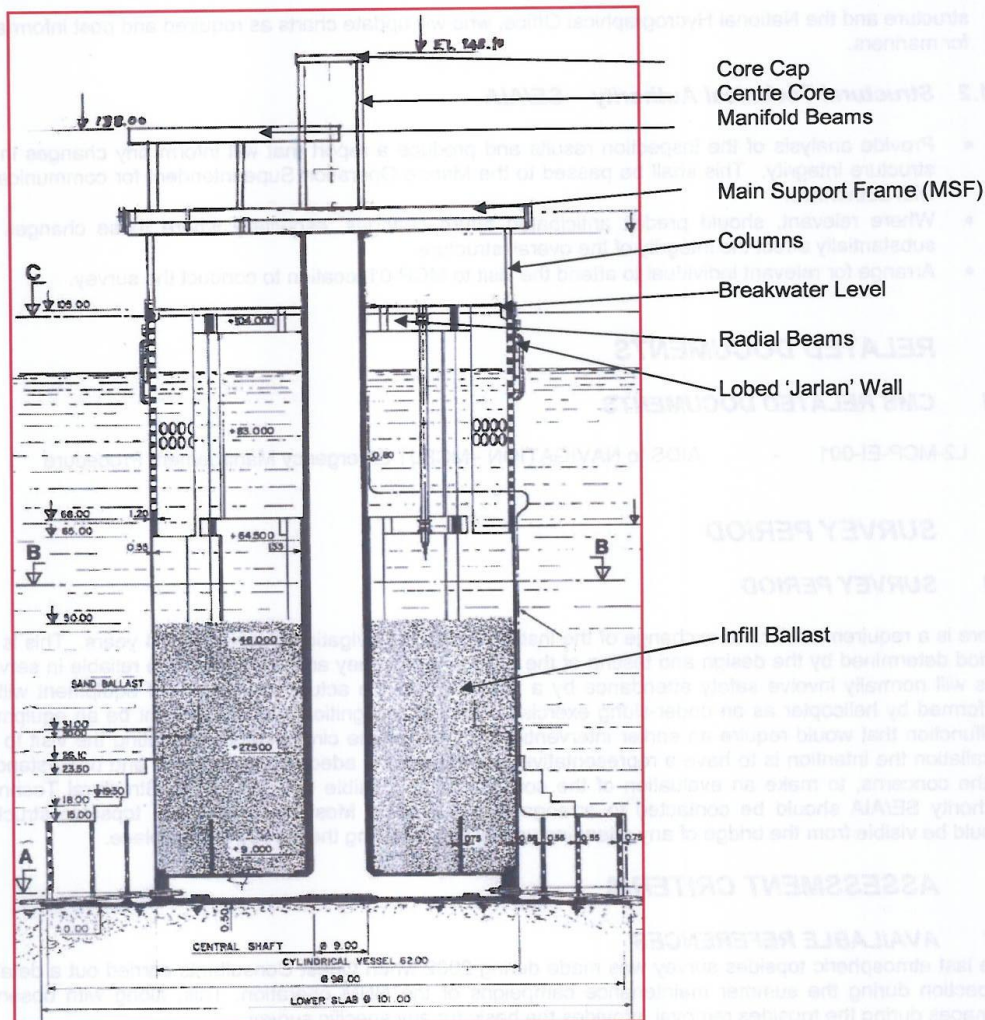


Fig 1.4 – Section view through MCP-01

2. RESPONSIBILITIES

2.1 TOTAL E&P UK

2.1.1 Marine Operations Superintendent - TS/LOG/MAR

- This role has the responsibility for organising and coordinating the attendance at MCP01 of an aircraft (helicopter) – in conjunction with Aviation TS/LOG/TRA - and probably a vessel to support the maintenance of the AtoN. Accordingly, this role should advise Structural Technical Authority of the attendance so that arrangements can be made to have a representative present to conduct and record the survey.
- Responsible for informing the authorities of the outcome of the survey. These authorities will be Department of Energy and Climate Change (DECC), who have governance over our operation of the

structure and the National Hydrographical Office, who will update charts as required and post information for mariners.

2.1.2 Structural Technical Authority - SE/AIA

- Provide analysis of the inspection results and produce a report that will inform any changes in the structure integrity. This shall be passed to the Marine Operation Superintendent for communication with authorities.
- Where relevant, should predict anticipated future changes, especially where those changes will substantially affect the integrity of the overall structure
- Arrange for relevant individual to attend the visit to MCP-01 location to conduct the survey.

3. RELATED DOCUMENTS

3.1 CMS RELATED DOCUMENTS

L2-MCP-EI-001 - AIDS to NAVIGATION –MCP01 Emergency Management Procedure

4. SURVEY PERIOD

4.1 SURVEY PERIOD

There is a requirement for the exchange of the installed Aids to Navigation (AtoN) every 4 years. This is the period determined by the design and testing of the units whereby they are expected to be reliable in service. This will normally involve safety attendance by a vessel whilst the actual change-out of equipment will be performed by helicopter as an under-slung exercise. There is recognition that there might be an equipment malfunction that would require an earlier intervention. Whatever the circumstances initiating the visit to the installation the intention is to have a representative present, having adequate experience and understanding of the concerns, to make an evaluation of the condition of the visible structure. The Structural Technical Authority SE/AIA should be contacted to arrange representation. Most of the external topsides structure should be visible from the bridge of any attending vessel thus allowing the survey to take place.

5. ASSESSMENT CRITERIA

5.1 AVAILABLE REFERENCES

The last atmospheric topsides survey was made during 2002 when Quest Consultants carried out a detailed inspection during the summer maintenance campaigns of the NNM operation. This, along with observed damages during the topsides removal, provides the basis for any specific survey.

In 2009, a comprehensive set of high quality aerial photographs were taken after the final topsides work was complete. This will provide a good point of reference for any work. Can be found in X Drive as X:\EPI\EMEA\GB\Entity\ABZ\Projects\MCP-01 Decommissioning Project\K. AS-LEFT Documentation\Photos of Concrete Substructure above water Aug. 2009

It is expected that the initial deterioration for most elements will be slow so there will not be any changes during the early visits to the platform. However there are some exception elements that may need to be observed and monitored. These are included in the Description of Platform

5.2 ANOMALY TYPES

Anomalies to be reported are:

- Spalling of the concrete
- Exposure of steel reinforcement / pre-stressing / Post-tension cables
- Large cracks
- Large settlement of the structure or parts of it
- Deterioration of the AtoN support structure.
- Detachment / loss of any external steelwork
- Collapse – full or partial - of dive system rails.

Data collection sheets are included as Appendix 1.

Part of the decommissioning project agreement was that all internal steel components should be removed from the structure. The exception to this was any item that provided sea level 1 metre and that when it did fall would be retained captive within the structure base slab as detailed. To achieve this, three external ladder access were removed from positions at E, NW & SE. The external stair at Platform East was also removed. As part of water penetration which removing the external stair it was agreed that the bolt through fitting at that location could be left in situ. Around the outer diameter there are several large plate fittings that were original installation side – mooring points, tow eyes etc. These are less than 1 metre protrusion. When these detach it is expected that they will fall within the concrete walls of the seabed.

6. DESCRIPTION OF PLATFORM

6.1 GENERAL

The visible structure, above water, consists of a 9m diameter concrete **central core** that projects to a height of 55m above sea level. This is surrounded by a 62m diameter **lobed wall** to a height of 12metres giving a **breakwater level**. This wall is a 'jarlan' construction perforated with 1.2m diameter holes that dissipate the wave energy of the sea. The central core and the lobed wall are connected by an array of **radial beams** at various levels up to the breakwater elevation. On top to the lobed wall there are **14 columns**, equally spaced around the diameter, with a height of 15 metres. These columns, with the central core, support a concrete frame – the **MSF** – that formerly carried the topsides equipment. Also remaining above the MSF is half of a concrete **manifold support structure** consisting of two large beams supported by **pillars**. The central core is installed with a **core cap** that has the installation posts for the navigation aids.

6.2 KEY DETAILS

Sea Level to Breakwater

Part of the cessation project agreement was that all external steel constructions should be removed from the structure. The exception to this was any item that protruded less than 1 metre and that when it did fall would be retained captive within the extended base slab at seabed. To achieve this, three external ladder accesses were removed from positions at S, NW & NE. The external riser at Platform East was also removed. As part of safety consideration whilst removing the external riser it was agreed that the boat bumper fittings at that location could be left in-situ. Around the outer diameter there are several large plate fittings that were original installation aids – mooring points, tow eyes etc. These are less than 1 metre protrusion. When these detach it is expected that they will fall within the concrete walls at the seabed.

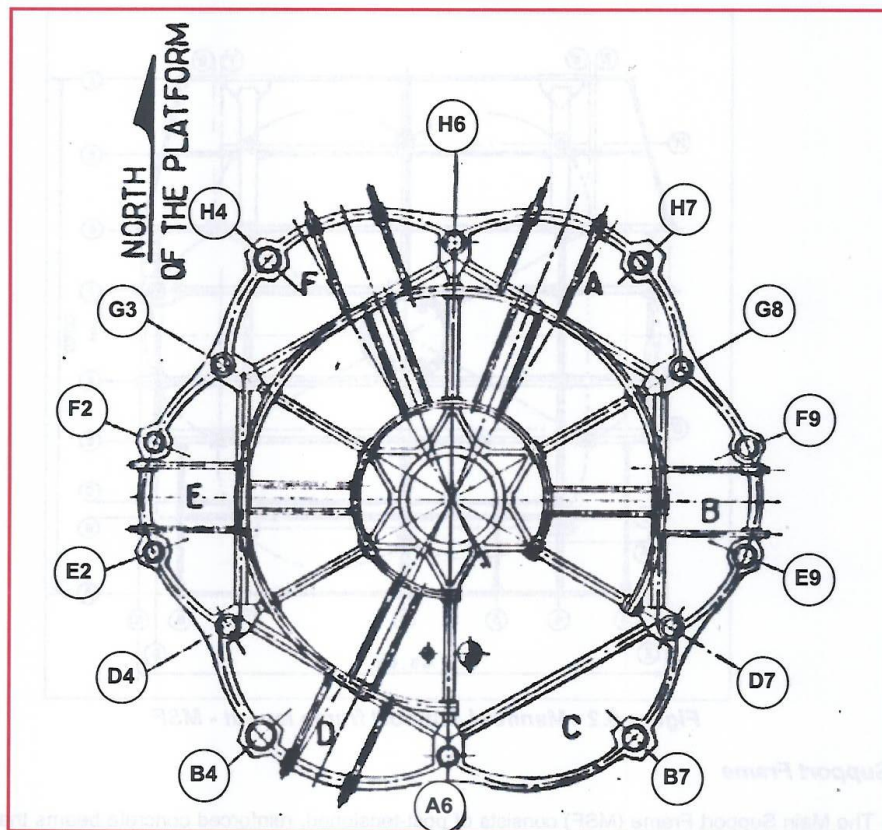


Figure 6.1 MCP01 breakwater level – Identification of Columns and Layout of Diving Rails

At Breakwater Level

Originally the Breakwater level had a gangway landing platform, radial walkways and stair access to the MSF and upper decks. During the operations periods some modifications were made and a specific addition was the heavy 'rails' that were used to deploy the dive system. Within the decommissioning period these were all removed with the exception of the dive system rails. Their removal represented great risk and, since once the ultimately fail, they will be captive within the jarlan wall it was agreed that these would remain in place. Also at this level, on the west side of the centre core, there is a large sheave assembly (part of the original installation system) that was left in-situ as its removal represented little benefit and at ultimate failure will be captive within the jarlan wall. At the East side of the core there is the remains of the 18" external riser left in place on similar basis. Finally there are some handrail panels, again adjacent to the centre core, that have been left in place. This again was an agreement of the final works at platform.

Support Columns

The 14 columns have a steel tubular outer sheath but the internal is of reinforced concrete. There is extensive corrosion evident on the steel outer but failure is not considered imminent. There were some decommissioning project lighting fittings for which the removal presented unnecessary risk. The small weight and dimensions of these meant they were left in place on the columns.

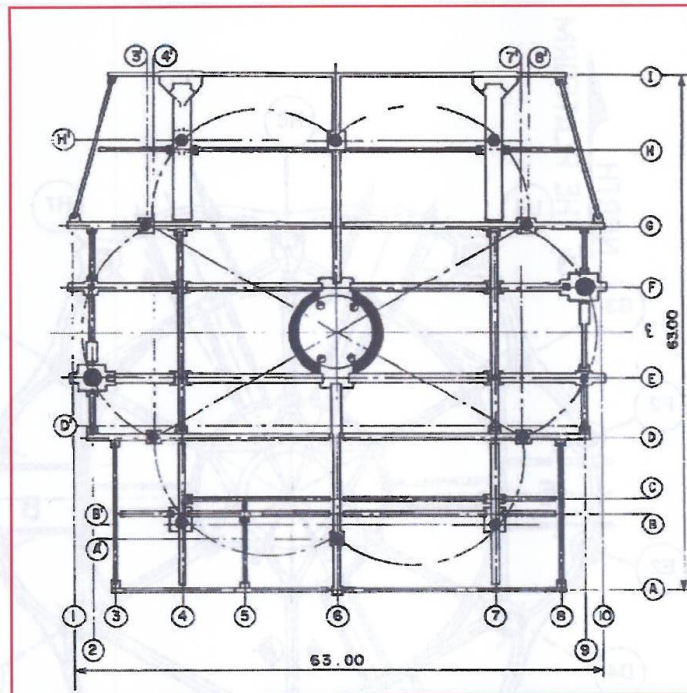


Figure 6.2 Manifold Support frame layout - MSF

Main Support Frame

The Main Support Frame (MSF) consists of post-tensioned, reinforced concrete beams that make up a lattice that originally supported the topsides structures. There are no significant protrusions remaining but there are numerous embedded plates that are to be seen throughout the surface. These were agreed to be left in place as their removal represented dealing with unnecessary hazard. The MSF will have evidence of spalling and there was some damage noted during the removal works.

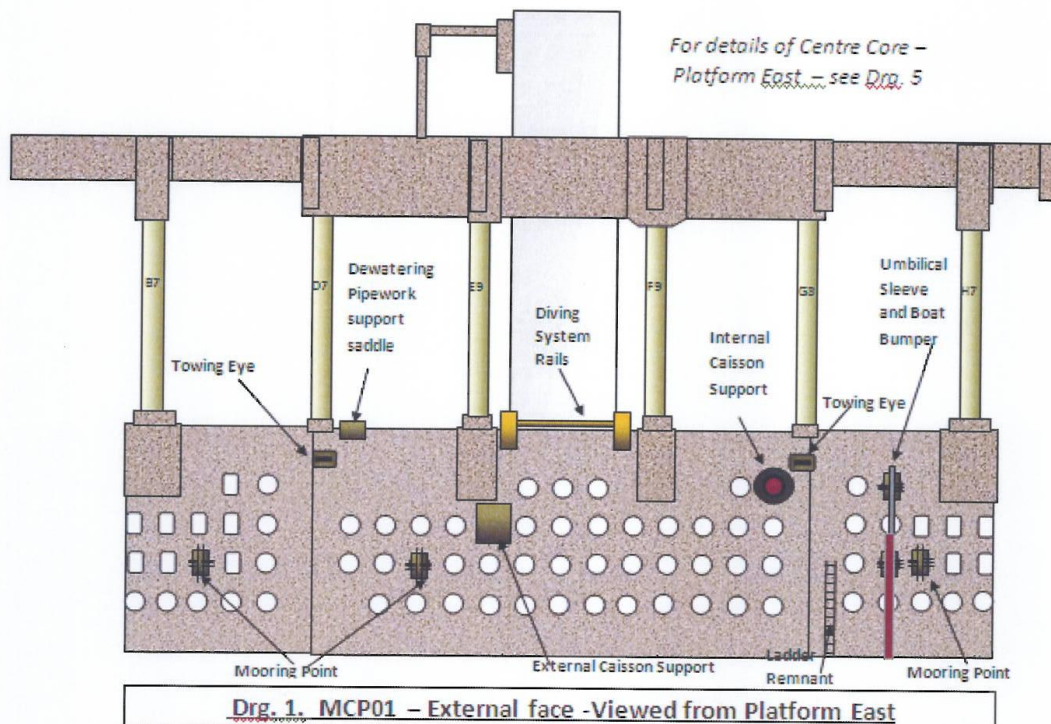
Manifold Beams

These were subject to significant work during the decommissioning project with the cutting and removal of the Eastern section of beams to allow required access to other equipment. The remaining pieces, without the loading and protection they formerly had are possibly the most likely area of concrete construction to fail first.

Centre Core

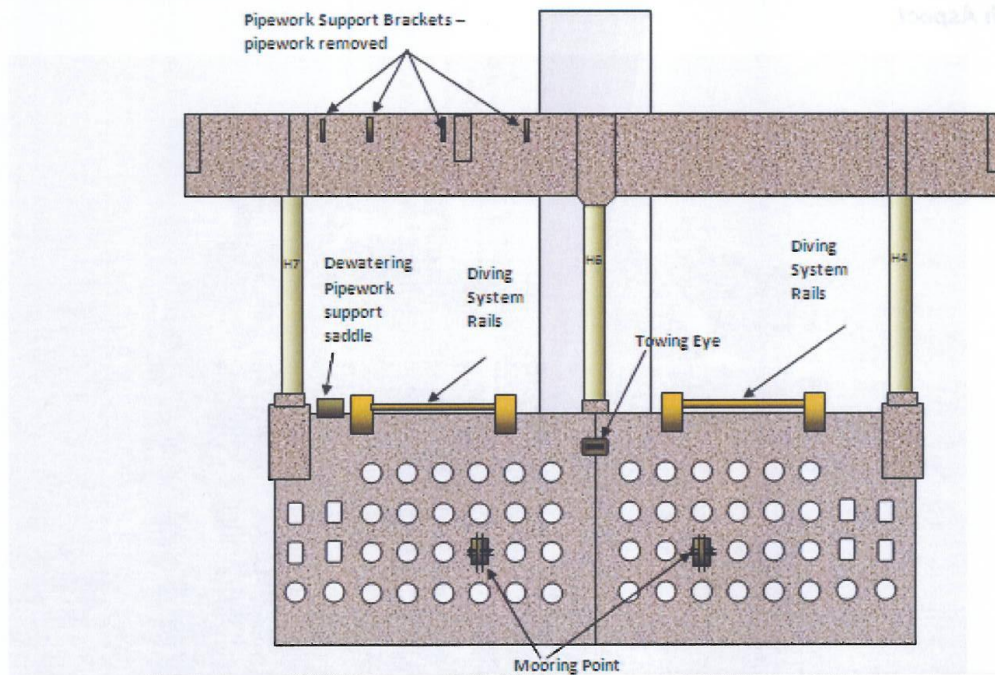
This concrete column is 9 metres in diameter with a wall thickness of just less than 1 metre. Originally it provided protection for the gas riser pipework – this is still inside the column. There were also numerous internal working platform levels throughout the entire height to seabed. Externally the core had only some attachments that were the supports for main gas pipes routing to / from the process modules. Most of these were removed as part of the decommissioning however one remains in place. The conditions on board had changed significantly so that by the time came for its removal it was deemed to be too hazardous. When it finally fails it will fall into the moonpool within the jarlan wall. There are a number of apertures in the core walls above the MSF. Most of these were filled by using concrete building blocks but there is an inconsistency in build quality so some failure may occur at quite an early stage. There are two openings that are sealed by steel panels only and these too will be expected to show signs of deterioration quite quickly especially now that the protective topsides structure has been taken.

1

East Aspect**Figure 6.3 MCP-01 – Viewed from East – September 2009**

North Aspect

Figure 6.4 MCP-01 – Viewed from North – September 2009

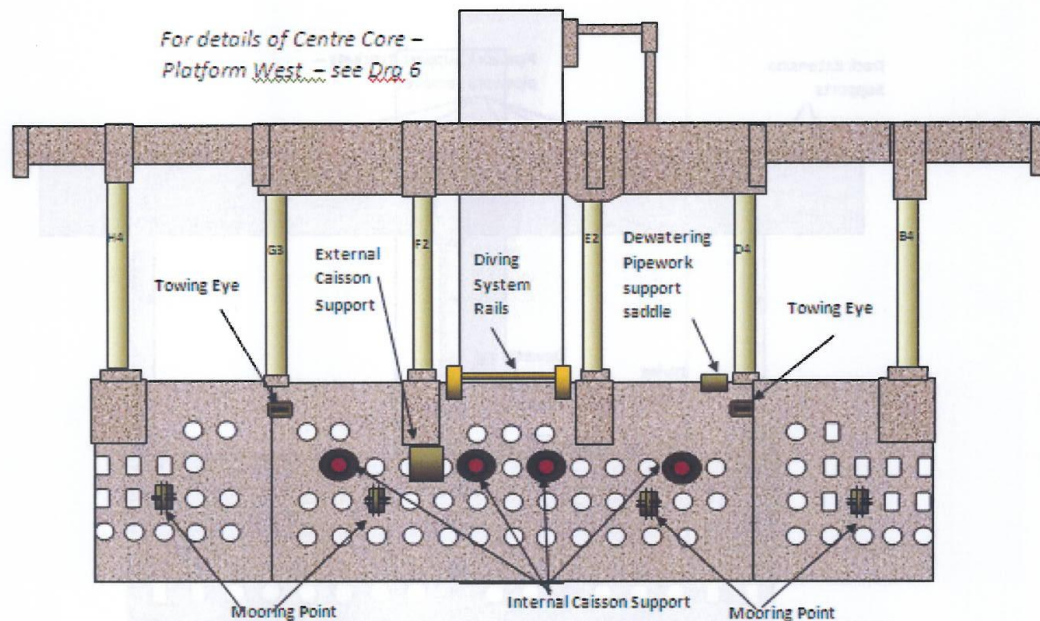


Drg. 2. MCP01 – External face -Viewed from Platform North

West Aspect



Figure 6.5 MCP-01 – Viewed from West – September 2009

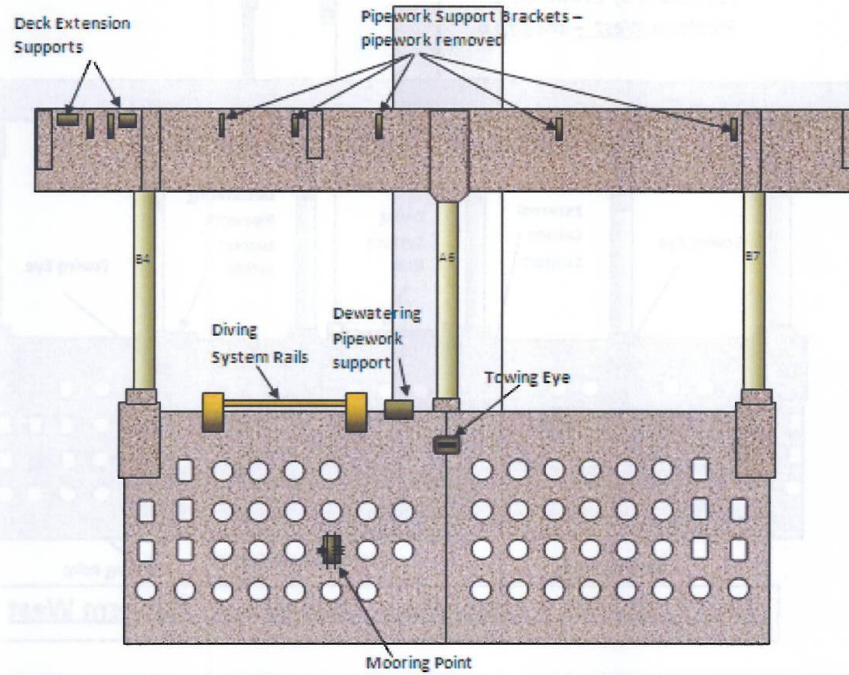


Drg. 3. MCP01 – External face -Viewed from Platform West

South Aspect



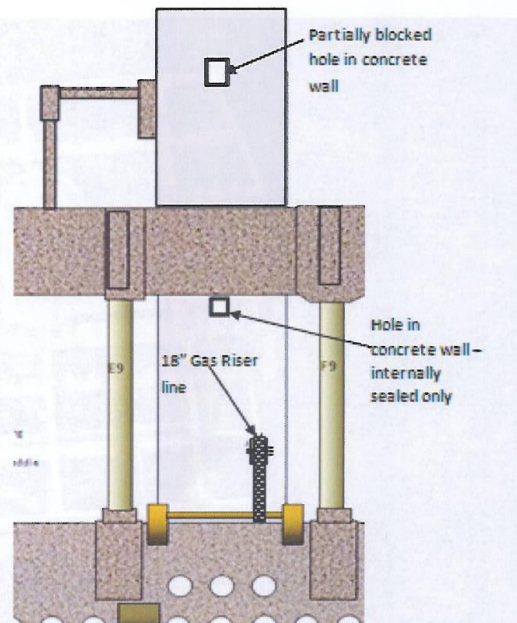
Figure 6.6 MCP-01 – Viewed from South – September 2009



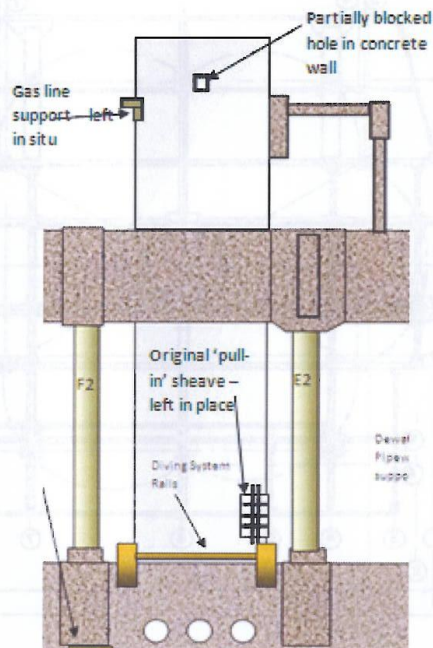
Drg. 4. MCP01 – External face -Viewed from Platform South

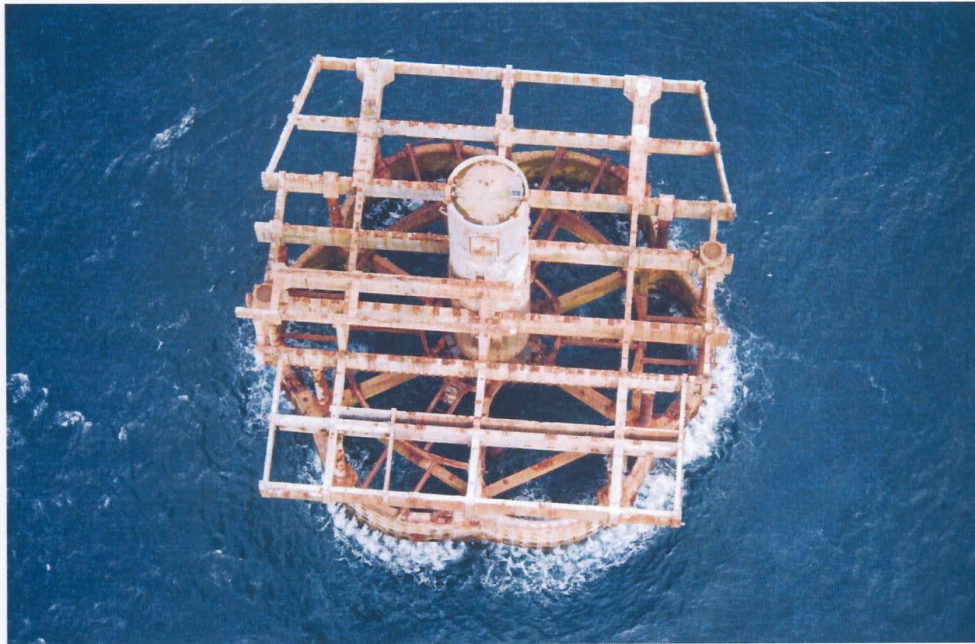
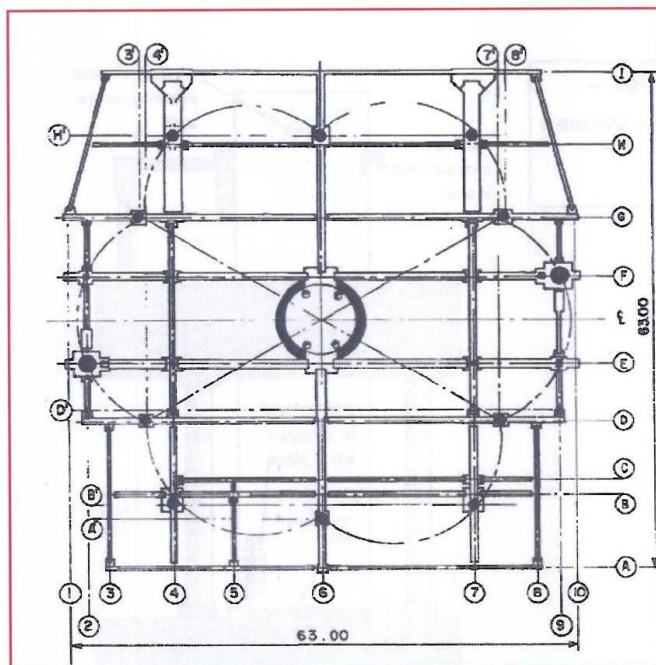
Centre Core

Drg. 5. – MCP01 –
Centre Core – Viewed
from East



Drg. 6. – MCP01 –
Centre Core – Viewed
from West



Main Support Frame**Figure 6.7 Aerial View of MSF from Platform South**

7. INSPECTION AND REPORTING

There are three stages to the process of reporting the structure status at MCP01:

- Data collection
- Assessment and preparation of formal report
- Reporting of findings to the authorities

7.1 DATA COLLECTION

Naturally, whilst Total are active in the North Sea there will be opportunity to have a vessel attend the site to observe and gather information. The rate of deterioration of the structure is not considered to be rapid so this does not need to be a frequent activity. Since there is to be an attendance every 4 years to change the AtoN equipment it is felt that this intervention would be a good opportunity to schedule an inspection. The responsibility for arranging the AtoN exchange is nested with Logistics, who will also have a responsibility to notify SE/AIA so that attendance to carry out the survey can be arranged.

It is recommended that the attending engineer / inspector have a sound understanding of the nature of the installation and expected / probable failure modes that might be observed. The gathered data has to be taken objectively so that adequate information is available for analysis.

It should be noted that this assessment is a General Visual Inspection (GVI) made for the above-water visible structure only. Any Close Visual Inspection (CVI) or Sub-sea reports will have to be made following a specific intervention. This is probably to be initiated as a consequence of the atmospheric report findings

Using the Aspects of the platform as reference points, each should be observed to take account of any notable change. Figures 6.3 through 6.6, and their annotated sketches, will assist with this. Results should be captured on the Survey Record Document (Appendix 1) for future analysis.

Photographic evidence is essential and relevant images should be captured and referred in the Survey Record Document.

For simplification of data gathering an assessment table (Figure 4.1) for the component parts of the structure is suggested. By assessing components in a uniform manner it will assist in the overall report structure.

	Grade	Structural Status	Damage Level
Concrete Components	1	Structurally Very Good	No observed damage
	2	Structurally Sound	Some damage noted
	3	Structure intact but may be compromised	Significant damage
	4	Structure failure imminent	Extensive damage
	5	Structure failed	
Attached Steel	A	Still secure in-situ	No damage
	M	Attached but loose	Damage evident
	Z	Detached	

Figure 7.1 Damage Assessment Table

Another possible source of data collection will be via aerial photographs taken from helicopter. The understanding is that helicopter operators will be unwilling to allow a photographer to be present during AtoN change-out but the crew might be requested to gather some data on behalf of the structural assessment during their flight. In particular, photographs from overhead of each of the platform MSF quadrants (SE, SW, NE, NW) along with detailed images of the centre core and centre core cap. It is suggested that Total supply the camera for this exercise, recovering at end. The air crew ought to be able to complete a simple report assessing the condition of what they see. (Appendix 2)

7.2 ASSESSMENT OF FINDINGS AND PREPARATION OF REPORT.

The information assimilated, as indicated in 7.1, has to be evaluated to determine the extent of change of structural status for MCP-01. This should be done with due reference to previous reports and with application of understanding on how the exposed, above water, structure will perform, especially now that the protection formerly given by the topsides structure has been removed.

The photographs taken in 2009 – after the completion of the topsides removal - will be invaluable in this and should be taken as the visual benchmark. Photo records (suitably annotated) recording any changes should be included in the database for future comparisons.

Persons making the assessment should be experienced / knowledgeable in making such evaluation, preferably with a background involving concrete structures but at least with a structural engineering bias.

The report should be a concise document. There is a relatively small structural inventory to report on.

When making the analysis it should be borne in mind that there will be slow change with the rate of deterioration, during the early years at any rate, so the level of reporting should reflect that. Only the significant changes will warrant documenting in a report to DECC. DECC however should be advised that an inspection has taken place with the date, summary of findings and indication of the next anticipated intervention.

7.3 REPORTS TO THE AUTHORITIES.

The reports to the authorities should include the following information:

Identification of the Installation	MCP-01
Geographical Location	Latitude: 58°49'38.7"N Longitude: 00°17'11.5"W

Date of Intervention

Reason for intervention

Key Findings – if any (include status of AtoN) – possibly include copy of the report as in 7.2

Do changes warrant notification to UK Hydrographic Office?

Have UK Hydrographic Office been informed?

Report should be submitted to:

Offshore Decommissioning Unit
Department of Energy and Climate Change
Atholl House
86-88 Guild Street
Aberdeen
AB11 6AR

and (if required)

The United Kingdom Hydrographic Office
Admiralty Way
Taunton Somerset
TA1 2DN United Kingdom
Telephone: +44 (0)1823 337900
Fax: +44 (0)1823 284077
Telex: 46274

APPENDICES

APPENDIX 1 SURVEY RECORD DOCUMENT

The following document is recommended for capturing the survey data, at site, that will allow the integrity assessment report to be prepared.

Grade assessments should be made using the values in Table 1.1.

An overall summary assessment should also be made. This can be the subject's view of the attending inspector.

Further notes and a photographic record should also be made.

APPENDICES

APPENDIX 1 SURVEY RECORD DOCUMENT

The following document is recommended for collecting the survey data, at site, that will allow the integrity assessment report to be prepared.

Grade assessments should be made using the values in Table 7.1

An overall summary assessment should also be made. This can be the subjective view of the attending inspector.

Further notes, and a photographic record, should also be made, as relevant.

East Aspect

ITEM	COMMENTS	ASSESSED GRADE					
Manifold Beams / Pillars							
Main Support Frame							
		Column B7	Column D7	Column E9	Column F9	Column G8	Column H7
Columns							
Breakwater Wall							
Jarlan Wall							
Jarlan Wall - Steel Attachments		Dewater Pipework Support	Towing Eye (1)	Diving System rails	Caisson Support	Towing Eye (2)	Umbilical Steeve & Boat Bumper
Jarlan Wall - Steel Attachments		Mooring Point (1)	Mooring Point (2)	External Caisson Support	Ladder Remnant	Mooring Point (3)	

South Aspect

South Aspect								
ITEM	COMMENTS	ASSESSED GRADE						
Main Support Frame								
MSF – Steel Attachments		Deck Extension Supports			Pipework Support Brackets			
		Column B4	Column A6	Column B7				
Columns								
Breakwater Wall								
Jarlan Wall								
Jarlan Wall - Steel Attachments		Diving System rails	Dewater Pipework Support	Towing Eye	Mooring Point			

West Aspect

ITEM	COMMENTS	ASSESSED GRADE					
Manifold Beams / Pillars							
Main Support Frame							
		Column H4	Column G3	Column F2	Column E2	Column D4	Column B4
Columns							
Breakwater Wall							
Jarlan Wall							
Jarlan Wall - Steel Attachments		Towing Eye (1)	External Caisson Support	Diving System rails	Dewater Pipework Support	Towing Eye (2)	Mooring Point (1)
Jarlan Wall - Steel Attachments		Mooring Point (2)	Internal Caisson Support(1)	Internal Caisson Support(4)	Internal Caisson Support(3)	Mooring Point (3)	Mooring Point (4)

North Aspect

North Aspect							
ITEM	COMMENTS	ASSESSED GRADE					
Main Support Frame							
MSF – Steel Attachments		Pipework Support Brackets					
		Column H7	Column H6	Column H4			
Columns							
Breakwater Wall							
Jarlan Wall							
Jarlan Wall - Steel Attachments		Dewater Pipework Support	Diving System rails	Towing Eye (1)	Diving System rails	Mooring Point (1)	Mooring Point (2)

TOTAL E&P UK

MCP-01 Substructure Inspection and Reporting Procedure

Centre Core

ITEM	COMMENTS	ASSESSED GRADE
Centre Core - General		
Concrete hole – East view		
18" Gas Riser Line		
Concrete Hole - West		
Gas Line support - West		
Pull In Sheave		

Centre Core Cap

ITEM	COMMENTS	ASSESSED GRADE
Centre Core Cap		
AtoN		

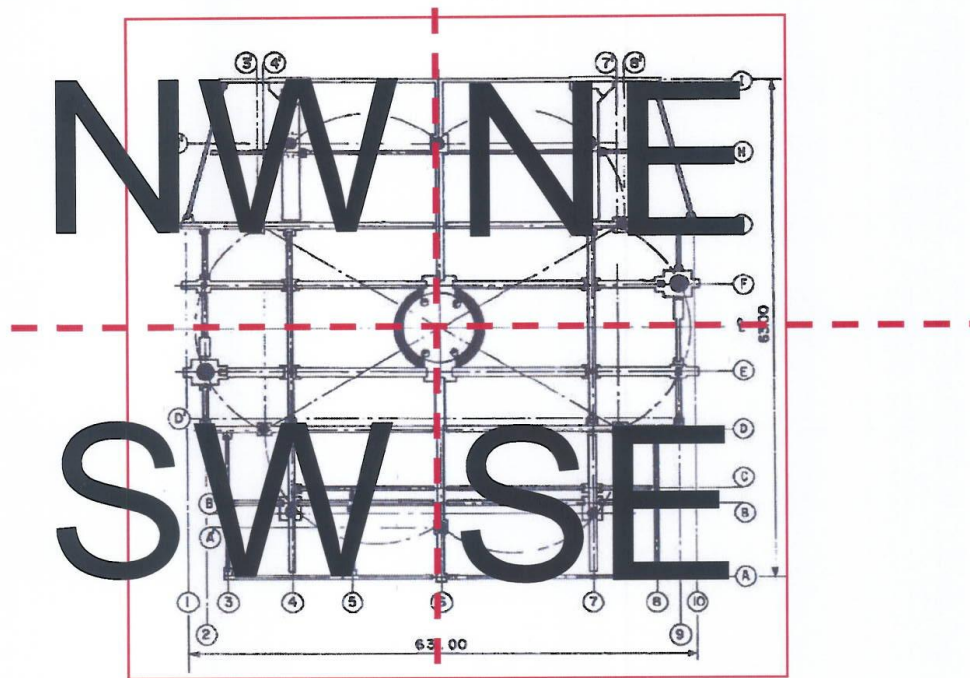
General Assessment of Platform Condition

This will be general observation only, based on attending inspector's subjective view

ITEM	COMMENTS	ANTICIPATED FUTURE FAILURE COMPONENT
Upper Structure		
Centre Core		
Lobed Wall		
Sub-surface Observations		
Navigation Aid System		

APPENDIX 2 AERIAL SURVEY REPORT

Where it is possible to make an aerial record of the MCP01 MSF, Centre Core, Centre Core Cap and Manifold beams the findings should be as on this report



Photographs should be taken to:

- Capture the platform as an overall structure aerially from south
- Multiple images of each 'quadrant' - as shown here.
- Detailed images of centre core cap - before and after change of AtoN