(Formerly Silverstone Energy Limited)

Tristan NW Field

Decommissioning Programmes

Close Out Report

BEL/TNW/REP/005

26th January 2010

LIST OF FIGURES

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1 Introduction

1.1 Scope of Document

This document has been prepared to fulfil the reporting requirements concerning the decommissioning of the Tristan NW Field as detailed in the DECC document "Guidance Notes Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998, version 5".

1.2 Background to the Project

The Tristan NW Field was located in Blocks 49/29b and 49/30d of the United Kingdom Continental Shelf (UKCS). The facilities in the field comprised a single production well, wellhead and subsea terminal unit, a suspended exploration well, a 6" 15.5km production pipeline with piggy-backed 4" 15.3km control umbilical, and a valve assembly linking the pipeline to the subsea production manifold of the adjacent host platform, the Davy platform operated by Perenco UK Ltd (Perenco), (**Figure 1, Figure 2**).

Production from the well commenced in 2008; however, the performance of the well was consistently poor. Studies were undertaken to investigate affordable measures to extend the economic life of the field but proved unsuccessful. Subsequently, the operator of the field, Bridge Energy Limited (formerly Silverstone Energy), initiated steps to decommission the field on behalf of the equity owners Granby (Tristan) Limited and MCX Exploration (UK) Limited.

To this end, a Cessation of Production report (COP) was submitted to DECC on 18th February 2010. Investigations into the possible engineering options were commissioned, as were the necessary Environmental Impact Assessment, Comparative Assessment and Decommissioning Programmes required under the Petroleum Act 1998 and associated guidelines on decommissioning of offshore installations.

The Decommissioning Programmes for the Tristan NW Field facilities (SEL/TNW/REP/002 Revision 3) were approved by the Secretary of State on 27th August 2010.

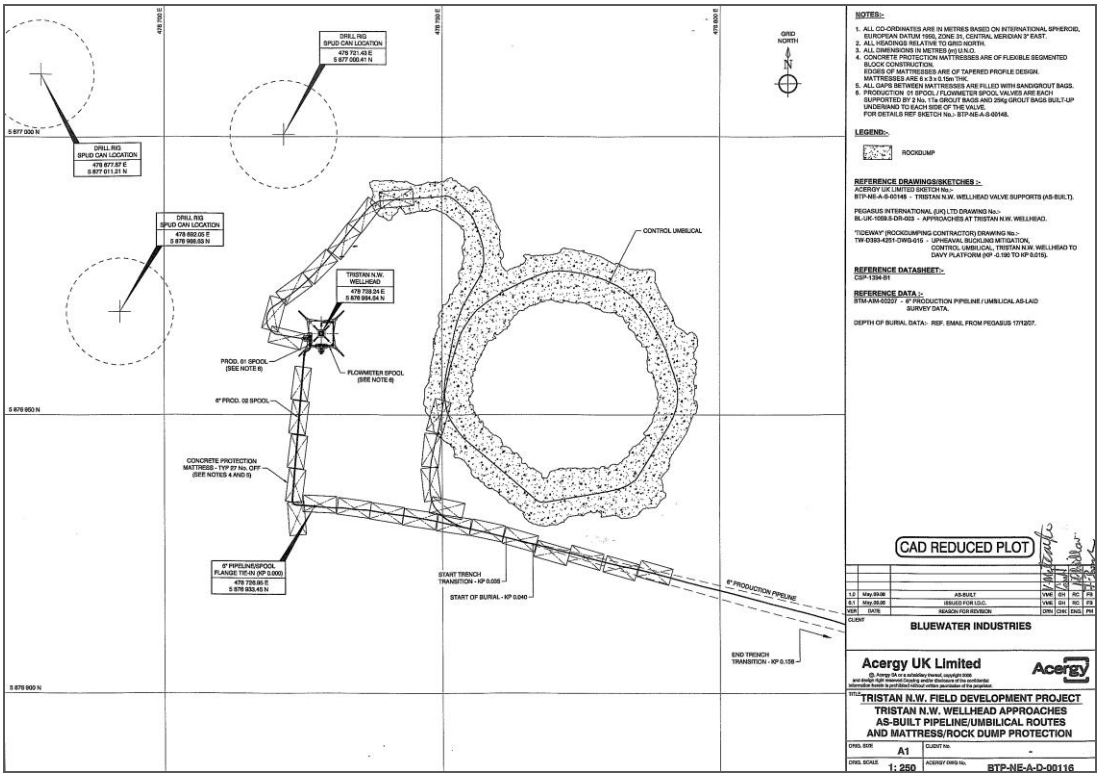

Figure 1: Facilities at the west end of the Tristan NW infrastructure.

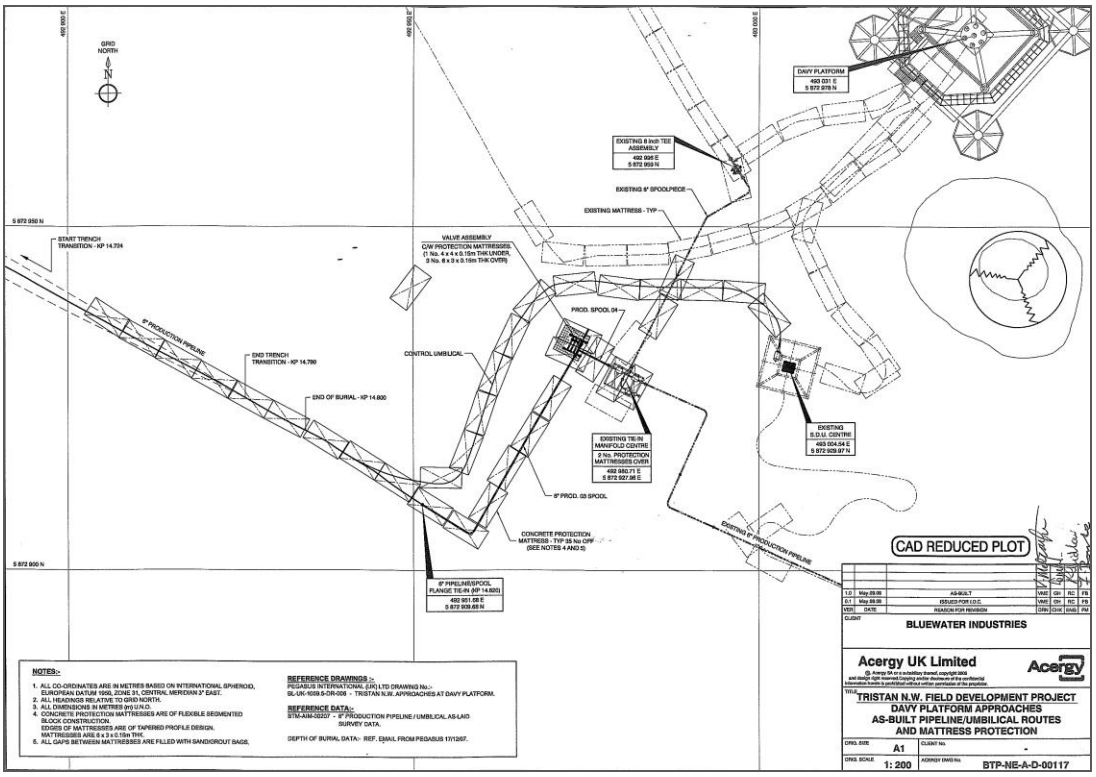

Figure 2: Facilities at the east end of the Tristan NW infrastructure (at Davy NUI).

2 Programme of Work

2.1 Proposed Programme of Work

The Decommissioning Programmes described the planned offshore programme of work to decommission the Tristan NW facilities. In summary, all items on the seabed were to be removed and the trenched and buried sections of the pipeline and umbilical were to be left in place, buried to a minimum depth of 0.6m. The existing 250m length of umbilical overage lying on the seabed near the production well was to be recovered by reverse reel through the existing rock dump cover. The works were planned in two phases:

- Preparatory work and decommissioning of the infrastructure on the seabed.
- Well abandonment

In July 200 and prior to work commencing, surveys were conducted around the wells and along the pipeline and umbilical route. The surveys comprised geophysical, geotechnical, ROV and environmental programmes (Document ref: FSLTF Report No. 00304.1 V3.1 Volume 3 of 4).

2.2 Preparatory Work and Removal of Subsea Infrastructure

The work was completed as planned using the DSV *Bibby Topaz*. The DSV completed the flushing operations of the infrastructure disconnected the items for removal. The trenched pipeline and piggy-backed umbilical were decommissioned and the seabed infrastructure was retrieved for transportation to shore. Mattresses removed from Davy infrastructure to allow access for decommissioning of Tristan NW items were replaced at the end of the operations. The DSV also completed as left surveys (ROV and diver) before leaving the location. Logs of the survey are presented in **Appendix 1**.

2.3 Well Abandonment

The jack-up rig *ENSCO 92* was used to complete the well suspension and abandonment of both wells and removal of the wellhead structure. Following clearance of the area of any debris and disconnection, removal of Tristan NW items by the DSV and isolation of the well, all well work was conducted from the jack-up drilling rig as planned. The wells were fully abandoned following the Oil & Gas UK Guidelines 2009 and the wellhead, casings etc were returned to shore for recycling.

2.4 Schedule of Work

The first phase of the decommissioning activities was due to commence with the arrival of the DSV at the beginning of August 2010 with the second phase commencing with the arrival of the jack-up rig after the 20th August. The work was planned to be completed by 30th September 2010 (**Figure 3**).

Decommissioning Activity	Timing			
	Week 1	Week 2	Week 3	Week 4
Flushing of umbilical and pipeline				
Decommissioning of pipeline and umbilical				
Retrieval of seabed infrastructure				
As-left survey (DSV)				
Well abandonment				
As-left survey (Rig)				

Figure 3: Proposed schedule of work.

However, due to both operational and extensive weather delays, the well abandonment work was completed later than planned and the rig had to remain on station beyond completion of the decommissioning work. This therefore impacted the overall cost of the project (**Section 5**).

2.5 Conclusions

All infrastructure at the Tristan NW Field was completely removed to shore, with the exception of the 14.8 km trenched section of the pipeline and piggy-backed umbilical, its existing cover of spot rock-dump, and the rock-dump previously protecting the 250 m coil of umbilical at the Tristan NW wellhead. The programme of work was completed as described in the Decommissioning Programmes approved by the Secretary of State on the 27th August 2010 and in accordance with the appropriate permits and consents.

3 Post Decommissioning Activities

3.1 Seabed Clearance Survey

On completion of the planned offshore programme of work, the seabed was surveyed using side scan sonar and ROV (**Appendix 1**) to ensure that it was clear of items or obstructions that might pose a safety risk to fishermen or other users of the sea. The areas that were surveyed were as described in the Decommissioning Programmes and are detailed below:

- The areas within the 500 m zone of the Davy NUI where Tristan NW decommissioning operations were undertaken.
- A corridor 100 m either side of the production pipeline running from the Davy manifold to the Tristan NW production well to confirm that the remaining, trenched pipeline and piggy-backed umbilical are not exposed.
- A 500 m radius circle centred on the production well 49/29b-11 and a 500 m radius circle covering the previously suspended well 49/29b-5.
- The remaining rock-dump previously located over the umbilical loop at the production well.

3.2 Observed Consequences of Decommissioning Activities

No debris associated with the Tristan NW Field was identified on or retrieved from the seabed. The rock dump that had been protecting the umbilical overage was slightly disturbed by the recovery of the 250 m umbilical: During the independent seabed clearance survey, and at the request of the NFFO, steps were taken to ensure this posed no risk to other sea users by reducing the height of the rock dump. This was achieved using the independent verification vessel, a beam trawler, to flatten the rock dump profile. A clear seabed was confirmed by the independent contractor (**Appendix 2**).

3.3 Final Condition of the Offshore Site

The seabed surface at the former location of the wells and infrastructure has been left clear of items, with the exception of the coil of rock dump which previously protected the 250m of umbilical overage. The well casings were severed approximately 3m below the seabed. The trenched production pipeline and piggy-backed umbilical remain buried and protected by the existing cover of spot rock-dump. The seabed is clear of Tristan NW items or debris.

3.4 Verification

The outcome of the well abandonment programme will be specifically examined under Regulation 18 of the **Offshore Installation and Well Design and Construction Regulation**s (DCR, 1996): The well abandonment operations were both carried out in accordance with the Bridge Energy Well Examination scheme and final reports for both wells have been received from the Well Examiner. Bridge Energy now hold copies of the End of Well reports.

An over-trawl survey by an independent fishing vessel has been completed at the previous location of the Tristan NW facilities, trenched pipeline and umbilical and remaining rock dump (**Appendix 2**).

3.5 Legacy Management

The trenched and buried pipeline and umbilical will remain the licensees' responsibility.

The UKHO have been notified of the changes at Tristan NW, including the removal of the marker buoy at well b-5; they have acknowledged this correspondence and stated they will remove the relevant items from the chart when they receive notification from the HSE that the Statutory Safety Zone has been revoked. The HSE have also been notified that the seabed has been cleared and have confirmed that the Safety Zone will be revoked at the next quarterly update. Finally, the Kingfisher service has been notified that the seabed is clear.

To date, the only post-decommissioning surveys that have taken place are the ROV sweeps described above, which were completed at the end of each phase of decommissioning work. Bridge Energy intend to survey the pipeline route one year after the decommissioning operations, followed by a second survey four years after that. These surveys will confirm the location and depth of burial of the trenched pipeline and piggy-backed umbilical. The results of these surveys will inform any further monitoring programme required by DECC.

4 Project Management

4.1 HSEQ Goals and Targets

Table 1 presents the HSEQ targets for the Tristan NW decommissioning project, as determined by Bridge Energy and detailed in the Decommissioning Programmes (SEL/TNW/REP/002 Revision 3). A review of the HSEQ information at the end of the project confirmed that with one exception, all targets were met and one target was exceeded.

4.2 Disposal of Waste

Disposal of waste from the operations was completed as planned (**Appendix 3**). Appropriately licensed waste contractors completed the work; full audit trails exist for all materials returned to shore. All retrieved material was recycled, including the concrete mattresses. No material was sent to landfill. As part of the "Duty of Care", Bridge Energy will retain these records for the required length of time (two years).

Table 1: Tristan NW Decommissioning Project HSEQ Goals and Targets

Tristan NW Decommissioning Project HSEQ GOALS and TARGETS				Tristan NW Decommissioning Project HSEQ RESULTS
	Performance Indicator	**Target**	**Aspects**	**Actual Result**
1	Lost Time Injuries	Zero	No harm to personnel during operations.	Achieved
2	Oil Spills	Zero	No marine impact due to operations	Achieved
3	Unauthorized Chemical Discharge	Zero	No marine impact other than pipeline authorised discharges	Achieved
4	Dangerous Occurrences (DO/OIR9)	Zero	No unwanted incidents - due to effective management	Achieved
5	Regulatory Non- Conformances	Zero	All regulatory requirements identified and satisfied	Achieved
6	Recycling	>95 %	Of retrieved recyclable metals to be recycled or reused	Exceeded – 100% recycled or reused
7	Perform HSEQ Audit	Undertaken	Undertake all planned HSEQ audits	Achieved
8	Effective consultations	100 %	All DECC-notified consultees to be consulted with	Achieved
9	Schedule	30-09-10	All offshore activities to be completed by 30th September 2010	Weather and some operational delays were experienced.

5 Costs

An estimate of the total cost of decommissioning the Tristan NW Field was prepared for the submission of the Decommissioning Programmes. Due to the delays described in **Section 2.4**, the final cost of the work was greater than this estimation (**Table 2**).

Table 2: Summary of the total final cost of the Tristan NW Decommissioning Programmes[1].

Item	Estimated Cost (£m)	Actual Cost (£m)
Programme to flush pipeline, umbilical and plug and abandon wells	3.1	6.9
Programme to remove subsea infrastructure	2.8	2.9
OPEX and other charges post-COP	2.0	2
Total	**7.9**	**11.8**

[1] Note: this table presents only the final costs to date and does not include predicted costs for post-decommissioning surveys in Year 1 and Year 5.

Appendix 1: Seabed Clearance Survey ROV and Diver Logs (Section 3.1)

DVD LOG

OPERATIONAL DETAILS

CLIENT: BRIDGE ENERGY

DATE STARTED: 05 -08-10

FIELD : TRISTAN / DAVY / VICTORIA

SUBJECT: SURVEYS

STRUCTURE : AS BELOW

DVD Title:

DIVE No : 001- 027

DVD No.OFF-UK10035-ROV-TOP-9006-DVD (R)

Chapter Number	Description
1	Headers
2	As Found Survey of Tristan Marker Buoy, Anchor & Chain.
3	As Found and Mattress Survey at Davy Manifold.
4	Survey of Buoy and Sinker at Davy.
5	As Found Survey of Tristan mats and umbilical route.
6	Footage of Divers during Mattress Recovery
7	NW Wellhead Umbilical Survey North Route
8	NW Wellhead Mattresses 19 to 27 Survey.
9	GVI Debris Survey of SE sector of NW well area.
10	GVI Debris Survey of NW sector of NW well area.
11	GVI Debris Survey of NW sector of NW well area.
12	GVI Debris Survey of SW sector of NW well area and Wellhead Seabed. X-ref Diver Video No.9027
13	As Left Survey Davy
14	NW Debris Survey Davy
15	As Left Survey Davy
16	As Found Survey Well 5
17	As Found Survey Victoria Development

7.0 DIVE VIDEO REGISTER

See Hard Drive

BIBBY OFFSHORE

I.S.S.

DVD LOG

ISS

CLIENT: Granby - Tristan

PROJECT: UK10035

STRUCTURE: Davy Manifold / Tristan Tree

DATE : 05h August 2010

PAGE 1 OF

DATE	DVD NUMBER	DESCRIPTION	
09/06/10	OFF-UK10035-TOP-9001-(D)	General video showing dredging at mat 19 - Davy	Dive 04
07/08/10	OFF-UK10035-TOP-9002-(D)	Dredging Mat 3 - Tristan	Dive 05
07/08/10	OFF-UK10035-TOP-9003-(D)	Dredging at Tristan – mat 8 / 9 ~400 depth of sand	Dive 06
08/08/10	OFF-UK10035-TOP-9004-(D)	Height of rock coverage mat 11 - Tristan	Dive 10
08/08/10	OFF-UK10035-TOP-9005-(D)	Height of sand coverage mat 15 - Tristan	Dive 11
09/08/10	OFF-UK10035-TOP-9006-(D)	Height of rock coverage mat 12 - Tristan	Dive 12
10/08/10	OFF-UK10035-TOP-9007-(D)	Confirm as left valve status Davy SDU	Dive 18
11/08/10	OFF-UK10035-TOP-9008-(D)	As found valve status – Davy	Dive 21
11/08/10	OFF-UK10035-TOP-9009-(D)	Valve ops – Davy manifold	Dive 21
12/08/10	OFF-UK10035-TOP-9010-(D)	Valve op TNW 003 – Tristan – set to CLOSE	Dive 25
12/08/10	OFF-UK10035-TOP-9011-(D)	Pig launcher gasket and flange face - Tristan	Dive 25
11/08/10	OFF-UK10035-TOP-9012-(D)	As found valve status Tristan	Dive 23
12/08/10	OFF-UK10035-TOP-9013-(D)	Pig launcher GVI	
12/08/10	OFF-UK10035-TOP-9014-(D)	Open Tristan DBB	
13/08/10	OFF-UK10035-TOP-9015-(D)	Pig launcher operations	
13/08/10	OFF-UK10035-TOP-9016-(D)	Open of TNW 003 and 002 – Tristan	Dive 28
13/08/10	OFF-UK10035-TOP-9017-(D)	Closing of TNW 002 – Tristan	Dive 29
13/08/10	OFF-UK10035-TOP-9018-(D)	Davy valve ops – Tristan DBB (close)	Dive 29
13/08/10	OFF-UK10035-TOP-9019-(D)	Davy valve ops –Davy East Inboard (open)	Dive 29
14/08/10	OFF-UK10035-TOP-9020-(D)	Tristan SCM Post Jumper Disconnect	Dive 30
15/08/10	OFF-UK10035-TOP-9021-(D)	Tristan Tie In Flange Face Inspection	Dive 34
15/08/10	OFF-UK10035-TOP-9022-(D)	Tristan Blind Flange Gasket Insertion & Dye Stick	Dive 34
16/08/10	OFF-UK10035-TOP-9023-(D)	Tristan Cut Chain MOC-016	Dive 37

DATE	DVD NUMBER	DESCRIPTION	DIVE
19/08/10	OFF-UK10035-TOP-9024-(D)	As left valve status - Tristan	Dive 50
19/08/10	OFF-UK10035-TOP-9025-(D)	As left video - Tristan	Dive 50
19/08/10	OFF-UK10035-TOP-9026-(D)	As left video – Tristan Under Tree	Dive 50
20/08/10	OFF-UK10035-TOP-9027-(D)	Post debris removal survey ROV-TOP-9006-DVD	Dive 51
20/08/10	OFF-UK10035-TOP-9028-(D)	Davy Tie In Flange Face & Blind Flange Face Inspection	Dive 55
20/08/10	OFF-UK10035-TOP-9029-(D)	Davy Blind Flange Gasket Inspection, Insertion & Dye Stick	Dive 55
21/08/10	OFF-UK10035-TOP-9030-(D)	Davy blind flange as left	Dive 55
	OFF-UK10035-TOP-9031-(D)	As left survey with SPAMM removed and test hose off blind flange and wrap off	Dive 56
21/08/10	OFF-UK10035-TOP-9032-(D)	As left survey with SPAMM removed and test hose off blind flange and wrap off	Dive 56
21/08/10	OFF-UK10035-TOP-9033-(D)	As Left, sand bag build up of Davy Test Blind	Dive 56
22/08/10	OFF-UK10035-TOP-9034-(D)	As Left of the Well 5 Transponder Installation	Dive 60
	OFF-UK10035-TOP-9035-(D)		
	OFF-UK10035-TOP-9036-(D)		
	OFF-UK10035-TOP-9037-(D)		
	OFF-UK10035-TOP-9038-(D)		
	OFF-UK10035-TOP-9039-(D)		
	OFF-UK10035-TOP-9040-(D)		
	OFF-UK10035-TOP-9041-(D)		
	OFF-UK10035-TOP-9042-(D)		
	OFF-UK10035-TOP-9043-(D)		
	OFF-UK10035-TOP-9044-(D)		
	OFF-UK10035-TOP-9045-(D)		
	OFF-UK10035-TOP-9046-(D)		
	OFF-UK10035-TOP-9047-(D)		
	OFF-UK10035-TOP-9048-(D)		
	OFF-UK10035-TOP-9049-(D)		
	OFF-UK10035-TOP-9050-(D)		
	OFF-UK10035-TOP-9051-(D)		
	OFF-UK10035-TOP-9052-(D)		
	OFF-UK10035-TOP-9053-(D)		
	OFF-UK10035-TOP-9054-(D)		
	OFF-UK10035-TOP-9055-(D)		
	OFF-UK10035-TOP-9056-(D)		
	OFF-UK10035-TOP-9057-(D)		

Appendix 2: Independent Verification Certificate (Section 3.4)

National Federation of Fishermen's Organisations.

30 Monkgate
York
YO31 7PF

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Web: www.nffoservices.com

10 Dec 2010

To whom it may concern

TRISTAN NW and 49/29b-5
TRAWL SWEEP CERIFICATE

The Harlingen based beam trawler **Soli de Gloria PD 63** operating under NFFO membership conducted the following activities at the Tristan NW and well no 5 locations commencing 6th December 2010.

1. A series of intense bi-directional sweeps over known rock deposits at Tristan NW with the objective of improving the profile of rock piles used for protection for a service umbilical
2. A series of bidirectional sweeps over the Tristan NW platform location with the objective of demonstrating the area to be free of debris or hazard following the decommissioning programme
3. A series of bidirectional sweeps over the Well 49/29b-5 location with the objective of demonstrating the area to be free of debris or hazard following the abandonment of the well.

A significant number of passes were made across the area. (see attached photos)
Standard Sothern North Sea twin-beam trawl equipment (x2 10m) beams with a series of chains suspended across the mouth of each trawl was used to conduct the sweeps.
The purpose of the chains being to displace the tops from rock piles, thereby reducing their profile and potential negative effects on any future fishing operations in the area.
The chains were also used to ensure continuous contact with the seabed to determine whether there were any major obstructions which might present a major snag for future fishing activities. The beam trawl net was seen as a means of gathering any items of debris located in the area.

Following completion of the sweep programme the skipper of Soli deo Gloria has reported to NFFO the following:

a) No debris was picked up and recovered in either trawl
b) No major snag was experienced during any of the sweeps
c) On two occasions, rock from the protective deposits near Tristan NW accumulated in the cod-end and caused some damage to the cod-ends on two occasions
d) That said, skipper is happy that as a result of the sweeps, the profile of the rock deposits has been reduced and the absence of any sort of debris or snag suggest the area will not be a problem for future fishing operations

Based upon feedback provided by the skipper, the Federation accepts that the decommissioned Tristan NW site, the abandoned well 49/29b-5 and the associated 500m safety zones are clear of debris or major obstruction and pose no significant problem for future fishing operations.

The Federation would like to thank Bridge Energy UK Ltd for their efforts in ensuring that all significant items of equipment and debris have been recovered. .

Signed

Dave Bevan

D F Bevan
NFFO Fisheries Liaison Officer

Appendix 3: Waste Certificates (Section 4.2)

MICK GEORGE

Recycling Certificate

This certificate is to confirm that Mick George Ltd received 14 loads (approximately 400 tonnes) of concrete mattresses from Bridge Energy's Tristan North West Field in August 2010. All materials were recycled at the Mick George Ltd, Southorpe Recycling Centre.

Mick George Ltd
Southorpe Recycling Centre
Sutton Lane,
Southorpe,
Cambs,
PE9 3BZ

N [illegible]

Signed by

31st August 2010

Dated

JOHN LAWRIE (Aberdeen) Ltd.

Bridge Energy
Tristan NW Decommissioning Project

We hereby certify that the scrap material that was collected from the MV Bibby Topaz New Quay, Deep Water Berth, Great Yarmouth on the 24th August 2010 has been cut up and recycled

Regards

Kevin Watt

Manager

SIGNED: _____ DATE: 1/9/10

☐ **Head Office**
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Mobile: (07776) 206696

E-mail: k2polymers@btconnect.com
Web: www.k2polymers.com

Certificate of Conformity

Customer Ref: MCX - Tristan Northwest **K2 Job No** Customer Ref.

Customer: C.S.L (Construction Specialists Ltd)

K2 Polymers Specification Code: Redundant Umbilical for Recycling - 400 Mtrs.

This is to certify that the material(s) detailed hereon have been processed, inspected and tested in accordance with the conditions and requirements of the contract and unless otherwise noted below originate and conform in all respects to the following specification(s)

Other information _____

Deviations: _____

Date Sept 2010

Signed _____ **Quality Assurance Manager**

Print name G. KIRBY **on behalf of K2 Polymers Limited**