

From: Nyholt, John J
Sent: Sat Jun 12 21:05:16 2010
To: Cook, Howard H; Hughes, John D; Chilton, Pat (Swift); Keck, Danny L; Knox, Tom; Austin, Julian; Olivier, Neal E; Repp, Glenn; Aaron Wayne; Michael.Smith1@ge.com; [REDACTED]; [REDACTED]; Crutchfield, Steve (TrendSetter); Phillips, Richard A. (Technip)
Cc: Webster, Simon; Worsley, Mark TC; Hudson, Mark G; Hill, Trevor; Grounds, Cheryl A.; McDonald, W Leith; Brookes, David; a.trower@welaptega.com; Reddin, Roger G; Block, Nathan
Subject: Riser Kink Survey status, NDE team and equipment details
Importance: High
Attachments: Riser Kink Survey v3.doc

All:

This work is on standby pending further clarification of when the riser will be pulled from the sea floor. A new riser kink survey revision (attached) was released this morning. It does not significantly change the current plans for UT, Remote visual inspection and computed radiography.

I'm told that the riser kink section may be pulled anytime between tomorrow and June 20th. The current equipment and personnel arrangements are to be kept within a 24 hour mobilization response until further notice. The two technicians on Marlin may continue their current work at that location. The GXT CR darkroom will still be transferred from Pompano to Viking Poseidon this evening. The remainder of equipment and personnel will travel to Houma when called upon.

The final details and contact information for the the 5 people traveling to Viking Poseidon are below. To my knowledge, Mike Smith from GE is the only person needing water survival and Gulf Safe waivers. If time permits, he may attend the required training.

I will take responsibility to contact the team upon mobilization. Note that the inspection equipment includes a 220 curie Ir-192 source and magnetic hold downs for the source snout and CR panels. The magnets are not very strong, however helicopter approval may still be needed. In addition to the equipment we will bring, we require 110V 15 amp AC power, a small water supply line, water blast cleaning, wire brushes and a small sun/weather canopy. Please advise if we need to bring any of this ourselves.

Aaron Sluder, ACUREN Inspection, AUT inspection
Mobilizing from: Marlin platform
Weight: [REDACTED]
Baggage (2): 75 lb equipment case, 50 lb personal bag
TWIC: Yes
Gulf Safe/6 in1: Yes
Water survival: Yes
e-mail: PERSONAL CONFIDENTIAL [REDACTED]

John Nyholt, BP team lead
Mobilizing from: Houma
Weight: [REDACTED]

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Baggage: 5 bags: 1 personal bag and 4 equipment cases 200 lbs. Note: previous baggage information modified to include ACUREN and NDE lab AUT equipment.

TWIK card: Yes

Safe Gulf/6 in 1 card: Yes

Water Survival card: Yes

e-mail: john.nyholt@bp.com

cell: [REDACTED]

Michael Smith, GE Inspection Technologies, Remote visual inspection

Mobilizing from: Houma

Weight: [REDACTED]

Baggage (4): 1 personal bag, 3 equipment cases: 150 lbs total

TWIC card: Yes

Safe Gulf/6 in 1 card: No

Water Survival card: No

e-mail: Michael.Smith1@ge.com

Cell: [REDACTED]

Kendrick Bushnell, Global X-Ray, computed radiography

Mobilizing from: Marlin platform

Weight: [REDACTED]

Baggage (2) Personal bag and 40lbs, equipment: 115lbs 155lbs total

TWIC card: Yes

Safe Gulf/6 in 1 card: Yes

Water Survival card: Yes

e-mail: PERSONAL CONFIDENTIAL

Mark Miller, Global X-Ray, computed radiography

Mobilizing from: Houma

Weight: [REDACTED]

Baggage (2): Personal 40lbs, equipment: 80lbs (200 curie Ir-192 radioactive source) and magnetic hold downs

TWIC card: Yes

Safe Gulf/6 in 1 card: Yes

Water Survival card: Yes

e-mail: PERSONAL CONFIDENTIAL

I'll provide daily updates for this work. Thank you for your continued patience.

Regards,

John Nyholt

BP Inspection/NDE SME. NDE Corporate Level III

501 Westlake Park Blvd.

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BPD410-167507

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Cellular: [REDACTED]
Office: 281-366-2933
NDE Lab: 281-930-7814
e-mail: John.Nyholt@bp.com

From: Nyholt, John J
Sent: Friday, June 11, 2010 10:40 AM
To: Cook, Howard H; Hughes, John D; Chilton, Pat (Swift); Keck, Danny L; Knox, Tom; Austin, Julian; 'mike@cuttingtools.com'; [REDACTED]; Brian Anderson; Keith Wilson (ACUREN); Eddie Jacob (ACUREN); 'faraci@flexbar.com'; 'eddie.gutierrez@ge.com'
Cc: Webster, Simon; Worsley, Mark TC; Hudson, Mark G; Hill, Trevor; Grounds, Cheryl A.; McDonald, W Leith; Brookes, David
Subject: RE: Riser Kink Survey Plan

I'm leaving for Houston in at noon. I plan to pick up the 3 seven pound rubber mold material kits from CuttingTools, the special digital camera and make a meeting at WL this afternoon if possible. The target mobilization date for this work is next Sunday out of Houma, LA.

Remote video: GE will provide one technician, a RVI crawler and tight access system that can inspect up to 45 feet down the riser.

ACUREN will demobilize Aaron Sluder from Marlin and send him to the Poseidon vessel. Their Houston office is to confirm availability of his that I will pick up this afternoon or tomorrow.

Global X-Ray is to also send a radiographer from Marlin plus one from Houma with a 120 curie Ir-192 source. We will use their CR system currently on Pompano. That system needs to be mobilized to Poseidon.

Could each person mobilizing please provide the following information. Mine is listed.

Name: John Nyholt
Company: BP America
Weight: [REDACTED]
Baggage: 3 bags, 100 lbs.
TWIK card: Yes
Safe Gulf/6 in 1 card: Yes

Further information will follow this afternoon.

Thanks for your help with this urgent response team

John Nyholt

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TREX-009518.0003

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NDE Lab: 281-930-7814
e-mail: John.Nyholt@bp.com

From: Cook, Howard H
Sent: Thursday, June 10, 2010 8:52 PM
To: Hughes, John D; Chilton, Pat (Swift); Nyholt, John J; Keck, Danny L; Knox, Tom; Austin, Julian
Cc: Webster, Simon; Worsley, Mark TC; Hudson, Mark G; Hill, Trevor; Grounds, Cheryl A.; McDonald, W Leith; Brookes, David
Subject: Riser Kink Survey Plan

All - FYI - latest version of the survey plans. Thanks all for your various inputs.

John Nyholt is returning to Houston tomorrow (Friday) to collect and arrange various inspection equipment, and then on to Houma for offshore mobilisation this weekend.

John N - please liaise with John Hughes or Pat directly to agree offshore transfer/manifest arrangements. (They will have information in due course w.r.t. which vessel the riser joint will be recovered to.)

Any other comments on the survey plan, or associated requests, please let me know tomorrow (Friday).

thanks & regards

Howard

Howard Cook

Senior Advisor and

Segment Engineering Technical Authority (Risers Flowlines & Turrets)

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howard.cook2@bp.com

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MC252

RISER KINK: POST-RECOVERY SURVEY PROCEDURE

1) Summary

This note summarises the requirements for riser kink survey, following its recovery to surface. The riser kink is temporarily parked on the seabed at the MC252 site and once on a surface vessel should be available for inspection.

Examination of this component after recovery could provide insight on:

- possible configurations of drill pipe and pipe tool joints currently within the BOP
- flow rates present when the riser was still attached to the BOP
- other matters (e.g. presence of debris; source of second pipe string in upstream side of the kink; erosion)

As such, the information is expected to be of particular value to the teams considering well isolation options involving further operations with the BOP. It should provide information on any pipe joints present within the BOP stack. Because of the time-critical nature of these activities, the survey plan described hereafter is intended to be conducted as soon as possible after riser joint recover to surface. i.e. on the back deck of the vessel to which it is recovered. The information will also be of value to the Investigation Team, to refine their lines of enquiry.

BP on-site inspection lead will be John Nyholt (Cell: **PERSONAL CONFIDENTIAL**)

2) Survey objectives

2.1 Determine the condition of all pipes found inside the riser joint. Internal inspection using endoscope or equivalent (40 foot reach required) to map position of internal pipes and associated tool joints. External digital radiography will be conducted along the length of the joint, if permitted.

2.2 Wall thickness determination: external UT of riser joint - over a coarse grid for the majority of the riser joint, and over a finer grid in the vicinity of the kink and the erosion holes.

2.3 Key geometric measurements:

- a) Measure wall thicknesses of all pipes at exposed surfaces (caliper measurements of 21" riser pipe, and of all accessible internal strings)
- b) Caliper measurements of riser pipe in vicinity of kink to determine dimensions of the dog-bone cross-section.
- c) Measure the hole sizes which are present at the kink using rubber molding compound.
- d) Photogrammetry - to enable 3D reconstruction of the kink geometry

2.4 Other observations

Record any other relevant information, for example:

- Debris location and description

- Observations of internal condition of any internal pipe surfaces

2.5 Document all the above in a survey report.

3) Current status of the kinked riser joint

Photo of cut riser (upstream, BOP end):

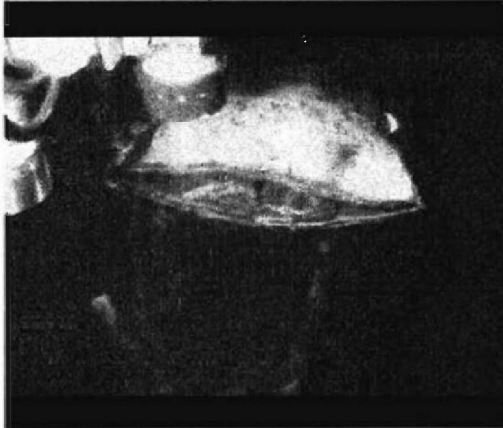
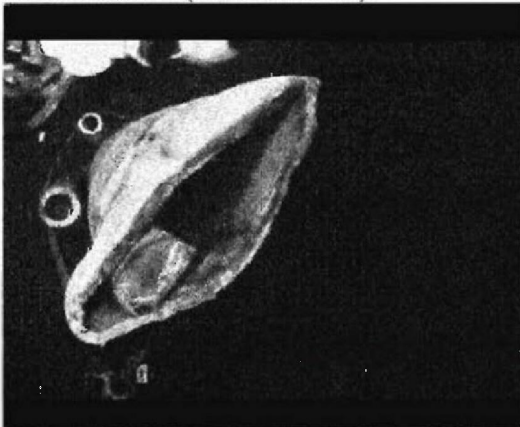


Photo of cut riser (downstream end):



General configuration of the kink shown below. (This is an early photo prior to cutting and prior to development of the leak at kink)
 Note: riser length being recovered is approx 40ft long, 21" diameter (main pipe).



Rigging status: kink will have slings attached. Recovered in 56ft basket and landed on back deck. Kink may need to be lifted onto back deck to enable boroscope access. The joint shall be made stable by appropriate supports and seafastening. It is anticipated that the inspection work will be conducted while in transit on the transport barge. The most stable laydown arrangement is preferred, probably with the kinked joint laid on its side.

4) Procedures

4.1 Safety

Prior to beginning any of this workscope, a JSEA should be performed and attached to the work instructions. All personnel must review and sign the JSEA prior to entering the defined work area.

4.2 Marking

The riser joint outer surface shall be marked with permanent marker in 1 foot increments axially, and 6inch increments circumferentially.

In the vicinity of the kink (1 ft upstream and downstream, sufficient to capture all the holes present, mark the joint in 2inch increments both axially and circumferentially. (Surveyor shall use this a reference system to allow future unambiguous cross-reference of measurements between the joint and record sheets)

Note: Depending on the as-recovered condition, it may be necessary to first clean the external surfaces of the riser joint by water jetting or other means.

4.3 Boroscope inspection

Internal boroscope inspection (with means of measuring inserted length):

- From upstream end
- From downstream end
- Through holes at kink
- Through exposed ends of the drill pipes. (If access to the pipe is precluded by the deformation caused by the subsea severing shears, attempt to open the shear/flap in order to gain internal access to the drill pipe).

All internal surveys shall be recorded, with designations to confirm survey location and direction.

In particular, record the following, using reference system per the marking plan in 4.2 above:

- Position of any drill pipe tool joints within the joint
- Any i.d. markings on the drill pipes within the joint
- Circularity of the internal pipe joints (general condition; location of any kinks in the internal pipes)
- Location of other debris.

Additional boroscope objectives:

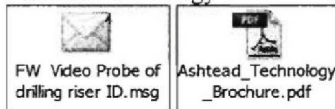
- some close-up photos of the inside corner of the kink (ie external surface but up in the corner) and at the edges of the kink to look for evidence of fracture
- putting the endoscope up the trapped drill pipes to the kink location to see what the inside looks like - if one is eroded more than the other it may tell us if one was pressure communicated elsewhere.
- getting a view of the edges of the trapped drill pipes (near the kink) to see if they cracked when flattened to help understand flow path communication.

Boroscope equipment will be provided via John Nyholt.

c.g. hired from

GE inspection Technologies, or

Ashtead Technology



If drill pipe tool joints are deemed to have an ID chip present, attempt to gather that ID information. (Contact: Tim Allen, BP)

4.4 Digital radiography or Betatron scan of riser joint

This is a potential back-up to endoscope inspection, especially if unable to access full length of riser joint by internal examination. If time and access allows, and equipment can be mobilised, this survey will be conducted in any case.

Equipment details available from John Nyholt.

4.5 Wall thickness measurement (external)

Manual UT procedure - to be conducted by John Nyholt.

Perform UT spot measurements over the entire surface of the joint to record wall thickness.

This should cover wall thicknesses at:

- the nodes of the marking scheme in 4.2 above
- pipe wall in the vicinity of the holes, to determine extent of local thinning

4.6 Hole sizing

Use rubber molds to take impressions of the holes in the riser wall in the kink region. Record all hole size dimensions. Preserve the molds for future use to confirm hole geometries.

Recommended molding compound: Flexbar's light blue Repro-Rubber:

<http://www.flexbar.com/repro-rubber.htm>

Available from various distributors around Houston; the closest to our location is:

Cutting Tools Inc.
5050 Ashley Court
Houston, Texas 77041
Telephone (713) 466-0088 / (800) 475-8665 Fax (713) 466-7722

4.7 Survey, Caliper measurements and photogrammetry (e.g. Welaptega or StudioWorks)

a) Take geometric measurements in vicinity of the kink, using callipers, in order to determine key dimensions of the dogbone section. (Per sketch below, dogbone height vs. X position). Generate three such cross section geometries: at the minimum section of the kink, and also at axial positions 2inch upstream and downstream.

b) Additional survey and photos:

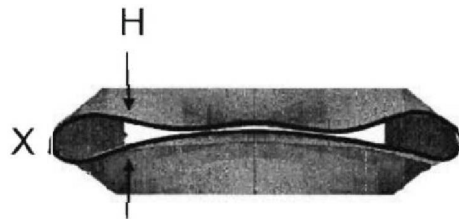
- positive confirmation of the weight category of the drill pipes (wall thickness/diameter)
- close-up photos of the edges of the dogbone section at the riser kink, looking for strain patterns that could indicate the origin of the buckle in the riser
- dimensions of the riser ends where it was sheared - this info could be used to estimate the ovality in the remaining pipe at the flange transition to assist the latch cap design

c) Take still photographs of the entire riser joint to allow subsequent creation of a 3D rendering of the whole joint, in particular the sizing of the cross section profile of the joint at selected intervals.

Requirements to be determined by and agreed with the photogrammetry contractor.
Note: Welaptega reps believed to be offshore on the OI-3 for subsea imaging work.

Expect that a rep could transfer to the vessel with the kink to enable photographic survey. Camera to be provided by BP rep (John Nyholt).

Welaptega contact: Alastair Trower (Cell: 1 902 401 5266, Office direct 902 422 3392, Office Switchboard 902 422 8303) a.trower@welaptega.com



HHC

V2 10th June 2010 - Issued to Inspection team and Vessel Reps

V3 12th June 2010 - Updated. Reissued to Inspection team and Vessel Reps, plus to BP Legal for custody discussion.

Contact for queries on the above plans:

Howard Cook: +44 7825 781214 howard.cook2@bp.com

Julian Austin: +44 7787 153973 julian.austin@bp.com