

From: Boughton, Geoff (Houston)
To: Guidry, Ronald (Offshore)
Subject: RE: Issue on the Horizon with pie connectors.
Date: Sunday, May 09, 2010 6:02:00 PM

Thanks Ron,

I will get the S/N's from Ray and trace them back to D&D.

Regards,

Geoff Boughton
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From: Guidry, Ronald (Offshore)
Sent: Sunday, May 09, 2010 5:29 PM
To: Boughton, Geoff (Houston)
Subject: RE: Issue on the Horizon with pie connectors.

I used some solenoids that were rebuilt locally onboard the Horizon when I first started, but most that I replaced were out of the crate of solenoids that had come back from D&D. It was the first 6 to 8 solenoids I'd replaced that were rebuilt from the rig. going off of my tally book, that would have been solenoids 37, 38, 111, 110, 28, 88 were definitely Horizon rebuilt solenoids. 107 and 51, I'm sorry but it was somewhere in there when I started using the rebuilt ones from D&D, but all the rest of the solenoids I changed out came from the crate that had just returned to the rig from D&D.

Regards,

Ronald Guidry
Superintendent Subsea MUX
SubseaTech.I Field Support Div.
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ronald.guidry@deepwater.com

From: Boughton, Geoff (Houston)
Sent: Sun 5/9/2010 4:10 PM
To: Guidry, Ronald (Offshore)
Cc: Fry, Michael (Houston); Stringfellow, William (Houston)
Subject: RE: Issue on the Horizon with pie connectors.

Ron,

Thanks for the info. The question has come up if we have confirmed that D&D did the Solenoid repairs on the ones you replaced. Sorry if this is redundant, as this may have been confirmed by Mike or Billy, but I am tasked by our management to pull the information together.

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Regards,

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From: Guidry, Ronald (Offshore)
Sent: Sunday, May 09, 2010 3:58 PM
To: Boughton, Geoff (Houston)
Subject: FW: Issue on the Horizon with pie connectors.

Geoff,

Below are the emails I'd sent to Mike Fry, and Billy Stringfellow earlier today as they asked much the same question.

In addition to the ones I'd initially given below, Solenoids 103, 108, 111, and 112 were also changed out.

From the notes I had in my tally book, those are all of the solenoids that were replaced. Between all of the work on the pie connectors, and chasing down, and eliminating intermittent coil faults, there may be more that I don't have in my tally book, but before I left the rig I'd given Owen a complete list of all solenoids, each solenoid that I changed out also had marked on it the solenoid number, associated pie connector number, the date I changed it, and my initials written in white with a paint marker.

There were also issues with the flow meter, the cable was giving extremely low megger readings. The original one was put back in service, and replacement's were placed on order.

Here is the order, as best as I recall:

- Yellow pod was disconnected from the LMRP, pulled, and moved into the SEM test stand in the BOP house.
- I connected the PETU, pilot line, and supply lines to the pod.
- I performed an initial test of all functions using the PETU, Owen had mentioned that they were still having issues with intermittent coil faults on yellow. I marked down all of the solenoids that gave an indication of a coil break.
- When I went to start removing the solenoids I'd marked down, I found anode residue had started to grow in numerous connectors (and shot the email off to you and Mike listed at the bottom about it). So, I went ahead, after talking to you guys and Owen about it, and went ahead and opened up all pie connectors, and thoroughly cleaned each and every pie, and performed meter testing of all the coils as I went, I replaced the solenoids that had initially given coil fault indications.
- with the PETU, supply pressure, and pilot pressure, I opened all bleed ports on all of the sleeve valves, and went through all functions, verifying correct bleed off with each function. During this process I did get a few more coil faults, stopped, and replaced those solenoids as well.
- Started the testing over with the new solenoids installed, had a couple more coil faults, and repeated.
- Before the pod went back onto the LMRP, with the PETU every single function was tested, all solenoids, increasing/decreasing regulator pressures, pressure read-backs, no-flow out of the pilot vent line when solenoids are vented other than the little bit that's supposed to come out

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when functioning.

- Placed all functions in vent/de-energize, then de-energized the stinger seals to verify none of the sleeve valves were operated.
- We then moved the pod back onto the LMRP, and performed another function test of all functions using the full system, we did have one solenoid (Owen believes it was solenoid 83) that did have flow through to the operator on the sleeve valve (with it in vent, we had flow coming out of the stinger port for that function), we then changed out that solenoid and tested again, with no coil breaks, no faults, and all corresponding functions operating as they should.

I left the rig the day after that part was complete, but Owen says they did do all of the normal pre-deployment function testing of the system and found no problems at all, no pod mis-matches, no coil faults, system okay indication on the ccu screen, and all functions operating the correct component on the system as verified by sight.

Regards,

Ronald Guidry
Superintendent Subsea MUX
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From: Guidry, Ronald (Offshore)
Sent: Sun 5/9/2010 5:35 AM
To: Fry, Michael (Houston)
Subject: FW: Issue on the Horizon with pie connectors.

email below

Regards,

Ronald Guidry
Superintendent Subsea MUX
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From: Guidry, Ronald (Offshore)
Sent: Fri 5/7/2010 5:52 PM
To: Stringfellow, William (Houston)
Subject: FW: Issue on the Horizon with pie connectors.

Billy,

Below is the email I'd sent regarding my findings with the solenoids. The only document I had with the list of functions and solenoids is here with me in my tally book.

When I started the work on the pie connectors and changing out the solenoids, the following is the list of solenoids that were giving break indications on the PETU:

Choke/Kill isolation Open - Pie 7E - Solenoid 37
Choke/Kill isolation Closed - Pie 7F - Solenoid 38
Wellhead Gasket release hold - 7B - 111
stack stinger seals De-energize - 8D - 110
Outer bleed valve close - 15D - 28
LOK Open - 1C - 88
stack stingers vent - 8A - 107
LMRP Stinger retract - 6D - 51
LMRP stinger seals energize - 6E - 52
Wellbore pres/temp retract - 6B - 48
Wellbore pres/temp extend - 6A - 47
upper annular preventer closed - 3A - 11
Wellhead Gasket connector Retract - 7B - 112
UIC close - 16F - 94
LIK open - 16A - 89
LIK close - 16B - 90

Note: while the system did indicate coil faults, all solenoids were verified to still be 100% operational. This was checked repeatedly.

After changing out Solenoids, unplugging all pie connectors, cleaning off that hard anode material, performing meter checks to verify all solenoids that weren't changed out, the only 2 that did give solenoid break faults a couple days after we put the pod back in service was the lower inner kill open/closed, it blinked on then went green almost immediately, the function did operate.

The only preventer function that ever gave a break indication (while I was out there for the rig move) was the upper annular during all of the testing, and it was thoroughly tested to be fully operational without any more break indications prior to me completing work on the pod.

Below is the original Email I'd sent out regarding my findings.

Regards,

Ronald Guidry
Superintendent Subsea MUX
SubseaTech.I Field Support Div.

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From: Guidry, Ronald (Offshore)
Sent: Sun 1/31/2010 2:54 PM
To: Boughton, Geoff (Houston); Fry, Michael (Houston)
Cc: DWH, SubSeaSup (Deepwater Horizon); chapmanpaco66@yahoo.com; jimdeems@gmail.com
Subject: Issue on the Horizon with pie connectors.

Mike, Geoff;

Last August, when I was last out here, there was a group of solenoids that was regularly giving "break" conditions. When I'd investigated, I found that the 2 anodes mounted above it had dropped residue all over the pie connectors as it broke down. This residue had worked its way between the pies, hardened and started to crystallize and grow, pushing apart the pies allowing reduced continuity

between the pins. Many of the pies were so bad, that the SEM was sent in to have all pies replaced, and the spare SEM (which had recently returned, and equipped with all new pie connectors) was put on yellow.

As a control measure we:

removed the offending anodes, and thoroughly cleaned the mounting surface of residue. cleaned off all solenoid, and the flow meter pie leads thoroughly using a pic to chip off the crystals, then contact cleaner, and WD-40, then wiped down thoroughly, and a light coat of 624 non-conductive silicone applied.

I'd thought I'd removed all of the material, but this go-around, Mark Hay had informed me that they were getting a number of coil break indications, again on yellow. Today, when I went to replace them, I'm finding all of the solenoids that are having issues have the same crystal residue growing in them again. Attached are photo's of what I've seen so far. I'm going to break off a few samples and bring them in with me when I leave the rig

I can go ahead and pull them, clean them, replace the solenoids that were giving break indications, but I'm not sure what else I can do to prevent this from occurring again. We currently have 32 solenoids on hand that I can change out.

Regards,

Ronald Guidry
Subsea Supervisor, Electronic
Subsea Field Tech. Support

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