



# Fishing Run - HON GT-01-S1 Spear LIH

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Timo Hein, Product Line Manager

August 18th, 2015

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# The event

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# The event

## Pre Job:

- As per requirement by WEP WFT offered a combined drift and fishing run. It was agreed that this BHA will only be used for a single fishing attempt and in case this fails a whipstock will be picked up. The BHA was setup as follows:

SPEAR LIH

| Customer                                                                             |     | Well Engineering Partners BV                                                                                   |              |  |                    |                               |            |
|--------------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------|--------------------|-------------------------------|------------|
| Contact                                                                              |     | Kornelius Boersma                                                                                              |              |                                                                                     |                    |                               |            |
| Contact Details                                                                      |     |                                                                                                                |              |                                                                                     |                    |                               |            |
| WFOrd Location                                                                       |     | Langenhagen, Germany                                                                                           |              |                                                                                     |                    |                               |            |
| Field/ Well No.                                                                      |     | Hon GT ST01                                                                                                    |              |                                                                                     |                    |                               |            |
| Toolstring Desc.                                                                     |     | Fishing BHA                                                                                                    |              |                                                                                     |                    |                               |            |
| BHA                                                                                  | Seq | Description                                                                                                    | Asset Number | OD                                                                                  | ID                 | Connection                    | Length (m) |
|  | 1   | Intensifier<br>FNL 320 mm<br>FNOD 120mm                                                                        | 153445-47000 | 120 mm<br>4-3/4"                                                                    | 58 mm<br>2-1/4"    | 3-1/2 IF Box x Pin            | 4,58       |
|                                                                                      | 2   | 6 pcs. DCs (Customer owned)                                                                                    |              | 120 mm<br>4-3/4"                                                                    |                    | 3-1/2 IF Box x Pin            |            |
|                                                                                      | 3   | Super Fishing Jar<br>FNL 350 mm<br>FNOD 120mm                                                                  | WG 106       | 120 mm<br>4-3/4"                                                                    | 56 mm<br>2-3/16"   | 3-1/2 IF Box x Pin            | 2,97       |
|                                                                                      | 4   | Bumper sub<br>FNL 320 mm<br>FNOD 120mm                                                                         | CW-1466929-1 | 120 mm<br>4-3/4"                                                                    | 52 mm<br>2-1/16"   | 3-1/2 IF Box x Pin            | 2,39       |
|                                                                                      | 5   | Bit Sub<br>sick                                                                                                | WG3006       | 120 mm<br>4-3/4"                                                                    | 36,5 mm<br>1-7/16" | 3-1/2 IF Box x 3-1/2 Reg Box  | 0,45       |
|                                                                                      | 6   | 7" 29# SD Stabilizer<br>FNL 240mm<br>FNOD 107mm                                                                | WG007        | 155,5 mm<br>6-1/8"                                                                  | 36,5 mm<br>1-7/16" | 3-1/2 Reg Pin x 3-1/2 Reg Box | 1,14       |
|                                                                                      | 7   | X-Over<br>sick                                                                                                 | WG3048       | 120 mm<br>4-3/4"                                                                    | 36,5 mm<br>1-7/16" | 3-1/2 Reg Pin x 3-1/2 IF Pin  | 0,56       |
|                                                                                      | 8   | Spacer / customer owned DC                                                                                     |              | 120 mm<br>4-3/4"                                                                    |                    | 3-1/2 IF Box x Pin            |            |
|                                                                                      | 9   | Bit Sub<br>sick                                                                                                | WG3049       | 120 mm<br>4-3/4"                                                                    | 36,5 mm<br>1-7/16" | 3-1/2 IF Box x 3-1/2 Reg Box  | 0,5        |
|                                                                                      | 10  | 7" 29# SD Stabilizer<br>FNL 230mm<br>FNOD 107mm                                                                | WG009        | 155,5 mm<br>6-1/8"                                                                  | 36,5 mm<br>1-7/16" | 3-1/2 Reg Pin x 3-1/2 Reg Box | 1,12       |
|                                                                                      | 11  | X-Over<br>sick                                                                                                 | WG3134       | 120 mm<br>4-3/4"                                                                    | 36,5 mm<br>1-7/16" | 3-1/2 Reg Pin x 3-1/2 IF Pin  | 0,44       |
|                                                                                      | 12  | 7" 29# SD Non Rot. Cag Scraper<br>FNL 600mm<br>FNOD 125mm                                                      | WG2004       | Drift                                                                               | 49 mm<br>1-15/16"  | 3-1/2 IF Box x 3-1/2 IF Pin   | 1,77       |
|                                                                                      | 13  | Stop Sub<br>FNL 350 mm FNOD 119mm                                                                              | WG810        | 145 mm<br>5-3/4"                                                                    | 53 mm<br>2-1/16"   | 3-1/2 IF Box x 3-1/2 IF Pin   | 0,5        |
|                                                                                      | 14  | X-Over<br>sick                                                                                                 | WN-XOS-224   | 114 mm<br>4-1/2"                                                                    | 53 mm<br>2-1/16"   | 3-1/2 IF Box x 2-3/8 Reg Pin  | 0,49       |
|                                                                                      | 15  | Spacer<br>sick                                                                                                 | WG3141       | 79 mm<br>3-1/8"                                                                     | 23 mm<br>15/16"    | 2-3/8 Reg Box x 2-3/8 Reg Pin | 1,00       |
|                                                                                      | 16  | Spacer<br>sick                                                                                                 | WG3053       | 79 mm<br>3-1/8"                                                                     | 23 mm<br>15/16"    | 2-3/8 Reg Box x 2-3/8 Reg Pin | 0,62       |
|                                                                                      | 17  | Ito Spear<br>Grapple to catch liner<br>incl. extension to catch the 98.8 mm ID<br>ITCO Grapple 9487, NC 3.885" | RS115        | 80 mm<br>3-1/8"                                                                     | 20 mm<br>3/4"      | 2-3/8 Reg Box x 2-3/8 Reg Pin | 0,73       |
|                                                                                      | 18  | Bull Nose<br>sick                                                                                              | WG6926       | 80 mm<br>3-1/8"                                                                     | 25 mm<br>1"        | 2-3/8 Reg Box                 | 0,22       |

PREPARED BY: KR

# The event



## The Job:

On the 12. of June the BHA was picked up and RIH.

The following day the tripping continued, see operator work book notes:

| COMMENTS: |       |    |                                                                       |
|-----------|-------|----|-----------------------------------------------------------------------|
| Date      | From  | To |                                                                       |
| 12.06.15  | 09:00 |    | On location,LSA / safety meeting.Stby till pressuretest finished.     |
|           | 15:30 |    | Bring BHA 1 in position to make up.                                   |
|           | 18:30 |    | Crew change HWO.                                                      |
|           | 19:30 |    | Make up BHA 1 as per drawing and tight up till all recomendet ft/lbs. |
|           | 22:00 |    | BHA under rotary.                                                     |
|           | 22:30 |    | Leave location.                                                       |

| COMMENTS: |       |    |                                                                                     |
|-----------|-------|----|-------------------------------------------------------------------------------------|
| Date      | From  | To |                                                                                     |
| 13.06.15  | 09:00 |    | On location , problems to pass ToI 7" 1022m.Hang up with drift stabies and scraper. |
|           |       |    | Connect kelly and circulate/wash clean.                                             |
|           | 10:30 |    | Still overpull with upper stabilizer/watermelonmill at 1036,97m.                    |
|           |       |    | Start rotation , free 1750 ft/lbs , 79klbs up , 73 klbs down.                       |
|           | 11:00 |    | Pass thru and stop rotation.Pass 1 x without and get in with no problems.           |
|           | 11:30 |    | Cont. Trip in , get into shift mode.Knut day ,Thomas night and leaves location.     |
|           | 19:30 |    | Crew change and still trip in.                                                      |
|           | 23:30 |    | Connect kelly to clean and change mud system.Start pump 750 lpm/1300psi.            |

# The event



## The Job:

On the 14.6. the BHA made it to the top of the fish.

### COMMENTS:

| Date     | From  | To    |                                                                                                                                                    |
|----------|-------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 14.06.15 | 00:00 | 09:00 | Cont. mix and pump mudsystem                                                                                                                       |
|          | 09:00 | 09:30 | Toolbox talk. Topic: Engage spear and fishing operation.                                                                                           |
|          | 09:30 | 10:15 | P/U and M/U 1 pcs. 2m pup joint and 2 DP                                                                                                           |
|          | 10:15 | 11:00 | Take parameter: ↑150 klb ↓113 klb                                                                                                                  |
|          |       |       | Free torque 50 RPM 3600ft/lbs, ↑135 klb ↓124 klb                                                                                                   |
|          |       |       | 500 l/min 35 bar SPP, 50 RPM 3600ft/lbs, ↑135 klb ↓124 klb                                                                                         |
|          |       |       | ↑148 klb ↓113 klb w/ 50 RPM                                                                                                                        |
|          | 11:00 | 11:15 | Lower string and engage spear by turning string 3 turns to the left. SPP increase to 38 bar. Stop pumps.                                           |
|          | 11:15 | 12:30 | Pick up string to 160 klb and activate the fishing jar. Pick up string in steps to max. 330 klb. (weight of slip cage 14 klb.) Strech is 2,3m      |
|          | 12:30 | 13:00 | Circulate w/ 500 l/min and 300 klb tension in the string.                                                                                          |
|          | 13:00 | 13:15 | Pick up string to max. 330 klb. Slack of 10 klb to load the jar. Pick up to 70 klb overpull and jarring. Pick up string to 330 klb. Fish not free. |
|          | 13:15 | 13:30 | Jarring 3 times with 70 klb. overpull jarring load. Than 330 klb. Pulltest. Fish not free.                                                         |
|          | 13:30 | 13:45 | Jarring 4 times with 75 klb. overpull jarring load. Than 330 klb. Pulltest. Fish not free.                                                         |
|          | 13:45 | 14:00 | Jarring 1 times with 80 klb. overpull jarring load. Weight decrease to 150 klb. up weight                                                          |
|          | 14:00 | 14:15 | Flow check. Decision to POOH                                                                                                                       |
|          | 14:15 |       | POOH                                                                                                                                               |

The spear was engaged and jarring commenced. After several attempts with slightly increased overpull the fish was not freed and we even some weight was lost. Decision was made to pull out of hole. Once out pulled out of hole it was noticed that the spear was lost in hole.

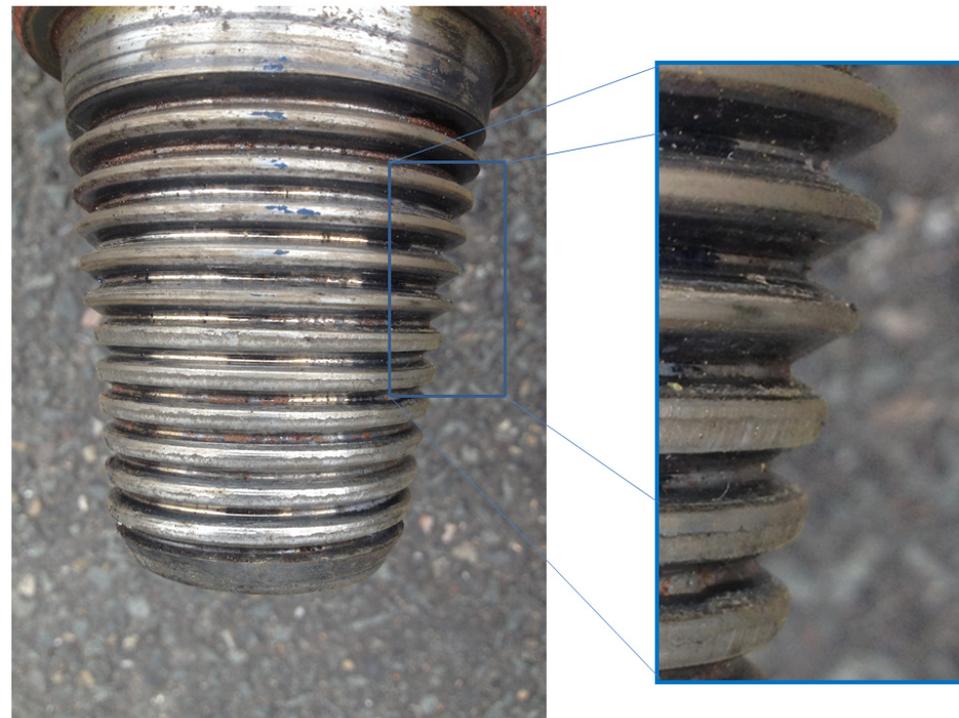
# The event



## Post Job:

The Itco Spear was attached to a spacer (WG3053, see BHA details).

The lower pin connection showed signs of wear on the lower two thirds of the threads.





# Potential Root Causes

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# Potential Root Cause



Three potential Root Causes have been identified:

## Tool Connections

- History of the spear
- History of the spacer

## Make-up of the connection

- Was the make-up performed in an adequate way
- Was this process witnessed

## Usage downhole

- Jar Placement
- Applied forces

# Potential Root Cause



## Tool Connections

Traceability of the Itco Spear can be tracked back to 2006.

The tool has never been used and was on rental only.

As part of a fishing tool package the spear was inspected on the 2<sup>nd</sup> September 2014 with no issues found.

**MONITEST srl**  
NDT - MONITORING & TEST

### Rotary Shouldered Connection - Inspection Report

Form-Rev. 01/2014

|           |                                                 |                |             |                  |             |
|-----------|-------------------------------------------------|----------------|-------------|------------------|-------------|
| Customer: | Weatherford Mediterranea S.P.A.<br>Ortona Italy | Work Location: | Ortona Yard | Inspection Date: | 02/09/14    |
|           |                                                 | Work Order:    | verbal      | Report Number:   | M_2014_2906 |

| Scope of Work                  | Specification                     | Inspection Equipment / Material                        |
|--------------------------------|-----------------------------------|--------------------------------------------------------|
| x Magnetic Particle Inspection | Customer Spec 5-3-GL-GL-PED-00002 | x Black Light unit #02RW-12 Cal. due date 01/2015      |
| x Visual Inspection            | DS-1 Cat. 3-5                     | x DC Coil #47 (WE-84) Cal. Due Date 04-2015            |
| x Dimensional Inspection       | Api RP 7G-2                       | x AC Yoke # 43G-13 Cal. Due Date 01-2015               |
| Other                          | ASTM E709                         | x UV meter # 10027247 Cal. Due Date 01-2015            |
|                                | Customer Spec WT 811              | x Yoke test block 4.5 kg # 0057 Cal. Due Date: 02/2015 |

| Tool Description:                 |                        |      |      |               |         |     |                |     |       | Serial Number # |     | RS115      |     |                 |     |         |  |
|-----------------------------------|------------------------|------|------|---------------|---------|-----|----------------|-----|-------|-----------------|-----|------------|-----|-----------------|-----|---------|--|
| All dimension in millimeter (mm). |                        |      |      |               |         |     |                |     |       | Total Length    |     | Tong Space |     | Final Condition |     | Remarks |  |
| Conn. Side                        | Connection Thread Type | Ø OD | Ø ID | Lenght Thread | Ø Bevel | Ø   | Lenght / Width | Ø   | Depth | VISUAL          | MPI | Nose Ø     |     |                 |     |         |  |
| Box                               | 2.3/8"Reg              | 79,5 | 25   | 90            | 78      | n/a | n/a            | 68  | 16    | Ok              | Ok  | n/a        | 725 | 185             | Acc |         |  |
| Pin                               | 2.3/8"Reg              | 79,5 |      | 76            | 78      | n/a | n/a            | n/a | n/a   |                 |     | n/a        |     |                 |     |         |  |

|                                                                               |   |                      |
|-------------------------------------------------------------------------------|---|----------------------|
| Comments: All Dimension in mm.<br>Inspection carried out with tool assembled. | 2 | Connection accepted  |
|                                                                               |   | Connection to Rework |
|                                                                               |   | Connection Rejected  |

| CODE |               |     |                    |      |                   |     |                        |     |          |     |                |
|------|---------------|-----|--------------------|------|-------------------|-----|------------------------|-----|----------|-----|----------------|
| ACC  | Accepted      | RF  | Refaced            | NBB  | No Bore Back      | CRG | Corroded Relief Groove | REP | Repair   | CR  | Cracked        |
| TD   | Thread Damage | ECC | Eccentric wear     | NSRG | No SRG            | PT  | Pitted Threads         | W   | Worm     | N/A | Not Applicable |
| SD   | Seal Damage   | IC  | Internal Corrosion | CBB  | Corroded Boreback | WO  | Wash Out               | REJ | Rejected | BB  | Belled box     |

Inspector: II level asnt / level 2 EN 473

Supervisor: II level asnt / level 2 EN 473

Customer:

**MONITEST**  
The Inspector  
**Angelo Di Nunzio**  
Lev. 2 MT  
ISO 9712 & SNT-TC1A

**MONITEST**  
**OCCHIPINTI GIAMPIERO**  
LEVEL II SNT-TC1A  
LEVEL 2 EN 473/ISO 9712  
C-120 PT-MT-UT-RT

Monitest srl, Traversa Cozzo Pantano 96100 Siracusa Italy - The inspection result as reported by the company to the customer represent good faith opinion and are not be considered warranties or guarantees of quality or usability of tool inspected.



# Potential Root Cause



## Make-up of the connection

The make-up of the BHA was done in our workshop in Langenhagen, Germany. This process was done by our workshop technician Björn Graunke and witnessed by the Senior Field Supervisor Knut Reppert. Mr. Reppert is the operator who was selected to run the operation.

As a best practice we have the Senior Field Supervisor joining the make-up procedure, this allows him to carryout final checks and measurements before the tools leave our base.

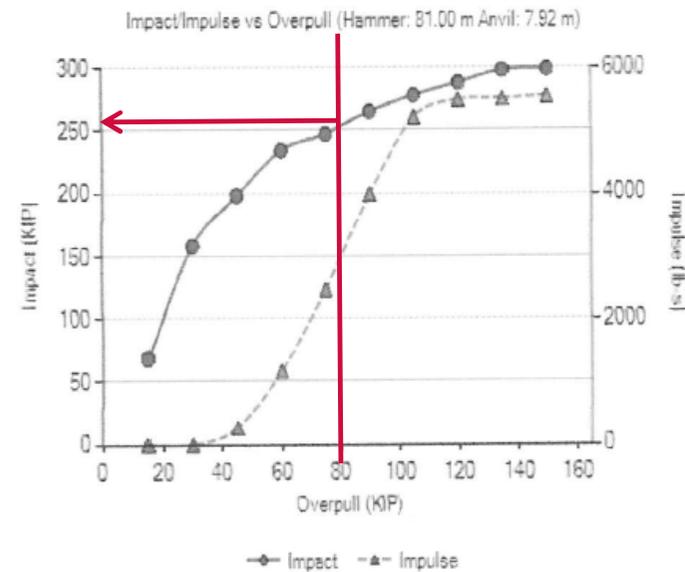
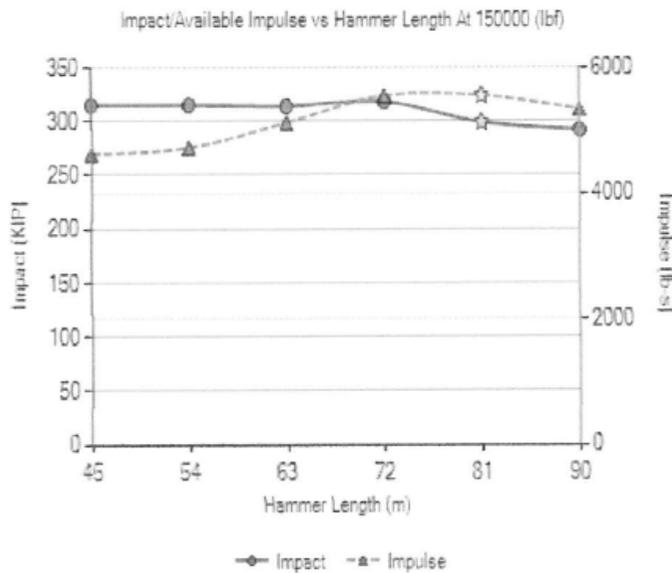
No abnormality were observed during this phase.

# Potential Root Cause



## Usage downhole

Knut and Thomas (the second field hand) ran a jar placement simulation before the BHA was run in hole. The calculations resulted in the following numbers:



With a calculated impact of 260Klbs they stayed quite safely away from the tensile limit of the 2-3/8" Regular Box (375Klbs) or even 80% of the tensile yield (300Klbs).



# Conclusion

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# Conclusion



**None of the potential three Root Causes have provide any evidence why the connection failed downhole. It is impossible to determine a reliable Root Cause as the key witness (Itco Spear) is lost down hole.**