

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
GULF OF MEXICO REGION

ACCIDENT INVESTIGATION REPORT

For Public Release

1. OCCURRED

DATE: 07-JAN-2016 TIME: 2245 HOURS

2. OPERATOR: Union Oil Company of California
REPRESENTATIVE:
TELEPHONE:
CONTRACTOR: Transocean Offshore
REPRESENTATIVE:
TELEPHONE:

3. OPERATOR/CONTRACTOR REPRESENTATIVE/SUPERVISOR
ON SITE AT TIME OF INCIDENT:

4. LEASE: G16759
AREA: GC LATITUDE:
BLOCK: 596 LONGITUDE:

5. PLATFORM:
RIG NAME: T.O. DISCOVERER INSPIRATION

6. ACTIVITY: EXPLORATION(POE)
 DEVELOPMENT/PRODUCTION
(DOCD/POD)

7. TYPE:

HISTORIC INJURY
 REQUIRED EVACUATION
 LTA (1-3 days)
 LTA (>3 days)
 RW/JT (1-3 days)
 RW/JT (>3 days)
 Other Injury

FATALITY
 POLLUTION
 FIRE
 EXPLOSION

LWC HISTORIC BLOWOUT
 UNDERGROUND
 SURFACE
 DEVERTER
 SURFACE EQUIPMENT FAILURE OR PROCEDURES

COLLISION HISTORIC >\$25K <=\$25K

STRUCTURAL DAMAGE
 CRANE
 OTHER LIFTING DEVICE
 DAMAGED/DISABLED SAFETY SYS. Overload
 INCIDENT >\$25K Switch
 H2S/15MIN./20PPM
 REQUIRED MUSTER
 SHUTDOWN FROM GAS RELEASE
OTHER

6. OPERATION:

PRODUCTION
 DRILLING
 WORKOVER
 COMPLETION
 HELICOPTER
 MOTOR VESSEL
 PIPELINE SEGMENT NO.
 OTHER

8. CAUSE:

EQUIPMENT FAILURE
 HUMAN ERROR
 EXTERNAL DAMAGE
 SLIP/TRIP/FALL
 WEATHER RELATED
 LEAK
 UPSET H2O TREATING
 OVERBOARD DRILLING FLUID
 OTHER _____

9. WATER DEPTH: 4021 FT.

10. DISTANCE FROM SHORE: 123 MI.

11. WIND DIRECTION: N
SPEED: 5 M.P.H.

12. CURRENT DIRECTION: N
SPEED: 1 M.P.H.

13. SEA STATE: FT.

17. INVESTIGATION FINDINGS:

On January 07, 2016, while performing completion operations on Chevron's PN006 well, an incident occurred onboard the Transocean Discoverer Inspiration in which the BOP Palfinger crane's hoist wire parted and the crane's 270 pound block fell 27 feet to the deck. The incident occurred while the Subsea Engineer was in the process of troubleshooting the crane's controls.

On the day of the incident an on-site training/certification practical exercise was being performed with the subsea crew. The crew discovered, due to the crane's unusual behavior, that the control system for the BOP Palfinger (model PK150002MB) crane had been installed improperly. The Subsea Engineer decided to begin troubleshooting the crane in order to determine which functions were operating opposite of their intended purpose. At approximately 2245 hours while performing the extend function on the crane, the block inadvertently struck the boom causing the hoist wire to part. The block, weighing roughly 270 pounds, proceeded to fall 27 feet until finally resting on the BOP securing platform. Only the Subsea Engineer was in the vicinity, approximately 12 feet away, at the time of the incident reducing the risk of employee injury.

An investigation by Transocean Offshore was conducted after the incident. The investigation determined that a safety system designed to prevent a hoist wire parting on the crane had been inadvertently defeated. The safety device in question, the overload protection system, occurred due to the extend/retract function hydraulic control lines being connected backwards. As a result of this, the mechanical relief valve, designed to cut oil flow to the crane when maximum load is achieved, failed to engage during normal crane operations. During the investigation a second fault with the relief valve was found. This involved an improperly installed external trigger device (overload switch) mounted on the crane's winch bracket. This overload switch is designed to activate when the crane's winch bracket moves due to encountering an excessive load. The switch's actuation bolt and adjustment nut were found missing at the time of the incident rendering the safety device inactive.

The Inspiration's BOP Palfinger crane was also fitted with an LSI load indicator (load cell) to monitor line tension during normal crane operations. During the investigation it was discovered that at the time of the incident, the load indicator was found inoperable. This was due to the load cell indicator's transponder batteries being faulty. As a result, the control panel's load cell display was in "error" state rendering the load indicator unusable.

The investigation also noted that the BOP Palfinger crane was installed in February 2014 but was not put into service due to a lack of certified operators in the subsea

department. The crane however never received a complete commissioning and acceptance approval at the time of its installation nor prior to its initial use. This shows that neither the operator nor the installer verified the crane's safety features prior to January 2016. Also, standard operating procedures for the specific crane as well as rig specific procedures for normal crane use and safety system checks were absent from the rig site.

The investigation concluded that the primary causes of the incident were due to the operator's failure to properly commission the Palfinger crane when it was first installed, coupled with the lack of knowledge of the crane by rig personnel. Had commissioning been conducted properly, the misaligned control hoses that inadvertently bypassed the crane's designed safety devices would have been detected and corrected before operating the Palfinger crane. The absence of operating procedures on location for the specific crane also contributed to the rig crew's lack of knowledge when operating the crane. Transocean has since provided updated operating procedures, crane specific training to all crew personnel involved with crane operations, and updated procedures for testing safety systems as per Original Equipment Manufacturer (OEM) recommendations. The drilling contractor has also updated and performed customer acceptance testing for cranes when initially installed on the rig site.

18. LIST THE PROBABLE CAUSE(S) OF ACCIDENT:

- (1) Failure to recognize that the BOP Palfinger Crane was not properly installed and commissioned during initial installation.
- (2) Failure to verify that all safety systems were in proper working order prior to operating the BOP Palfinger Crane.
- (3) Failure to provide proper operating procedures for the specific crane on location.

19. LIST THE CONTRIBUTING CAUSE(S) OF ACCIDENT:

- (1) Lack of Supervision: The operator's inability to provide detailed procedures to the crew for crane operations.
- (2) Lack of Awareness: The subsea crew's failure to notice warning signs as well as identify possible hazards associated with crane operations.

20. LIST THE ADDITIONAL INFORMATION:

The Palfinger crane was installed on February 14, 2014 but was never put into use. According to all information provided, January 7, 2016 was the first time the crane was used since it was installed.

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

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Hoist Wire for BOP Palfinger Crane

Wire parted

ESTIMATED AMOUNT (TOTAL):

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

BSEE Houma District has no recommendations to make to the Regional Office at this time.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: **YES**

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

A G-111 (W) was issued as follows:

On January 7, 2016 an incident occurred on the Transocean Discoverer Inspiration in which the BOP Palfinger crane's hoist wire parted and the crane's 270 pound block fell 27 feet to the deck. The key issues which lead up to this event were:

- The crane was installed in February 2014 but the OEM departed the rig prior to a full factory acceptance test being conducted.**
 - o The crane was not put into service due to a lack of certified operators.**
- The safety systems to prevent the hoist wire from parting were not verified to be functional prior to operating the crane.**
- Operating procedures for the Palfinger crane were not available on the rig.**

The operator must respond with a letter of explanation addressing each of these issues and explain what corrective measures have been put into place to prevent future occurrences.

25. DATE OF ONSITE INVESTIGATION:

26. ONSITE TEAM MEMBERS:

James Richard / Clinton Campo /

29. ACCIDENT INVESTIGATION

PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

Bryan Domangue

APPROVED

DATE: **26-APR-2016**

Crane/Other Material-Handling Equipment Attachment

Equipment Information

Installation date: **14-FEB-14**

Manufacturer: **PALFINGER**

Manufacture date: **27-JUL-12**

Make/Model: **PK150002MB / 510003690**

Any modifications since manufactured? Describe and include date(s).

What was the maximum lifting capacity at the time of the lift?

Static:**12** Dynamic:

Was a tag line utilized during the lift? **N**

Were there any known documented deficiencies prior to conducting the lift? If yes, what were the deficiencies?

Crane Block

List specific type of failure that occurred during this incident.(e.g. cable parted, sticking control valve, etc.)

Hoist wire parted

If sling/loose gear failure occurred does operator have a sling/loose gear inspection program in place?

Type of lift:

For crane only:

Type of crane: **HYDRAULIC**

Boom angle at time of incident: Degrees: **90** Radius: **29**

What was load limit at that angle? **12**

Crane equipped with: **L**

Which line was in use at time of incident? **L**

If load line involved, what configuration is the load block: **2** part.

Load Information

What was being lifted?

Description of what was being lifted (e.g. 10 joints of 2 3/8-inch pipe, ten 500-lb. sacks of sand, 2 employees, etc.)

Approximate weight of load being lifted:

Was crane/lifting device equipped with an operable weight indicator? **N**

Was the load identified with the correct or approximate weight? **N**

Where was the lift started, where was it destined to finish, and at what point in the lift did the incident occur? Give specific details (e.g. pipe rack, riser cart, drill floor, etc.)

If personnel was being lifted at the time of this incident, give specific details of lifting device and riding apparatus in use (e.g. 1) crane-personnel basket, 2) air hoist-boatswain chair, other)

Were personnel wearing a safety harness?

Was a lifeline available and utilized?

List property lost overboard.

Rigger/Operator Information

Has rigger had rigger training?

If yes, date of last training:

How many years of rigger experience did rigger have?

How many hours was the operator on duty prior to the incident?

Was operator on medication when incident occurred? **N**

How many hours was the rigger on duty prior to the incident?

How much sleep did rigger have in the 24 hours preceding this incident?

Was rigger on medication when incident occurred?

Were all personnel involved in the lift drug tested immediately following this incident?

Operator: **N** Rigger: Other:

While conducting the lift, was line of sight between operator and load maintained?

N

Does operator wear glasses or contact lenses? **N**

If so, were glasses or contacts in use at time of the incident? **N**

Does operator wear a hearing aid? **N**

If so, was operator using hearing aid at time of the incident? **N**

What type of communication system was being utilized between operator and rigger at time of this incident?

For crane only:

What crane training institution did crane operator attend?

PALFINGER

Where was institution located? **TIFFIN, OH**

Was operator qualified on this type of crane? **N**

How much actual operational time did operator have on this particular crane involved in this incident?

Years: 0 Months: 0

List recent crane operator training dates.

N/A

For other material-handling equipment only:

Has operator been trained to operate the lifting device involved in the incident? **N**

How many years of experience did operator have operating the specific type of

For other material-handling equipment only:

Was equipment visually inspected before the lift took place?

What is the manufacture's recommendation for performing periodic inspection on the equipment involved in this incident?

Safety Management Systems

Does the company have a safety management program in place?

Does the company's safety management program address crane/other material-handling equipment operations?

Provide any remarks you may have that applies to the company's safety management program and this incident?

Did operator fill out a Job Safety Analysis (JSA) prior to job being performed?

Did operator have an operational or safety meeting prior to job being performed?

What precautions were taken by operator before conducting lift resulting in ir

Procedures in place for crane/other material-handling equipment activities:

Did operator have procedures written?

Did procedures cover the circumstances of this incident?

Was a copy available for review prior to incident?

Were procedures available to MMS upon request?

Is it documented that operator's representative reviewed procedures before conducting lift?

Additional observations or concerns: