

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

ACCIDENT INVESTIGATION REPORT

1. OCCURRED

DATE: **21-JUL-2012** TIME: **1048** HOURS

2. OPERATOR: **Nexen Petroleum U.S.A. Inc.**

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR:

REPRESENTATIVE:

TELEPHONE:

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

4. LEASE: **G02091**

AREA: **VR** LATITUDE:

BLOCK: **340** LONGITUDE:

5. PLATFORM: **A**

RIG NAME:

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.
- INCIDENT >\$25K **>\$100,000**
- H2S/15MIN./20PPM
- REQUIRED MUSTER
- SHUTDOWN FROM GAS RELEASE
- OTHER

6. OPERATION:

- PRODUCTION
- DRILLING
- WORKOVER
- COMPLETION
- HELICOPTER
- MOTOR VESSEL
- PIPELINE SEGMENT NO.
- OTHER **Well Abandonment Operations**

8. CAUSE:

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

9. WATER DEPTH: **221** FT.

10. DISTANCE FROM SHORE: **90** MI.

11. WIND DIRECTION: **W**
SPEED: **10** M.P.H.

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

13. SEA STATE: FT.

17. INVESTIGATION FINDINGS:

Wright's Well Control Service (WWCS) was performing a plug and abandonment (PA) on the A-17 well on the VR 340A platform for Nexen Petroleum. On July 21, 2012, operations were being conducted to pull the 3.5" workstring and casing knives from the well after using a power swivel to cut the 9 5/8" and 10 3/4" casings. The cutter assembly had become stuck while mechanical cutting the casings, and the hydraulic cylinders on the swivel stand were used to free the stuck knives. The cutter came free from the casing and the assembly was ready to be pulled from the well using the crane. The workstring and knives weigh approx. 6600 pounds. The load line on the platform crane was attached to the workstring using pipe elevators. The load chart in the crane indicated that the crane could perform a static lift of 21,448 pounds at a boom angle of 63 degrees. The boom was raised to a 63 degree angle and the crane operator then proceeded to pull on the workstring until 21,000 pounds was displayed on the weight indicator with no success. The crane operator stated "looked like work sting was stuck". After slacking off on the load, a second attempt was made to pull the workstring and knives from the well. The crane operator stated that "the weight indicator in the crane cab was displaying 21,000 pounds during the second attempt". The operator then stated that "all of the weight fell off of the indicator at which time the crane boom began to fall to the deck of the platform". The crane boom came to rest on the power swivel stand that had been used for the cutting operation, as well as a power pack belonging to WWCS. The tip section of the boom came to rest at approximately 90 degrees to the right side of the main stem of the crane boom. No personnel were injured, and all were accounted for immediately following the incident.

The load chart in use in the crane at the time of the incident was found to be incorrect. After examining the serial number on the load chart and the crane itself, it was noted that they did not match. The difference in load limits between the two charts was approx. 1,234 pounds for a static lift. (21,448lbs. @ 63 degrees vs. 20,214lbs. @ 61.6 degrees), and approx. 3,338 pounds for a dynamic lift (16,680lbs. @ 63 degrees vs. 13,442lbs. @ 61.6 degrees), using a four part line. The chart in use indicated a load limit that was more than the actual rated limit for the crane being used for both static and dynamic lifts. According to Wrights Well Control Standard Operating Procedure (SOP) in section eight, Tubing Pulling Procedure, under item thirteen states "Before using lift boat/platform cranes ensure to check the dynamic capacity before pulling to avoid shock loading". By not following the SOP and using static limits instead of dynamic limits the crane boom was over-loaded by 7,558 pounds. This difference in weight placed the crane in an over-load condition at the time of the incident.

Facility personnel indicated that excess deflection, or sag, was present in the crane boom both before and at the time of the incident. After disassembly of the failed boom, it was observed that the bore holes for the pin connections in the boom showed excess wear. This condition caused the holes for the pin connections to elongate, stretch, or become considerably larger than the pins, thus causing slack in the connections and improper load distribution in the boom. The pins used to fasten the boom sections together had an original outside diameter of 1.250". Examinations by a third party found some of the connection bores measured up to 1.638" in diameter and were severely elongated.

Crane service and maintenance records revealed problems with the crane weight indicator in use at the time of the incident. On July 19, 2012 a successful pull test was performed on the crane using a dynamometer. A previous attempt at a pull test was unsuccessful due to improper calibration in the dynamometer a few days earlier. After the incident it was found that the weight indicator was not adjusted properly. The load block in use was also found to have had additional weights added to it. The additional weights changed the block weight which also affected the load rating of the crane. The excess weight did not appear to be reflected in the weight indicator.

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

1. The bore holes of the pin connections in the boom showed excess wear. This condition causes the holes of the pin connections to elongate, stretch, or become considerably larger than the pins, thus causing slack in the connections and improper load distribution in the boom.
2. An incorrect load chart was in use at the time of the incident.
3. The crane operator incorrectly used the load chart for the static load limits instead of using the dynamic load limits as per WWCS SOP.

Items 2 and 3 contributed to an over-load of the boom by 7,558 pounds.

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

Human error by all parties involved in incident:

1. Lack of thorough crane inspections by both the crane maintenance personnel and crane operators allowed deficiencies to go uncorrected on the platform crane involved in the incident. The boom sagging due to wear in the boom pin connections was not corrected. Leaks in the weight indicator were addressed and corrected but the addition of weights on the load block were not accounted for. Attention to detail by all parties would have insured that the deficiencies were corrected instead of being a contributing cause of the incident.
2. The incorrect load chart was not identified as having a different serial number than the actual crane by maintenance personnel or crane operators on the facility before using the crane.

Both occurrences lead to an over-load of the boom.

20. LIST THE ADDITIONAL INFORMATION:

The 1.5" two part slings used to attach the elevators to the crane at the time of the incident were observed to have no certification tags in place. Lack of proper pre-use inspections should identify such deficiencies before lifting operations take place.

The diagonal lacing, boom cords, and pin connections of the middle boom sections were found to be severely corroded. Proper maintenance by all parties would have identified the affected areas and put in place measures to stop or reduce the level of corrosion.

21. PROPERTY DAMAGED:

Crane boom, load block, load line, air compressor for PA operations, and power swivel stand.

NATURE OF DAMAGE:

Buckling of middle sections of crane boom, kinking of the load line, bending of load block hook, denting and buckling of air compressor skid, and denting from collision of the boom with the power swivel stand.

ESTIMATED AMOUNT (TOTAL): \$300,000

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

The Lake Charles District recommends to the Office of Safety Management that a

Safety Alert be issued with recommendations for conducting proper crane pre-use inspections as per API RP 2D, C.4.1.2a and crane maintenance inspections as per API RP 2D, C.4.1.2. The recommendations should include thorough inspection of boom connections, proper load chart verification, and adherence to SOP's and procedures put forth by both operators and contractors while conducting lifting operations.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: YES

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

I-131 (C): The load chart in use in the crane at the time of the incident was incorrect. The serial number on the crane and the load chart were observed to not match. The lift capacities between the chart in use and the actual chart for the crane were also found to not be the same. The chart in use displayed greater lift capacities for both static and dynamic lifts. These incorrect weights placed the crane in an overload condition at the time of the incident.

I-161 (C): The two part 1.5" slings being used to attach the elevators to the workstring were found to have no certification tags affixed to them. API RP 2D, Paragraph 5.2.4b requires slings to be identified with manufacturer's name, working load limits, proof test certification number, length, diameter, and date of proof test.

G-111 (C): The following unsafe conditions were found on the crane:

1. Severe corrosion was found on the diagonal lacing, boom cords, and pin connections of the middle boom sections.

2. Pin connections in several areas of the crane boom were found to have excessive wear in the bore holes for the pins. The outside diameter of the pins is 1.250". Several of the connections were found to have the holes worn to the point of elongation up to as much as 1.638". This excessive wear in the connections places slack in the boom and allows improper load distribution in the boom.

25. DATE OF ONSITE INVESTIGATION:

23-JUL-2012

26. ONSITE TEAM MEMBERS:

Wayne Meaux / Mitchell Klumpp /
Carl Matte /

29. ACCIDENT INVESTIGATION

PANEL FORMED: NO

OCS REPORT:

30. DISTRICT SUPERVISOR:

Larry Williamson

APPROVED

DATE: 15-JAN-2013

INJURY/FATALITY/WITNESS ATTACHMENT

OPERATOR REPRESENTATIVE

INJURY

CONTRACTOR REPRESENTATIVE

FATALITY

OTHER Crane Operator

WITNESS

NAME :

HOME ADDRESS :

CITY :

STATE :

WORK PHONE :

TOTAL OFFSHORE EXPERIENCE :

YEARS

EMPLOYED BY :

BUSINESS ADDRESS :

CITY :

STATE :

ZIP CODE :

OPERATOR REPRESENTATIVE

INJURY

CONTRACTOR REPRESENTATIVE

FATALITY

OTHER PA deck crew member

WITNESS

NAME :

HOME ADDRESS :

CITY :

STATE :

WORK PHONE :

TOTAL OFFSHORE EXPERIENCE :

YEARS

EMPLOYED BY :

BUSINESS ADDRESS :

CITY :

STATE :

ZIP CODE :

INJURY/FATALITY/WITNESS ATTACHMENT

OPERATOR REPRESENTATIVE

INJURY

CONTRACTOR REPRESENTATIVE

FATALITY

OTHER PA supervisor

WITNESS

NAME :

HOME ADDRESS :

CITY :

STATE :

WORK PHONE :

TOTAL OFFSHORE EXPERIENCE :

YEARS

EMPLOYED BY :

BUSINESS ADDRESS :

CITY :

STATE :

ZIP CODE :

