UNITED STATES DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE
GULF OF MEXICO REGION

ACCIDENT INVESTIGATION REPORT

1. OCCURRED
   DATE: **28-FEB-2007** TIME: **1500** HOURS

2. OPERATOR: **BP Exploration & Production Inc.**
   REPRESENTATIVE: **Dennis Sustala**
   TELEPHONE: **(713) 865-6824**
   CONTRACTOR:
   REPRESENTATIVE:
   TELEPHONE:

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

4. LEASE: **G15607**
   AREA: **GC** LATITUDE:
   BLOCK: **743** LONGITUDE:

5. PLATFORM:
   RIG NAME:

6. ACTIVITY:
- [ ] EXPLORATION(POE)
- [X] 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
- [X] CRANE
- [X] OTHER LIFTING DEVICE
- [ ] DAMAGED/DISABLED SAFETY SYS.
- [X] INCIDENT >$25K **Winch Wildcat & Pull In**
- [ ] H2S/15MIN./20PPM **Unit**
- [ ]
- [ ] REQUIRED MUSTER
- [ ] SHUTDOWN FROM GAS RELEASE
- [ ] OTHER

6. OPERATION:
- [ ] PRODUCTION
- [ ] DRILLING
- [ ] WORKOVER
- [ ] COMPLETION
- [ ] HELICOPTER
- [ ] MOTOR VESSEL
- [ ] PIPELINE SEGMENT NO.
- [X] OTHER **Atlantis crane and winch chain transfer**

8. CAUSE:
- [X] EQUIPMENT FAILURE
- [ ] HUMAN ERROR
- [ ] EXTERNAL DAMAGE
- [ ] SLIP/TRIP/FALL
- [ ] WEATHER RELATED
- [ ] LEAK
- [ ] UPSET H2O TREATING
- [ ] OVERBOARD DRILLING FLUID
- [ ] OTHER _____

9. WATER DEPTH: **6800** FT.

10. DISTANCE FROM SHORE: **135** MI.

11. WIND DIRECTION: **ESE**
    SPEED: **14** M.P.H.

12. CURRENT DIRECTION: **SW**
    SPEED: **1** M.P.H.

13. SEA STATE: **1** FT.

17. INVESTIGATION FINDINGS:

At approximately 1500 hours on 28 February 2007, during transfer of the chain from the Pull-In Unit (PIU) to the Wildcat Unit (WWU), the WWU turned in an uncontrolled manner by approximately a one-half turn. The chain catenary between the WWU and the PIU was taken up, with the chain release taking approximately five to ten seconds. The PIU was tilted approximately 30 degrees by the chain release, and after 30 to 60 seconds the PIU chain grippers released with the PIU falling near its original position. The WWU brakes engaged, stopping the chain and holding the load. No injuries, fatalities or pollution occurred.

Normal operation of the WWU while moving the chain uses speeds between 20% and 40%. At approximately 15% speed the WWU drum moves at a slow speed that is difficult to detect visually. At approximately 10% speed the speed control valve closes and the winch is stopped and does not move. At 0% speed the valve is closed and the mechanical brake is set (this is the same as pressing the stop button).

Various Operators indicated that they rarely use a speed less than 15%. None of them could remember using that speed range except for very short periods of time (one or two seconds) while jogging the control buttons to adjust the chain catenary. Normal speed ranges used were between 20% and 40% or the unit was stopped using the stop function.

The Operator at the time of the incident did use a slow speed setting. The operation at the time was removing the last few links of chain from the PIU. There were approximately seven links of chain below the PIU. The Deck Supervisor instructed the Operator to lay the chain on the deck. Most Operators interviewed would have stopped both the WWU and PIU and operated the PIU independently to accomplish this task. The Operator at the time of the incident slowed the WWU down to a 1% to 2% speed. Within minutes of doing this the WWU released the chain.

Since the control valve does not begin to open until approximately 10% setting, the chain load was held by hydraulic pressure in the motors and the brake was not set. Total case drain for the four motors can be as high a 34 liters per minute for this case. The control valve set point was not such as to ensure that sufficient hydraulic supply was kept to the motors for this period. The motors then drained of hydraulic fluid, began operating as pumps, and then cavitated due to lack of fluid. This incident occurred on GC787 (RUE - G23579), Atlantis PQ facility. On 26 February 2007, the subsea team onboard the Atlantis PQ began transferring the chain from the PIU to the WWU. The purpose of this operation was to prepare the equipment for pulling in umbilicals. This requires the chain to be taken out of the PIU and hung off from the WWU.

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

The cause of the chain runaway was cavitation of all four hydraulic motors. This can happen with these types of motors when insufficient hydraulic fluid is supplied to make up normal case drain leakage during normal operation at very low speeds.

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

The mechanical brakes are activated by releasing the 30 bar hydraulic pressure that holds them open. The control for this circuit is by Program Logic Control (PLC). The PLC automatically provides a three second delay in brake activation whether by manual stop, automatic stop or emergency stop. The delay is to allow the hydraulic motors to come to a halt before the brakes engage to extend their life. In the case of a runaway, this delay only serves to increase the damage since the cavitation had occurred and the chain is accelerating.

20. LIST THE ADDITIONAL INFORMATION:

21. PROPERTY DAMAGED:

The Winch Wildcat Unit transmission and hydraulic motors.

Structural damage to the PIU.

NATURE OF DAMAGE:

The transmission required replacement of the gears and the hydraulic motors were rebuilt by the manufacturer.

Minimal damage to the locking pins and support plates.

ESTIMATED AMOUNT (TOTAL): **$150,000**

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

The Houma District has no recommendations for the Regional Office of Safety Management.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: **NO**

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

02-MAR-2007

26. ONSITE TEAM MEMBERS:
Kelly Bouzigard / Bryan Domangue / Ben Coco /

29. ACCIDENT INVESTIGATION PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

B. Domangue for MJS

APPROVED DATE: **24-APR-2007**

INJURY/FATALITY/WITNESS ATTACHMENT

[X] OPERATOR REPRESENTATIVE
[ ] CONTRACTOR REPRESENTATIVE
[ ] OTHER _____

[ ] INJURY
[ ] FATALITY
[X] WITNESS

NAME:

HOME ADDRESS:

CITY: STATE:

WORK PHONE: TOTAL OFFSHORE EXPERIENCE: YEARS

EMPLOYED BY:

BUSINESS ADDRESS:

CITY: STATE:

ZIP CODE:

[X] OPERATOR REPRESENTATIVE
[ ] CONTRACTOR REPRESENTATIVE
[ ] OTHER _____

[ ] INJURY
[ ] FATALITY
[X] WITNESS

NAME:

HOME ADDRESS:

CITY: STATE:

WORK PHONE: TOTAL OFFSHORE EXPERIENCE: YEARS

EMPLOYED BY:

BUSINESS ADDRESS:

CITY: STATE:

ZIP CODE:

Crane/Other Material-Handling Equipment Attachment

Equipment Information

Installation date: **01-NOV-2005**

Manufacturer: **HUISMAN ITREC**

Manufacture date: **01-SEP-2005**

Make/Model: **HUISMAN ITREC** / **SCR PULL IN EQUIPMENT**

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

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

Static: **600000** Dynamic: **600000**

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?

None.

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

Hydraulic motor powering the Winch/Wildcat Unit failed.

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

Type of lift: **DD**

Load Information

What was being lifted? **PIPE**

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.)

Transfer chain

Approximate weight of load being lifted: **400000**

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

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

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.)

Chain was being transferred from the pull-in-unit to the winch/wildcat unit in preparation for future umbilical pull in activities.

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)

N/a

Were personnel wearing a safety harness? **NA**

Was a lifeline available and utilized? **NA**

List property lost overboard.

NONE

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?

RADIO/VHF

For crane only:

What crane training institution did crane operator attend?

Where was institution located?

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: Months

List recent crane operator training dates.

For other material-handling equipment only:

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

How many years of experience did operator have operating the specific type of lifting device involved in the incident?

1

Inspection/Maintenance Information

For crane only:

Is the crane involved classified as Heavy, Moderate or Infrequent use.

Was pre-use inspeciton conducted?

For the annual/quarterly/monthly crane inspections, please fill out the following information:

What was the date of the last inspection?

Who performed the last inspection?

Was inspection conducted in-house or by a 3rd party?

Who qualified the inspector?

Does operators' policy require load or pull test prior to heavy lift?

Which type of test was conducted prior to heavy lift?

Date of last pull test: Load test:

Results:

If fail explain why:

Test Parameters: Boom angle: Radius:

What was the date of most recent crane maintenance performed?

Who performed crane maintenance? (Please clarify persons name or company name.)

Was crane maintenance performed in-house or by a third party?

What type of maintenance was performed?

For other material-handling equipment only:

Was equipment visually inspected before the lift took place? **Y**

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

Periodic inspection plan in place and maintenance period was completed two weeks before incident.

Safety Management Systems

Does the company have a safety management program in place? **N**

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

Y

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?

Y

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

Y

What precautions were taken by operator before conducting lift resulting in incident?

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

Did operator have procedures written? **Y**

Did procedures cover the circumstances of this incident? **Y**

Was a copy available for review prior to incident? **Y**

Were procedures available to MMS upon request? **Y**

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

Y

Additional observations or concerns: