

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
PACIFIC OCS REGION

ACCIDENT INVESTIGATION REPORT

1. OCCURRED

DATE: 18-NOV-2004 TIME: 0945 HOURS

2. OPERATOR: Venoco, Inc.
REPRESENTATIVE:
TELEPHONE:
CONTRACTOR:
REPRESENTATIVE: toolpusher
TELEPHONE:

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

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

6. OPERATION:

4. LEASE: P00205
AREA: LA LATITUDE:
BLOCK: 6912 LONGITUDE:

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

5. PLATFORM: GAIL
RIG NAME: KENAI RIG 2

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

8. CAUSE:

7. TYPE:

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

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

- FATALITY 0
- POLLUTION
- FIRE
- EXPLOSION

- LWC HISTORIC BLOWOUT
- UNDERGROUND
- SURFACE
- DEVERTER
- SURFACE EQUIPMENT FAILURE OR PROCEDURES

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

- 9. WATER DEPTH: 739 FT.
- 10. DISTANCE FROM SHORE: 10 MI.
- 11. WIND DIRECTION:
SPEED: M.P.H.
- 12. CURRENT DIRECTION:
SPEED: M.P.H.
- 13. SEA STATE: FT.
- 14. PICTURES TAKEN: YES
- 15. STATEMENT TAKEN: YES

17. INVESTIGATION FINDINGS:

Venoco experienced a loss of well control while performing a workover/completion operation on Well E-15 when an Elco, Inc. Wellhead Service Technician removed a 1.5" diameter lockdown pin and packing-gland from the wellhead. The pin was removed to achieve a visual alignment of the split tubing hanger; however, it is designed only to be screwed in and out, without being removed, to secure the tubing hanger in place. Removal of this pin circumvented the blowout prevention system (BOP). A short while (minutes) after removing the pin, completion fluid (seawater) began to flow from the opening and the ensuing flow turned into a mixture of water and hydrocarbons. After realizing that the well was flowing the Elco technician alerted rig personnel of the problem and attempted to replace the pin. Around this time the driller closed the annular (bag) blowout preventer after seeing that the well was flowing because completion fluid was observed by the tool pusher to be rising in the BOP stack. Closure of the annular preventer caused increased flow and pressure out of the 1.5" opening and pushed the pin back out as the Elco technician was unable to sufficiently secure it. A 2" valve on the 9-5/8" casing was opened to attempt to relieve the pressure on the 1.5" opening without success and inadvertently left open for a short time which increased flow from the well. The well was unsecured downhole in that open perforations in the Monterey formation had an unimpeded path to the surface except for the well completion fluid which was being lost/depleted due to a thief zone within the same formation. Venoco had been continuously pumping completion fluid at a rate of 2.6 barrels/minute through the fill-up line located above the BOP stack, but estimated that they had stopped pumping between 20 and 40 minutes prior to the incident to allow visual observation of the tubing hanger through the 1.5" opening. The deluge system was manually activated in all areas that appeared to contain gas, to help prevent ignition of the gas cloud. Platform operations were shutdown manually due to LEL (Lower-Explosive-Limit)/combustible gas and H₂S detector/sensor activation in the area of the release. The abandon-platform alarm sounded and thirty nine (39) nonessential personnel were evacuated from the platform via 2-Whittaker Escape Capsules. Twelve (12) essential personnel remained aboard the platform to attempt to bring the situation back under control and to prevent escalation of the situation. H₂S safety precautions were taken by all nonessential personnel as well as the initial Emergency Response Team (ERT#1). Upon initial entry into the upper wellbay, the ERT took gas readings of 0% LEL and 0 ppm H₂S using a handheld detector. Their second reading at that location indicated 5 ppm H₂S. A third reading taken in the lower wellbay registered at 63 ppm H₂S. Another reading at that location taken ten minutes later indicated 10 ppm H₂S. At that time, entry was made into the lower wellbay to isolate the 9-5/8" casing valve. The H₂S concentration at the wellhead when the valve assembly was being installed was 0 ppm. The platform flare continued to burn with residual gas after the shut-down of operations. Workers attempted to extinguish it with a fire hose and dry chemical extinguishers to prevent ignition of the gas cloud which was being released in the vicinity and direction of the flare. Extinguishing the flare proved to be difficult and exhausting yet critical to eliminate an obvious and ominous ignition source. Approximately 1 to 3 barrels of crude oil spewed onto decking from the opening while the deluge system flooded the decks with water at an approximate rate of 6000 gallons per minute. A filter screen on the deck drainage system plugged with debris causing an overflow of the deck containment system (curbing) and a spill of approximately 3 gallons of crude oil into the ocean along with seawater from the deluge system. Rig pumps were eventually activated and seawater was pumped into the well at a high rate through the kill line on the BOP stack and after flowing uncontrolled for approximately 2.5 hours the rate of leakage subsided enough to allow the installation of a valve assembly into the 1.5" opening. Valves on this assembly were closed thus eliminating the leak path.

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

- Pumping of fluids into the well to maintain sufficient hydrostatic overbalance (as required by Venoco's approved APM and field rules) was discontinued for a long enough period of time to allow an underbalanced well condition to develop. Consequently, the well kicked, allowing formation fluids to enter the well and migrate uphole.
- The lockdown pin was completely removed from the wellhead assembly, circumventing the BOP system.

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

- The well was not closely monitored for flow during this critical phase of the operation. The inadequate monitoring resulted in inattentiveness to developing well conditions by workover/completion crew members.
- Poor work practices and bad judgment combined with inadequate and/or inappropriate training with respect to performing the unsafe and precarious operation of removing the lockdown pin from the wellhead assembly in a well with open perforations and an active, known thief zone.
- Operator failed to provide sufficient direction to contract employees on adhering to approved procedures contained in the approved APM and established field rules.

20. LIST THE ADDITIONAL INFORMATION:

Monterey Formation characteristics of the well prior to recompletion/workover:

- 1700 Bbls gross production per day, with a 91% water cut.
- 200 psi flowing tubing pressure.
- 235 mcf gas production per day.
- 1100 psi applied gas lift pressure.
- H2S concentration of 6000 ppm.

21. PROPERTY DAMAGED:

None

NATURE OF DAMAGE:

Not Applicable

ESTIMATED AMOUNT (TOTAL): \$

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

- Discontinue the semi-routine practice of complete removal of lockdown pins to visually confirm the correct position of split tubing hangers.
- BOP/well control systems must never be circumvented unless adequate downhole isolation is first established and confirmed to prevent loss of well control, and the operator has secured appropriate approval from the MMS District Manager.
- Well control training and drills should include detailed discussions of the hazards and ramifications of circumventing BOP/well control systems. Pre-work safety meetings should address the unique operating challenges presented by the characteristic behavior of the Monterey Formation.
- Personnel should be trained to pay closer attention to all aspects of ongoing operations, even if they are not directly involved, that could potentially affect platform operations overall. Emphasis should be placed on reacting to developing situations as quickly and as safely as possible.
- Safety alerts should be issued addressing both the removal of lockdown pins to visually confirm position of split tubing hangers, and on the potential need for rapid extinguishment systems for platform flare stacks.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT:

YES

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

The following 2 INCs were issued on 11/19/04:

- PINC E-100 (W), 30 CFR 250.300(a): Operator was unable to prevent pollution of offshore waters that resulted from a well control incident from Well # E-15.
- PINC G-110 (S), 30 CFR 250.107(a): Operator did not perform all operations in a manner that ensured complete well control resulting in a sustained and uncontrolled flow of hydrocarbon fluids to the surface.

Other INCs under consideration include:

- PINCs G-115 and/or G-116: Operator did not conduct operations in accordance with approved applications (in this case, an APM), or approved plans (approved field rules), respectively, in that the well was not kept sufficiently full of completion fluids (sea water) to exert enough hydrostatic pressure on the Monterey Formation to prevent formation fluids from entering the well, migrating uphole, and escaping in an uncontrolled manner.

25. DATE OF ONSITE INVESTIGATION:

19-NOV-2004

28. ACCIDENT CLASSIFICATION:

MINOR

26. ONSITE TEAM MEMBERS:

Bob Hime / Ralph Vasquez / Shannon
Shaw / Dan Knowlson /

29. ACCIDENT INVESTIGATION

PANEL FORMED: NO

OCS REPORT:

30. DISTRICT SUPERVISOR:

thomas dunaway

27. OPERATOR REPORT ON FILE: YES

APPROVED

DATE:

16-DEC-2004

BLOWOUT ATTACHMENT

1. WELL NAME: **R015** WELL NO.: **043112066401** LEASE: **P00205**

2. OPERATION: DRILLING COMPLETION
 WORKOVER PRODUCTION

3. SIMULTANEOUS OPERATIONS IN PROGRESS? **YES**

4. FLUID TYPE: **SEAWATER** WEIGHT: **8.4** PPG

5. BOP STACK CONFIGURATION: **2-7/8"x5"VBR, Spool, Blind, 2-7/8"Dual Ram, Annular** SIZE: **13-5/8** IN
PRESS RATING: **5000** PSI

6. BOP STACK - LAST TEST DATE PRIOR TO INCIDENT: PRESSURE: PSI

7. LAST CASING STRING SET: FT SIZE: IN

8. SIZE OF DRILLING/WORKOVER STRING IN HOLE: IN

9. KICK SIZE: BBLs

10. FLUID KILL WEIGHT: PPG

11. INITIAL S.I.C.P.: PSI

12. S.I.D.P./W.S.P.: PSI

13. PRIOR HOLE PROBLEMS? **NO**

14. WELL CONTROL EQUIPMENT INITIALLY ACTIVATED:
 ANNULAR BOP SCSSV
 PIPE SSV
 BLIND OTHER _____
 BLIND SHEAR

15. EVACUATION: **YES**

16. DIVERTER SYSTEM VALVE SIZE:
LINE SIZE:
 SINGLE SPOOL
 DUAL SPOOL

17. WAS WELL DIVERTED? **NO**

18. BOTTOM HOLE ASSEMBLY:

19. DRILLING DEPTH: TVD MD

20. DATE LAST FORMATION INTEGRITY TEST:

21. SSSV TYPE:
DATE LAST TESTED:

22. TREE: ON OFF

23. SURFACE SAFETY EQUIPMENT IN SERVICE? **NO**

24. WELL TD: TVD MD

25. OPEN PERF? **NO**

POLLUTION ATTACHMENT

1. VOLUME: 3 GAL BBL

YARDS LONG X YARDS WIDE

APPEARANCE:

2. TYPE OF HYDROCARBON RELEASED: OIL
 DIESEL
 CONDENSATE
 HYDRAULIC
 NATURAL GAS
 OTHER _____

3. SOURCE OF HYDROCARBON RELEASED: Platform Gail Well E-15

4. WERE SAMPLES TAKEN? NO

5. WAS CLEANUP EQUIPMENT ACTIVATED? YES

- IF SO, TYPE: SKIMMER
 CONTAINMENT BOOM
 ABSORPTION EQUIPMENT
 DISPERSANTS
 OTHER _____

6. ESTIMATED RECOVERY: 3 GAL BBL

7. RESPONSE TIME: HOURS

8. IS THE POLLUTION IN THE PROXIMITY OF AN ENVIRONMENTALLY SENSITIVE AREA (CLASS I)? NO

9. HAS REGION OIL SPILL TASK FORCE BEEN NOTIFIED? NO

10. CONTACTED SHORE: NO IF YES, WHERE:

11. WERE ANY LIVE ANIMALS OBSERVED NEAR: NO

12. WERE ANY OILED OR DEAD ANIMALS OBSERVED NEAR SPILL: NO

