STATE OF ALASKA
ALASKA OIL AND GAS CONSERVATION COMMISSION
333 West Seventh Avenue
Anchorage, Alaska 99501

Re: Failure to Notify of Changes to an Approved Permit. Failure to Maintain a Safe Work Environment. Milne Point Unit J-08A, PTD 1991170.	))))	Docket Number: OTH-15-025 Other Order 116 March 3, 2017

DECISION AND ORDER

On November 12, 2015, the Alaska Oil and Gas Conservation Commission (AOGCC) issued a Notice of Proposed Enforcement Action (Notice) to Hilcorp Alaska, LLC (Hilcorp) regarding the Milne Point Unit well J-08A (MPU J-08A). The Notice was based upon Hilcorp's performance of well operations on MPU J-08A by failing to obtain approval to change an approved program, failing to follow good oilfield engineering practices, and failing to provide BOPE test reports to the AOGCC within 5 days after completing the test. The Notice proposed specific corrective actions and a $720,000 civil penalty.

At Hilcorp's request an informal review was held February 18, 2016.

Summary of Proposed Enforcement Action:

The conduct which gave rise to the Notice occurred during workover operations conducted by Hilcorp on the MPU J-08A well on September 23 – 25, 2015. Hilcorp notified the AOGCC that three Automated Services Rig 1 (ASR1) personnel had been "overcome by something" while performing a well cleanout with nitrogen at MPU J-08A, and an AOGCC inspector was sent to the location to gather information about the workover operation and incident. Nitrogen had not been approved for use during a well cleanout on MPU J-08A.

The Notice identified violations of 20 AAC 25.507, 20 AAC 25.526, and 20 AAC 25.285. After review of information gathered and discussions with Hilcorp about the events at MPU J-08A, the Notice proposed civil penalties as follows:

- **$100,000** for the unauthorized change to the work procedure approved in Sundry 315-527 - use of nitrogen in the cleanout of MPU J-08A;

- **$600,000** for failure to maintain a safe work environment in accordance with good oilfield engineering practices:
    - **$100,000** for failure to engage in formal hazards identification;
    - **$100,000** for failure to identify and implement safeguards to ensure personnel safety in the event of a nitrogen release;
    - **$100,000** for failure to provide and make available at the rig a detailed procedure for performing a fill cleanout with nitrogen, including requirements for verification of the integrity of all barriers in the flow paths for wellbore fluids returning to surface during the fill cleanout operations;
    - **$100,000** for failure to have in place a robust "Stop Work Authority" that was clearly understood and readily implemented by ASR1;
    - **$100,000** for failure to assess and manage changes that potentially introduce new hazards or unknowingly increase risk of existing hazards during a rig workover, and
    - **$100,000** for inadequate training of personnel on ASR1.
- **$20,000** for failure to provide the results of a blowout prevention test to AOGCC within five days after completion of the test on September 24, 2015, including $10,000 for the initial event and $5,000 per day for the remaining two days that elapsed until the test report was received.

Changes to an Approved Permit:

An operator may not undertake a change to an approved program or activity without AOGCC approval. To make a valid change, the proposed change must be provided in advance to AOGCC for review and approval.

Good Oilfield Practices:

An operator must conduct all operations in a safe and skillful manner in accordance with good oilfield engineering practices. The hazards associated with the commercial uses of nitrogen are well documented and readily available.[1] Safety training programs and standardized safety procedures required for working in North Slope oilfield operations emphasize not only the hazards represented by nitrogen but also the good oilfield operating practices that should be employed when nitrogen is part of a work activity.[2,3]

[1] U.S. Chemical Safety and Hazard Investigation Board, Safety Bulletin No.2001-10-B, *Hazards of Nitrogen Asphyxiation*; June 2003
[2] North Slope Training Cooperative, *Range of O_2 Levels*
[3] 2014 Alaska Safety Handbook; At the time of this incident, Hilcorp had adopted the Alaska Safety Handbook for its North Slope operations (October 6, 2015 letter from Hilcorp to AOGCC)

Blowout Prevention Equipment Testing:

Blowout prevention equipment test reports must be provided to AOGCC within five days after completing the test. Hilcorp ASR1 blowout prevention equipment was tested on September 24, 2015, and the AOGCC received the test report on October 2, 2015.

Informal Review:

On January 29, 2016 Hilcorp submitted documentation in advance of the informal review. Included were: a timeline of activities associated with the workover of MPU J-08A; Hilcorp's Root Cause Analysis; a claim that the use of seawater, nitrogen, or other substances is standard industry practice dependent on actual well conditions encountered during the operation; and a claim that the imposition of multiple penalties for the same event is not within the AOGCC's authority. During the February 18, 2016 informal review, Hilcorp expressed a desire to move toward a resolution with "fair fines", argued against AOGCC's choice of language in the proposed enforcement and asserted AOGCC was imposing separate penalties for one course of conduct.

Discussion:

Workover operations on MPU J-08A, approved on August 31, 2015 (Sundry Approval 315-527), authorized Hilcorp to replace a failed electric submersible pump (ESP) and perform a well cleanout using 8.5 ppg seawater. The approval did not authorize the use of nitrogen during the workover operations.

Hilcorp commenced the workover with the ASR1 rig on September 23, 2015. The failed ESP completion was pulled from the well. After attempting to clean out the well with 8.5 ppg seawater on September 24, 2015, Hilcorp rigged up Halliburton pumping equipment the same day and began to pump nitrogen down the well to aid in the well cleanout. The pumping of nitrogen was completed at 6:30 am on September 25th. While attempting to pump seawater into the well to displace the nitrogen, unexpected annulus pressure of 1100 psi was encountered and pumping was stopped at approximately 8:50 am. The ASR1 rig crew was directed by Hilcorp to bleed off the annulus pressure of 1100 psi, and lined up to bleed off the pressure through the enclosed mud

trailer[4], not to the external open top tanks that were staged at location for the nitrogen returns. Shortly after the rig crew started to bleed off the annulus pressure, two crew members in the mud pit trailer experienced dizziness and felt light headed. After reporting the dizziness, three crew members lost consciousness for an unknown duration after re-entering the mud pit trailer. A crew member shut in the well, stopping the flow of nitrogen into the mud pit trailer. The well site work was stopped for an incident investigation, and the three affected rig crew members were evacuated to the Milne Point clinic for evaluation.

Hilcorp notified the AOGCC of the incident, and AOGCC immediately sent a field inspector to the location. Upon arrival, he interviewed Hilcorp's Wellsite Manager and others, checked records, observed the equipment staged at the location, noted the position of choke manifold and blowout preventer stack valve, and attempted to determine the flowback piping arrangement from the well to the storage tanks, both external and inside the mud trailer. The fill cleanout approach was described to the AOGCC Inspector as pumping nitrogen and seawater to displace the well followed by 100 barrels of seawater pumped in two 50-barrel increments.[5] The Inspector's review of the ASR1 rig files confirmed that the written workover procedure was the same as was attached to the AOGCC's approved sundry, *i.e.*, the onsite procedure did not authorize nitrogen. There was no written procedure available at the location that detailed the overall fill cleanout operation, and there was no written procedure or safety protocol for the use of nitrogen.

The ASR1 rig was equipped with a gas buster located in the enclosed mud trailer above the mud tanks. A gas buster - a simple separator vessel used to remove free or entrained gas from fluids

[4] ASR1 mud trailer is a fully enclosed module consisting of mud tanks, fluid management equipment, and mud pumps. Mud tanks are housed in a separate from the choke and kill manifolds. A gas buster was also located inside the mud trailer with gas vent piped through the roof to outside.

[5] The well cleanout was designed to pump down the tubing-casing annulus with return flow to surface up the tubing (workstring) to an external flow back tank. Records of the cleanout operations indicate 200,000 standard cubic feet of nitrogen were pumped on 9/25/2015 (Halliburton Job Log #902780922) and that was mixed with 207 barrels of 8.5 pounds per gallon seawater (Hilcorp's *Comprehensive List of Causes; Incident Investigation Events Sequencing Chart*). Hilcorp reports that the first 50-barrel seawater pill was successfully pumped (Hilcorp's *Internal Incident Investigation*). Unexpected pressure was encountered after pumping approximately 4 barrels of the second 50-barrel seawater pill causing rig personnel to shut down the pumping operation, and realign the flow path to bleed pressure from tubing-casing annulus of MPU J-08A. Records show the flow path was adjusted to allow the returning well bore fluids to flow through the choke manifold valves, gas buster and finally to tanks all within the enclosed mud trailer (instead of bleeding to the exterior tank).

circulated in the wellbore, such as fluid used during cleanout - typically contains a series of baffles with a liquid exit on the bottom and a gas-vent line at the top of the vessel.[6] During the MPU J-08A workover, the dump valve on the liquid exit was left open effectively dumping the nitrogen in the return fluids into the enclosed mud trailer. The nitrogen displaced oxygen to a deadly level.[7, 8]

Findings and Conclusions:

Hilcorp has a significant history of noncompliance with AOGCC regulations. Prior to the MPU J-08A incident, AOGCC issued several enforcement actions against Hilcorp for various noncompliant activities, including one involving a civil penalty. AOGCC also met several times with Hilcorp's Alaska managers regarding concerns about regulatory compliance, including an unprecedented meeting with Hilcorp operations personnel at its Kenai field office to advise Hilcorp of AOGCC compliance expectations.[9] A list of regulatory violations, provided as part of the discussions, was intended to draw attention to and correct Hilcorp's relatively high frequency of noncompliant activities.

Hilcorp has violated three distinct regulations in the conduct of workover operations at MPU J-08A: failure to obtain prior approval for a plan change (20 AAC 25.507); failure to conduct workover operations in accordance with good oilfield engineering practices (20 AAC 25.526), and failure to provide a required report (20 AAC 25.285). Specifically,

- Hilcorp did not seek and Sundry 315-527 did not authorize the use of nitrogen for a cleanout out of MPU J-08A.
- In proceeding with the nitrogen fill cleanout, Hilcorp failed adequately to identify, assess, and mitigate the hazards associated with the use of nitrogen, and in doing so failed to conduct the cleanout in accordance with good oilfield practices. Specifically, Hilcorp:

[6] Schlumberger Oilfield Glossary; http://glossary.oilfield.slb.com; device is also commonly referred to as a "mud gas separator" or a "poor boy degasser"
[7] U.S. Chemical Safety and Hazard Investigation Board, Safety Bulletin No.2001-10-B, *Hazards of Nitrogen Asphyxiation*; June 2003
[8] North Slope Training Cooperative, *Range of O_2 Levels*
[9] Meeting requested and arranged by Hilcorp; held November 11, 2013

  - failed to engage in the formal hazards identification process (facilitated by hazards/risk experts) integral to the work planning process, including assessing the risks of using nitrogen in a fill cleanout on ASR1;
  - failed to identify and implement safeguards to ensure personnel safety in the event of a nitrogen release for the fill cleanout operation;
  - failed to provide and make available at the rig a detailed procedure for performing a fill cleanout with nitrogen including requirements for verification of the integrity of all barriers in the flow paths for wellbore fluids returning to surface during the fill cleanout operations;
  - failed to have in place a "Stop Work Authority" that was clearly understood and readily implemented by ASR1 personnel;
  - failed to provide a documented process for assessing and managing changes to approved sundries that potentially introduce new hazards or increase risk of existing hazards during a rig workover.
- Hilcorp ASR1 blowout prevention equipment was tested on September 24, 2015, representing the initial test after rigging up on MPU J-08A. By regulation, blowout prevention equipment test reports must be provided to AOGCC within five days after completing the test. AOGCC received the required test report three days past due on October 2, 2015, violating 20 AAC 25.285.

The AOGCC has considered the factors in AS 31.05.150(g) in its determination of penalties for the MPU J-08A violations. Hilcorp has demonstrated neither mitigating factors relative to this incident nor that AOGCC missed information in reviewing the enforcement action. The extent and seriousness of the consequences of the violations cannot be overstated: nothing but luck prevented the deaths of three workers during the cleanout operations. Hilcorp's conduct cannot be characterized as a good faith attempt to comply with AOGCC regulations. The potential severity of the outcome of Hilcorp's actions, Hilcorp's ongoing history of performing work outside of approved permits or management-of-change protocols, its history of compliance issues and the need to deter are significant factors in the AOGCC's analysis.[10] However during the past twelve months, Hilcorp has taken initiatives that have improved their overall regulatory compliance. Also, after the initial investigation of this incident, the AOGCC stopped work on all four Hilcorp workover rigs in Alaska from 10/1/15 to 10/26/15, until Hilcorp could demonstrate compliance with AOGCC's conditions for restarting well work. The AOGCC recognizes that this shutdown of well workover operations had a significant financial impact to Hilcorp. AOGCC finds some

[10] AS 31.05.150(g) requires AOGCC to consider nine criteria in setting the amount of a civil penalty.

merit in Hilcorp's claim that AOGCC has issued multiple penalties for a single act, specifically that some of the penalties under 20 AAC 25.526 are overlapping. However, AOGCC does not agree the entire incident comprises a single act and finds that Hilcorp has violated three distinct regulations in the conduct of workover operations at MPU J-08A.

Now Therefore It Is Ordered That:

A civil penalty in the amount of **$200,000** is imposed for violating 20 AAC 25.507, 20 AAC 25.526, and 20 AAC 25.285 during the workover operations on MPU J-08A as follows:

- **$80,000** for changing the work procedure in Sundry approval 315-527 - performing the cleanout of MPU J-08A using an unapproved contingent plan (nitrogen);
- **$100,000** for failure to maintain a safe work environment in accordance with good oilfield engineering practices. Included are:
    - failure to engage in the formal hazards identification; including the failure to assess and manage changes that introduced new hazards or unknowingly increased risk of existing hazards during a rig workover;
    - failure to identify and implement safeguards to ensure personnel safety in the event of a nitrogen release; including failure to provide and make available at the rig a detailed procedure for performing a fill cleanout with nitrogen, including requirements for verification of the integrity of all barriers in the flow paths for wellbore fluids returning to surface during the fill cleanout operations; and
    - inadequate training of personnel performing cleanout operations on ASR1.
- **$20,000** for failing to provide the results of a blowout prevention test to AOGCC within five days after completing the test on September 24, 2015. Included is $10,000 for the initial event and $5,000 per day for the remaining two days that elapsed until the test report was received.

Done at Anchorage, Alaska and dated March 3, 2017.

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Cathy P. Foerster	Daniel T. Seamount, Jr.	Hollis S. French
Chair, Commissioner	Commissioner	Commissioner

RECONSIDERATION AND APPEAL NOTICE

As provided in AS 31.05.080(a), within **20** days after written notice of the entry of this order or decision, or such further time as the AOGCC grants for good cause shown, a person affected by it may file with the AOGCC an application for reconsideration of the matter determined by it. If the notice was mailed, then the period of time shall be **23** days. An application for reconsideration must set out the respect in which the order or decision is believed to be erroneous.

The AOGCC shall grant or refuse the application for reconsideration in whole or in part within 10 days after it is filed. Failure to act on it within 10-days is a denial of reconsideration. If the AOGCC denies reconsideration, upon denial, this order or decision and the denial of reconsideration are **FINAL** and may be appealed to superior court. The appeal **MUST** be filed within **33** days after the date on which the AOGCC mails, **OR 30** days if the AOGCC otherwise distributes, the order or decision denying reconsideration, **UNLESS** the denial is by inaction, in which case the appeal **MUST** be filed within **40** days after the date on which the application for reconsideration was filed.

If the AOGCC grants an application for reconsideration, this order or decision does not become final. Rather, the order or decision on reconsideration will be the **FINAL** order or decision of the AOGCC, and it may be appealed to superior court. That appeal **MUST** be filed within **33** days after the date on which the AOGCC mails, **OR 30** days if the AOGCC otherwise distributes, the order or decision on reconsideration.

In computing a period of time above, the date of the event or default after which the designated period begins to run is not included in the period; the last day of the period is included, unless it falls on a weekend or state holiday, in which event the period runs until 5:00 p.m. on the next day that does not fall on a weekend or state holiday.