

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

Re: Missing Meter Calibration Reports
Ninilchik Unit Bartolowits Pad
Custody Transfer Meter

Other Order 113
Docket Number: OTH-15-036
October 20, 2016

DECISION AND ORDER

On December 16, 2015 the Alaska Oil and Gas Conservation Commission (AOGCC) issued a Notice of Proposed Enforcement Action (Notice) to Hilcorp Alaska, LLC (Hilcorp) regarding the Ninilchik Unit Bartolowits (Bartolowits) Pad. The Notice was based upon Hilcorp's failure to submit required meter reports for the months August 2014 through December 2015. Hilcorp requested an informal review. That review was held January 21, 2016.

Summary of Proposed Enforcement Action:

The Notice identified violations by Hilcorp of the conditional approval letter for the Bartolowits pad custody transfer measurement equipment, specifically the requirement to provide monthly meter calibration and performance reports. The Notice proposed that Hilcorp provide a detailed written explanation describing how it intends to prevent recurrence of this violation. For these violations, the AOGCC proposed a \$170,000 civil penalty on Hilcorp.

Informal Review:

An informal review provides opportunity for the recipient of a proposed enforcement action to submit evidence and make written and oral statements regarding the enforcement action in advance of AOGCC issuing a final decision. Hilcorp's request for an informal review stated it would "submit documentary material in advance of informal review, and make an oral presentation at the informal review." That same day, Hilcorp forwarded the missing calibration reports and Elster Uniguard Meter Health Check Reports (health check reports) for the Bartolowits custody transfer ultrasonic meter. Hilcorp's January 4, 2016 submittal was incomplete, missing the following ultrasonic meter health check reports: September 2014; November 2014; February 2015; and October 2015. Also missing was the meter calibration report for August 2014. The missing health check reports were provided on January 7, 2016; the missing meter calibration report has never

been submitted (discussed below). Review of the health check reports identified numerous times meter alarms were recorded, which raise concerns about the gas measurement system's accuracy.

Hilcorp's submittal suggested that AOGCC had inspected the Bartolowits custody transfer meter "three times since its approval" and that "documentation was given directly to the Inspector" after each witnessed test. AOGCC records show only two Inspector-witnessed meter calibrations between the start of production on the Bartolowits pad (July 28, 2014) through December 31, 2015. Hilcorp records provided on January 4, 2016 confirm there were only two AOGCC inspections.¹ AOGCC Inspectors were never provided copies of the health check reports for the Bartolowits ultrasonic meter.

Except for the missing meter reports, Hilcorp provided no additional information for AOGCC's consideration in its proposed enforcement action.

During the informal review, although Hilcorp admitted it had no auditing mechanism of its regulatory tracking system which would have caught its failure to apprise its employees of the reporting requirement, it nonetheless characterized its failure to submit the reports as an honest mistake due to its failure to add the conditions of approval into its regulatory tracking system. According to Hilcorp, because it had no tracking system, it "didn't know reports were due." Hilcorp contends that in combination its failures render its conduct a single initial event (failure to submit reports) that carried forward each month since the Bartolowits custody transfer meter was placed in service. Hilcorp characterized the financial penalty as excessive because it disagreed with AOGCC's proposed enforcement which effectively represented a separate penalty for each monthly failure to report.²

Review of the meter reports prior to the informal review identified numerous meter alarms in the monthly health check reports, including several that were repeat occurrences during the 17-month

¹ August 13, 2015; December 4, 2016

² August 2014 through December 2015

period covered by this enforcement action. The meter alarms are significant. AOGCC raised concerns about the performance of this particular ultrasonic meter during the application review due to previous issues at the Kasilof pad where health check reports exhibited some of the same alarms.^{3,4} The history of this meter at the Kasilof pad was a main factor in requiring the submittal of monthly health check reports for the relocated ultrasonic meter. Hilcorp could not answer AOGCC's questions about the contents of the reports, specifically the recurring velocity of sound alarms.

In spite of the above, Hilcorp placed part of the blame for its regulatory violations on AOGCC claiming that

- AOGCC is responsible for contacting Hilcorp and educating its personnel about the conditions of approval;
- AOGCC incorrectly accuses Hilcorp of failing to provide required reports associated with two monthly calibrations; and
- AOGCC has "explicitly declined to provide any guidance on ambiguous requirements."

As evidence Hilcorp cites an August 1, 2014 email that informed AOGCC it understands that the documents attached to the email were the "last submissions necessary for compliance." The context and timing of the August 1, 2014 email address pre-start obligations that were also included as approval conditions, not the ongoing month-to-month compliance requirements for an operating gas measurement system. Hilcorp claims that the conditions of approval were misread by its personnel. AOGCC bears no responsibility for Hilcorp's behavior.

Hilcorp notified AOGCC during the informal meeting that it failed to perform the required meter calibration checks in August 2014. Reasons for the missed meter calibration were not provided. This represents an additional violation of the Bartolowits custody transfer meter approval.

³ Bartolowits meter application received May 28, 2014, approved June 26, 2014

⁴ Operated by Marathon before Hilcorp obtained owner/operator rights in February 2013

At the close of the informal review, AOGCC provided Hilcorp with an additional opportunity to submit information addressing AOGCC concerns about the gas measurement equipment performance at Bartolowits and corrective actions that have been or are being implemented. Hilcorp's letter dated January 28, 2016 provided an example of a work order process being implemented that will be used to track required meter calibrations from scheduling through report submittal. Hilcorp's letter also references in general terms the development of "training modules" without providing details demonstrating how the training will prevent recurrence of the violations identified in the Bartolowits notice.

Health Check Reports:

An ultrasonic flow meter measures the speed (velocity) of the fluid flowing through a known cross sectional area of the meter body. The meter infers the flow of gas (velocity) by measuring the difference in transit time of sound pulses transmitted through the flowing fluid downstream (shorter transit time) and upstream (longer transit time). A commonly used analogy is comparing a kayak crossing a river – faster across when traveling with the current as compared to against the current. Different configurations are used for the sound-pulse transmission path geometry; the Bartolowits meter uses a reflected acoustic path geometry with three sound-pulse transmission paths of known length. Because the ultrasonic meter infers gas velocity, direct meter proving methods are not available which places an increased emphasis on proper system configuration, the use of proper diagnostic software tools, and knowledge of how to interpret the data. A major advantage of ultrasonic meters is the large amount of data produced for diagnosing the meter's correct operation. Another distinct advantage is the continuous remote monitoring capability of the meter's health to evaluate trends in the data. Key parameters include composition of gas, velocity of sound (by path), comparison of "measured" velocity of sound to calculations using industry recognized standards⁵, transducer performance, signal-to-noise ratios, and transducer gain (signal strength). Diagnostics look for changes and out-of-limit events over time on basic parameters such as velocity of sound to verify proper meter performance and provide early

⁵ American Gas Association Report No. 10

identification of potential measurement issues. The importance of diagnostics is underscored by comments from ultrasonic meter manufacturers:

- Daniel Measurement and Controls – “if all the diagnostic parameters are normal one can have complete confidence that the meter is working correctly”;⁶
- Honeywell Elster – “Good, representative samples of gas quality are necessary to facilitate calculation of reference speed of sound values needed to evaluate meter operating conditions”; “Comparisons of meter measured SOS (velocity of sound) may be made against this calculation as a ‘health check.’ Direct correlation between meter accuracy and SOS has yet to be established, but it is known that correct meter function is doubtful if the SOS calculation is in error.”; “Discrepancies between measured and calculated SOS (velocity of sound) indicate a fundamental meter problem.”⁷

As a result, concerns identified through performance monitoring should trigger additional analysis of the meter system that impact the velocity of sound calculation.

The Bartolowits health check reports are described by Hilcorp as a snapshot (2-3 minutes) of the meter’s performance instead of totals or averages of results over a longer time interval. Roughly half – eight of seventeen – of the reports show alarms triggered for the comparison of measurement to calculated velocity of sound. Hilcorp’s assessment states the eight months where a velocity of sound alarm occurred can indicate a drift in either the meter or the gas analysis and that the snapshot “is typically used to trend drift over a period of time”. Hilcorp’s letter dated January 28, 2016 included a graph of “Average Percent Deviation by Month” for the velocity of sound comparison, concluding that the Bartolowits meter trends “do not indicate a consistent drift from the normal range”. A credible assessment regarding drift is not obtained from a 2 to 3-minute snapshot of meter performance once a month. More problematically, one purpose of requiring the reports is to have AOGCC, not Hilcorp, make that determination.

⁶ “Diagnostic Ability of the Daniel Four Path Ultrasonic Flow Meter”; K. Zanker, Daniel Measurement and Controls White Papers; www.daniel.com

⁷ “Ultrasonic Gas Flow Meters for Custody Transfer Measurement”; J. Micklos, Elster

Hilcorp attributes the alarms for velocity of sound comparisons in five of the seventeen months to dates where the health check report was run coincident to no gas flow through the Bartolowits ultrasonic meter. AOGCC deems a 2 to 3-minute diagnostic “snapshot”, especially one that is captured without gas flowing through the meter, to be of no value in an assessment of meter performance.

Discussion:

The above discussion demonstrates the importance of performance monitoring with the proper diagnostics software and understanding how to interpret the data. Hilcorp’s failure to provide the required health check reports for the Bartolowits ultrasonic meter violated a specific, clearly worded condition of the Bartolowits meter approval and denied AOGCC the ability to review and address questions about health check report alarms in a timely manner.

The AOGCC has considered the factors in AS 31.05.150(g) in its assessment of the violations. Hilcorp admits it failed to submit the required meter performance reports. Hilcorp also admits that it failed to perform the required calibration checks on the Bartolowits meter during August 2014.

There is nothing ambiguous about the conditions imposed by AOGCC for approval of the Bartolowits meters. Hilcorp’s history of noncompliance and its failure to take the rudimentary measure of entering AOGCC’s requirements in its regulatory tracking system preclude any claim that Hilcorp has acted in good faith. Prior to this violation, AOGCC staff had met with Hilcorp on a number of occasions regarding ongoing compliance issues with Hilcorp, including an unprecedented meeting with field operations staff at Hilcorp’s Kenai field office. AOGCC resolved Hilcorp’s earlier violations without enforcement actions. (See Table 1, attached to this Decision.) This approach has had little discernible impact on Hilcorp’s behavior. Hilcorp’s previous commitments to train its personnel have been insufficient to avoid recurrences of regulatory violations.⁸ Hilcorp’s lack of good faith in its attempts to comply with the imposed

⁸ October 14, 2016 letter to J. Barnes (Hilcorp) deferring closeout of a notice of violation

conditions, its history of regulatory noncompliance and need to deter similar behavior are the factors which most heavily influence this decision.

AOGCC agrees with Hilcorp that not adding the Bartolowits meter application conditions of approval into its regulatory tracking system exacerbated the length of its non-compliance. Hilcorp's ability to provide AOGCC with the missing reports partially mitigates the seriousness of the violation.

Findings and Conclusions:

The AOGCC finds that Hilcorp violated Condition #4 of the approval authorizing the use of an ultrasonic flow meter at Bartolowits for custody transfer measurement of produced gas by failing to submit required meter calibration and health check reports. AOGCC further finds that by its own admission in the informal review, Hilcorp violated the requirement of Condition #2 by failing to perform meter calibration during August 2014.

Now Therefore It Is Ordered That:

A civil penalty in the amount of **\$30,000** for violating the conditions of the Bartolowits custody transfer meter application approval dated June 26, 2014 as follows:

- **\$20,000** for failing to calibrate the Bartolowits meter in August 2014;
- **\$10,000** for failing to submit the required reports between the months of August 2014 through December 2016.

In addition to the required monthly meter calibration reports, Hilcorp must commence at least daily health checks of the meter and provide the monthly average of the collected data. Average performance data that is outside operating limits must be addressed in the health check report. Hilcorp must maintain the daily health check reports to substantiate the monthly summary reports.

As an Operator involved in an enforcement action, you are required to preserve documents concerning the above action until after resolution of the proceeding.

Done at Anchorage, Alaska and dated October 20, 2016.

//signature on file//
Cathy P. Foerster
Chair, Commissioner

//signature on file//
Daniel T. Seamount, Jr.
Commissioner



Attachment

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.

Table 1 – Hilcorp Noncompliance History

Date	Non-Compliance	Location	AOGCC Action⁹	Comments
April 2012	Missing SVS tests; Failure to notify AOGCC for test witness	Westside CI	No action taken	Numerous efforts by AOGCC to obtain SVS test results for IRU, PCU, LRU, Stump Lake; some missing SVS tests between 5/2011 and 2/2012; some failure to notify AOGCC for opportunity to witness (previous operator responsible for some tests)
5/8/2012	Missing Kill Line Valve	Swanson River Unit 21-22 (Aurora Rig 1)	NOV	BOPE test; Inspector observed missing kill line valve at inlet to stack (1 installed; 2 required)
9/17/2012	Choke Manifold Valves cheated closed during BOPE test	Swanson River 21-25 (Aurora Rig 1)	Corrective actions	Rig crew performing choke manifold test greased and had to cheat choke manifold valves closed to pass pressure test
10/2/2012	Notice of Meter Calibrations	Happy Valley	Corrective actions	AOGCC has not received notice of meter calibration for Happy Valley custody transfer meter for at least as long as Hilcorp has been responsible for the meter; schedule provided 10/9/12
10/18/2012	Incorrect BOPE Test Pressure	Soldotna Creek Unit 44-33 (Doyon Rig 1)	See 10/23/12 enforcement	When finally tested BOPE after use (10/18/12), tested to wrong pressure (4000psi instead of 5000psi)
10/23/2012	Failure to notify of changes to approved permit	Soldotna Creek Unit 44-33 (Doyon Rig 1)	Civil Penalty; Corrective Actions (Other Order 80)	Hilcorp failed to follow well drilling procedures approved in PTD by AOGCC; failed to notify AOGCC of changes to well plan; failed to maintain well in overbalanced condition; lack mgt of change
	Well control; Failure to test BOPE after use			Hilcorp failed to test BOPE used in well control operations prior to first wellbore entry following use
10/26/2012	Failure to Test BOPE within 7 days	Granite Pt 32-13RD (crane workover)	Denied request for delaying BOPE test	Test due 10/26/12, started running completion 1500hrs on 10/26 without making any attempt to get test extension (working daylight hours only); landed pipe high, had to trip pipe; request extension 10/27/12
10/31/2012	Improper gauge on IA	Trading Bay Unit D-45	none	Hilcorp self-reported that gauge was pegged out; 2000psi alarm set, 1000psi gauge; well SI by Hilcorp

⁹ NOV – Notice of Violation; no financial penalty; corrective actions only

Date	Non-Compliance	Location	AOGCC Action⁹	Comments
11/29/2012	Missing well control equipment	Happy Valley B-16 (Aurora Rig 1)	NOV	Missing top drive valve(s) on 10/10/12 and again 11/18/12; reviewing Hilcorp response rec'd 12/11/12
11/29/2012	Incorrect BOPE test pressure	Granite Point #50 (Schlumberger CT 2)	NOV	Sundry 312-439 required BOPE rams, valves to test to 4500psi; Hilcorp tested to 3500psi
12/6/2012	Conduct of operations	Trading Bay Unit G-32 (Williams Rig 404)	NOV	Violation found 11/7/12 as part of rig inspection/ and BOPE test witness; hazardous conditions; wellbore fluids on deck; equipment placement; lack of winterization; reviewing Hilcorp response rec'd 12/21/12
12/16/2012	Winterization; Conduct of Operations	Trading Bay Unit G-32 (Williams Rig 404)	Ordered ops shut down on Rig 404 until corrective actions implemented	Inspector arrived 12/15/12 for BOPE test; unable to test due to fluids covering stack well cellar (similar to issued noted in 12/6/12 NOV); returned 12/16/12 to test BOPE – unable to test BOPE (frozen choke manifold, top drive valves, floor safety valves, choke and kill lines along with everything else not in heated enclosure. Rig ops allowed to restart 12/31/12 after corrective actions, inspection and passing BOPE test
12/16/2012	Commence production w/o approved LACT meter	Nikolaevsk Unit (Red pad)	Corrective actions	12/18/12 – Hilcorp contacts AOGCC with notice of SVS testing; AOGCC determined by questioning status that well commenced production 12/16/12; application for LACT meter rec'd 1/9/12
4/11/2013	Defeated SVS	Sterling 43-09X	NOV	SVS found defeated 3/15/13 during AOGCC inspection; well was SI without testing
9/30/2013	Defeated SVS	Swanson River Field KGSF #1	NOV	SVS found defeated 9/2/13 during AOGCC inspection; needle valve on actuator blocked
1/14/2014	Defeated SVS Missing Annulus Gauges	Soldotna Cree Unit 12A-04; SCU 24A-09; SCU 41A-08	NOV	SVS on 3 rod pump wells found defeated during 12/9/13 AOGCC inspection; also found SCU 24A-09 without the required pressure gauge to monitor outer annulus (OA)
4/22/2014	Defeated SVS	Ninilchik Unit SD-3; Ninilchik Unit FC-5	Corrective actions	SSSV found by AOGCC Inspectors 4/15/14 and 4/16/14; Hilcorp reported on 4/21/14; Inspector required SSSV back in service before departing

Date	Non-Compliance	Location	AOGCC Action⁹	Comments
8/29/2014	Failure to Test BOPE	Trading Bay Unit G-11 (Moncla Rig 301)	NOV	Rig exceeded allowed 7days between BOPE tests without AOGCC approval
10/31/2014	Failure to Test Required Well Control Equipment	Ninilchik Unit Paxton 7 & Paxton 8	Corrective actions	No enforcement; reported by Hilcorp; approved sundry required testing despite wells being isolated from the formation
1/5/2015	Workover Safety Concerns	Hilcorp Cook Inlet and Kenai Peninsula Rig Workovers	Meeting 1/9/15; Corrective actions	List of concerns provided to Hilcorp addressing suitability of equipment and procedures; unsafe working conditions associated with rig workovers; onshore and offshore Cook Inlet
1/7/2015	Casing Valves Inaccessible	Ninilchik Unit Paxton 8	Meeting 1/9/15; Corrective actions	Frozen well cellar found by Inspector 1/7/15; operator instructed to thaw cellar; no action taken per Hilcorp (1/9/15 mtg - "operator unclear about required action"); AOGCC Deficiency Report created to track corrective actions identified during inspections
2/4/2015	Defeated SVS	Northstar Unit NS-15	NOV	SSV found defeated during 1/23/15 AOGCC inspection
4/22/2015	Failure to Obtain Approval for Continued Production	Kenai Gas Field KDU 1	NOV	Operating without required competent tubing and packer; no AOGCC approval (20 AAC 25.200); discovered as part of well review; well shut in