

IN THE MATTER of a CONTRAVENTION
of the *OIL AND GAS ACTIVITIES ACT*
[SBC 2008] Chapter 36
before
The BC OIL AND GAS COMMISSION
Case File 2017-006

BETWEEN

The BC Oil and Gas Commission

AND

Crew Energy Inc.

AND

FMC Technologies Canada Ltd.

ADMINISTRATIVE FINDING

Before	Vice President, Operations, Lance Ollenberger
Representing the BC Oil and Gas Commission	Enforcement Operations Officer, Ken McLean
Representing Crew Energy Inc.	Vice President, Planning & Development, Kurtis Fischer
Representing FMC Technologies Canada Ltd.	Partner, Melanie Teetaert, Stikeman Elliott LLP
Decision Date	July 23, 2018

Introduction:

1. On January 23, 2017, Crew Energy Inc. (Crew), reported a Level 3 Incident involving a total loss of well control during hydraulic fracturing operations at wellsite WA 31665, (the Well) located at A05-04-082-20 in the Wilder Field (the Incident). There was a complete wellhead collapse and failure resulting in a spill of produced water.
2. The Incident occurred after failure of the Drill Time Optimization (DTO) wellhead that was provided and installed by Crew's third party contractor FMC Technologies Canada Ltd. (FMC).
3. A Contravention Report (the Report) was sent to me on February 7, 2018 alleging that: Crew contravened sections 9(1), 12(1) and 16(1)(a) of the *Drilling and Production Regulation* (DPR) and/or section 37(1) of the *Oil and Gas Activities Act* (OGAA); and that FMC contravened sections 12(1) and 16(1)(a) DPR and/or section 37(1)(a) of the OGAA.
4. The BC Oil and Gas Commission (Commission) sent Crew a letter and the Report on February 9, 2018 informing Crew that I was considering making a finding that it contravened sections 9(1), 12(1) and 16(1)(a) of the DPR and/or section 37(1)(a) of the OGAA. The letter informed Crew of its opportunity to be heard in written form and advised that a finding of contravention could result in the Commission imposing an administrative penalty in accordance with section 63 of the OGAA. Crew provided a response in a letter dated March 6, 2018 (the Crew Response).
5. The Commission sent FMC a letter and the Report on February 9, 2018 informing FMC that I was considering making a finding that it contravened sections 12(1) and 16(1)(a) of the DPR and/or section 37(1)(a) of the OGAA. The letter informed FMC of its opportunity to be heard in written form and advised that a finding of contravention could result in the Commission imposing an administrative penalty in accordance with section 63 of the OGAA. FMC provided a response in a letter dated March 21, 2018 (the FMC Response).
6. The Commissioner of the BC Oil and Gas Commission has delegated me authority under sections 62 and 63 of the OGAA. I will be making a determination with regards to: whether Crew contravened sections 9(1), 12(1) and 16(1)(a) of the DPR and/or section 37(1)(a) of the OGAA; whether FMC contravened sections 12(1) and 16(1)(a) of the DPR and/or section 37(1)(a) of the OGAA; whether to impose an administrative penalty under section 63 of the OGAA to Crew and/or FMC; and the amount of the penalties, if any. I have reviewed the Report, the Crew Response and the FMC Response. In making a determination, I rely on these documents, and the applicable legislation.

Applicable Legislation

7. Section 9(1) of the DPR states that a well permit holder must ensure that, during well operations, reliably operating well control equipment is installed to control kicks, prevent blow-outs and safely carry out all well operations.
8. Maximum penalties for specific violations are set by regulation. Section 5(1) of the *Administrative Penalties Regulation* (APR) provides that a person who contravenes section 9(1) of the DPR is liable to an administrative penalty not exceeding \$500,000.
9. Section 12(1) of the DPR states that a well permit holder must take all reasonable measures to minimize the risk of loss of well control.
10. Section 5(1) of the APR states that a person who contravenes section 12(1) of the DPR is liable to an administrative penalty not exceeding \$500,000.

11. Section 16(1)(a) of the DPR states that a well permit holder must ensure that all tools and equipment used in well operations are installed and operated in accordance with the manufacturer's specifications or sound engineering practices.
12. Section 5(1) of the APR states that a person who contravenes section 16(1)(a) of the DPR is liable to an administrative penalty not exceeding \$500,000.
13. Section 37(1)(a) of the OGAA states that a permit holder, an authorization holder and a person carrying out an oil and gas activity must prevent spillage.
14. Section 2(1) of the APR states that a person who contravenes section 37(1) of the OGAA is liable to an administrative penalty not exceeding \$500,000.
15. Section 62(1) of the OGAA states that, after providing an opportunity to be heard to a person who is alleged to have contravened a provision of the OGAA, the regulations, a permit, an authorization or an order, the Commission may find that the person has contravened the provision.
16. Section 62(4) of the OGAA states that if a person contravenes a provision referred to in subsection (1), any other person who (a) is directly or indirectly responsible for the act or omission that constitutes the contravention, and (b) is a contractor, employee or agent of the person or of another person described in paragraph (a) also contravenes the provision.
17. Section 62(5) of the OGAA states, in part, that the Commission may not find that a person has contravened a provision of the OGAA or the regulations if the person demonstrates to the satisfaction of the Commission that they exercised due diligence to prevent the contravention.
18. Section 63(1) states that, if the Commission finds that a person contravened a provision of the OGAA or its regulations, the Commission may impose an administrative penalty. Section 63(2) of the OGAA sets out the factors that must be considered when determining whether to impose an administrative penalty under section 63(1) and the amount of the penalty. These include:
 - (a) previous contraventions by, administrative penalties imposed on, or orders issued to the person;
 - (b) the gravity and magnitude of the contravention;
 - (c) the extent of harm to others resulting from the contravention;
 - (d) whether the contravention was repeated or continuous;
 - (e) whether the contravention was deliberate;
 - (f) any economic benefit derived by the person from the contravention;
 - (g) the person's efforts to prevent and correct the contravention; and
 - (h) other prescribed matters.

Background

19. On January 23, 2017, Crew experienced a total loss of well control at the Well, located 17 kilometers southwest of Fort St. John, during stage one hydraulic fracturing operations. The wellhead completely detached from the well bore leaving the production tubing open and exposed which allowed produced water to pour out of the casing and onto the lease. The wellhead was a specialized technology called the FMC DTO system that was designed and installed by FMC.
20. The Incident was initially classified as a Level 3 event and Crew implemented its emergency response plan, evacuated personnel on the site, set up roadblocks and monitored gas levels. Crew initiated clean-up of the produced water immediately after the Incident occurred and had vacuum trucks and tankers onsite to recover fluids. Fire crews were on standby at the wellsite in

the event of a fire and well control specialists along with equipment were called in from Grande Prairie, Alberta.

21. On January 24, 2017, the well flow had slowly diminished enough to allow for down-hole packers to be installed. The Well was plugged and brought back under control and the Incident was downgraded to a Level 1. Crew sent the wellhead for analysis and began an investigation into the cause of the Incident.

Issues

22. The issues which I will decide are:

Section 9(1) of the DPR:

- Did Crew fail to ensure that, during well operations, reliably operating well control equipment was installed to control kicks, prevent blow-outs and safely carry out all well operations?
- Did Crew exercise due diligence in its efforts to ensure that, during well operations, reliably operating well control equipment was installed to control kicks, prevent blow-outs and safely carry out all well operations?
- Did Crew contravene section 9(1) of the DPR?

Section 12(1) of the DPR

- Did Crew fail to take all reasonable measures to minimize the risk of loss of well control?
- Did Crew exercise due diligence in its efforts to take all reasonable measures to minimize the risk of loss of well control?
- Did Crew contravene section 12(1) of the DPR?
- If Crew contravened section 12(1) of the DPR, was FMC, as Crew's contractor, directly or indirectly responsible for the act or omission that constituted the contravention?
- Did FMC exercise due diligence in its efforts to take all reasonable measures to minimize the risk of loss of well control?
- Did FMC contravene section 12(1) of the DPR?

Section 16(1)(a) of the DPR

- Did Crew fail to ensure that all tools and equipment used in well operations were installed and operated in accordance with the manufacturer's specifications or sound engineering practices?
- Did Crew exercise due diligence in its efforts to ensure that all tools and equipment used in well operations were installed and operated in accordance with the manufacturer's specifications or sound engineering practices?
- Did Crew contravene section 16(1)(a) of the DPR?
- If Crew contravened section 16(1)(a) of the DPR, was FMC, as Crew's contractor, directly or indirectly responsible for the act or omission that constituted the contravention?
- Did FMC exercise due diligence in its efforts to ensure that all tools and equipment used in well operations were installed and operated in accordance with the manufacturer's specifications or sound engineering practices?
- Did FMC contravene section 16(1)(a) of the DPR?

Section 37(1)(a) of the OGAA

- Did Crew fail to prevent spillage?
- Did Crew exercise due diligence in its efforts to prevent spillage?
- Did Crew contravene section 37(1)(a) of the OGAA?
- Did FMC fail to prevent spillage?
- Did FMC exercise due diligence in its efforts to prevent spillage?
- Did FMC contravene section 37(1)(a) of the OGAA?

Section 63 of OGAA

- If Crew is found to have contravened sections 9(1), 12(1) and 16(1)(a) of the DPR and/or section 37(1)(a) of the OGAA what if any, administrative penalty to impose?
- If FMC is found to have contravened sections 12(1) and 16(1)(a) of the DPR and/or section 37(1)(a) of the OGAA what if any, administrative penalty to impose?

Section 9(1) of the DPR:

Did Crew fail to ensure that, during well operations, reliably operating well control equipment was installed to control kicks, prevent blow-outs and safely carry out all well operations?

23. The permit for the Well identifies that Crew is the well permit holder. I accept that this is the case in the absence of any evidence to the contrary.
24. In order to make a determination under section 9(1) I must also be satisfied that the DTO wellhead comprised part of well control equipment. "Well control" is defined in the DPR as meaning control of the movement of fluids into or from a well. The evidence is consistent that the failure of the DTO wellhead resulted in the wellhead separating from the casing and leaving the production tubing open to atmosphere. This resulted in produced water flowing uncontrolled from the tubing and onto the wellsite. It is evident to me that the DTO wellhead was an important part of the well control equipment as it should have, when operating correctly, managed the control of produced water out of the well.
25. Crew hired FMC as its technical specialist to install the DTO system at the Well; however, the wellhead was not correctly installed. The FMC technicians failed to properly install the split retaining ring on the lower connection joining the casing head to the extension sleeve. A torque wrench was not used to tighten the set screws to the specified amount and there were no records to show that proper installation procedures had been followed. In an email dated March 13, 2017, Crew's D&C Manager indicated that Crew did not have any established policies or procedures in place at the time of the Incident pertaining to sign off confirmation that third party contractors were following the correct operation and installation methods. Current practice at the time was for wellsite supervisors to witness and record pressure tests as confirmation of correct installation and operation. These factors all contributed to the incorrect installation of the wellhead.
26. I must also consider if the failure occurred during well operations. "Well operation" is defined in the DPR as meaning the operation of drilling, completing, recompleting, intervening, re-entering, carrying out a workover, suspending or abandoning a well. The Incident Report provided by Crew identifies that the failure occurred during completion operations. I am therefore satisfied that the Incident occurred during well operations.
27. I find that Crew, as the well permit holder, failed to ensure that during well operations, reliably operating well control equipment was installed to control kicks, prevent blow-outs and safely carry out all well operations.

Did Crew exercise due diligence in its efforts to ensure that, during well operations, reliably operating well control equipment was installed to control kicks, prevent blow-outs and safely carry out all well operations?

28. Pursuant to section 62(5) of the OGAA, I may not find that Crew contravened section 9(1) of the DPR if Crew demonstrates to my satisfaction that it exercised due diligence to prevent the contravention. The test to be applied is whether Crew has demonstrated that it took all reasonable steps to prevent the contravention. Crew is not required to show that it took all possible or imaginable steps to avoid the contravention. The standard is not one of perfection, but rather of a reasonable person in similar circumstances.
29. In its Response, Crew indicated that 20 staff and consultants had attended training for one day at the FMC facility in Edmonton to get familiarized with the installation procedures for the DTO wellhead. A step by step demonstration of a wellhead rig up was given, as well as a video summary and question and answer session on installation and operation of the wellhead. This affirms that Crew was aware of the procedures and steps that were required to be taken to ensure that the equipment was installed correctly, including the torquing of the retaining ring and set screws.
30. A reasonable step Crew could have taken would have been to implement checklists and/or sign off procedures for both the FMC technicians and Crew personnel at the time of installation to confirm that the proper techniques had been executed to ensure the wellhead was correctly installed and operating reliably. Alternatively, or in addition to, Crew could have had a supervisor or manager oversee the installation to certify the procedures followed were to specification as shown to Crew at the training and demonstration given by FMC.
31. Crew has failed to satisfy me that it took all reasonable steps to prevent the contravention.

Did Crew contravene section 9(1) of the DPR?

32. Crew failed to comply with section 9(1) of the DPR. I am not satisfied that Crew exercised due diligence to prevent the contravention. As such, I find that Crew contravened section 9(1) of the DPR.

Section 12(1) of the DPR:

Did Crew fail to take all reasonable measures to minimize the risk of loss of well control?

33. As was discussed above, I have determined that Crew was both the well permit holder and that the failure of the DTO system resulted in the loss of well control. The remaining issue to determine in relation to section 12(1) is whether Crew took all reasonable measures to minimize the risk of the loss.
34. Although I note that Crew took some steps such as familiarizing themselves with the installation procedures of the DTO wellhead and identifying certain technical and installation issues, Crew did not describe any established policies or procedures that were in place at the time of the Incident regarding sign off of correct installation practices. This is a reasonable measure I would have expected.
35. Other reasonable measures that Crew could have taken would have been to have policies and procedures in place to assure effective communication was occurring between Crew and its technical specialists relating to the processes that were being followed during the installation and operation of the wellhead. Additionally, it would be reasonable to expect that Crew would have a

system of training and especially monitoring in place to ensure its personnel and third party contractors were adhering to the recognized and documented installation procedures.

36. I find that Crew failed to take all reasonable measures to minimize the risk of loss of well control.

Did Crew exercise due diligence in its efforts to take all reasonable measures to minimize the risk of loss of well control?

37. In a telephone conversation between Commission staff and a Crew Manager on March 15, 2017, it was indicated that Crew's due diligence consisted of audits of the contractor's compliance and safety management system and their regulatory system but that it did not shadow third party contractors to check and verify every action. Crew did not require that FMC provide a checklist or sign off procedure to document the steps taken to install the wellhead.

38. Taking all reasonable measures to minimize the risk of loss of well control would have included ensuring experienced and competent specialist technicians were completing the installation. In the Final 5-24 Wellhead Failure Report (the Failure Report) it stated that only one of the FMC technicians had been assessed as having practical experience in installing the DTO wellhead. The FMC employee that completed the initial installation was a Level III Technician but had completed no formal training on the installation of the DTO system so would still have been a Level I (the lowest competency level) on that particular aspect. This suggests that there were gaps in the experience, knowledge and training of the FMC technicians that completed the installation which directly led to the Incident occurring. Crew could have taken the necessary measures to verify the level of practical experience and competency the FMC Technicians possessed prior to installation and operation.

39. Crew has not satisfied me that it took all reasonable measures to minimize the risk of loss of well control.

Did Crew contravene section 12(1) of the DPR?

40. Crew failed to comply with section 12(1) of the DPR. I am not satisfied that Crew exercised due diligence to prevent the contravention. As such, I find that Crew contravened section 12(1) of the DPR.

If Crew contravened section 12(1) of the DPR, was FMC, as Crew's contractor, directly or indirectly responsible for the act or omission that constituted the contravention?

41. Section 12(1) of the DPR requires that **well permit holders** take all reasonable measures to minimize the risk of loss of well control. The Report includes the permit for the Well, which identifies Crew as the well permit holder. The identity of the well permit holder is undisputed in the evidence.

42. Although FMC is not the well permit holder, section 62(4) of the OGAA provides that if a person contravenes a provision, any other person who (a) is directly or indirectly responsible for the act or omission that constitutes the contravention, and (b) is a contractor, employee or agent of the person or of an other person described in paragraph (a) also contravenes the provision. As per the above, I have found that Crew contravened section 12(1). I also note that the Report identifies that FMC was a contractor of Crew. This does not appear to be in dispute and is confirmed by the following statement in the FMC Response: "The Incident involved a Drill Time Optimizing system (DTO) that FMC had supplied and installed." I accept that FMC was a contractor of Crew.

43. I must therefore consider whether FMC was directly or indirectly responsible for the contravention of Crew.
44. In its Response, FMC admitted that its technicians did not possess a copy of the Installation/Commissioning Procedure – Uniheads, DTO Wellhead System (Commissioning Procedure) on the wellsite during installation of the DTO wellhead and failed to record the date and initial each step of the process as delineated in the document. The technicians did not torque the retaining ring and set screws to the necessary requirements.
45. Taking all reasonable measures to minimize the risk of loss of well control would have included ensuring experienced and competent specialist technicians were completing the installation. There were gaps in the experience, knowledge and training of the FMC technicians that completed the installation. As a result, the installation was not completed correctly. These actions/omissions by FMC directly resulted in the contravention by Crew of section 12(1) of the DPR.

Did FMC exercise due diligence in its efforts to take all reasonable measures to minimize the risk of loss of well control?

46. FMC has not presented any evidence with regards to due diligence prior to the incident occurring. FMC has conceded that the Incident occurred as a direct result of its personnel not following the proper installation procedure and torquing method.
47. It is reasonable to expect that given the importance of the torquing requirements in the operation of the DTO wellhead, having and utilizing the Commissioning Procedure would have been mandatory for all technicians employed by FMC. In addition, technicians should have attended a more comprehensive training program and performed practical installation in a classroom setting prior to being dispatched into the field to install the wellhead on site.

48. FMC has failed to satisfy me that it took all reasonable steps to prevent the contravention.

Did FMC contravene section 12(1) of the DPR?

49. I find that FMC had direct responsibility for Crew's contravention of section 12(1) of the DPR. I am not satisfied that FMC exercised due diligence to prevent the contravention. As such, I find that FMC contravened section 12(1) of the DPR.

Section 16(1)(a) of the DPR:

Did Crew fail to ensure that all tools and equipment used in well operations were installed and operated in accordance with the manufacturer's specifications or sound engineering practices?

50. Although tools and equipment are not defined terms in either of the DPR or the OGAA, I accept, based on the plain meaning of "equipment", that the DTO wellhead is an important piece of equipment used for well operations (as the latter term is discussed above).
51. The manufacturer's specifications for the DTO wellhead were set out in the Commissioning Procedure and that document recommended that a qualified FMC service representative be used for any job pertaining to the system. Each section in the Commissioning Procedure contained a place to initial, enter the date and add specific information following the completion of each step. The FMC employees did not have a copy of this document on site and therefore, did not utilize the function or complete each section as it was intended.

52. The specifications state that the split retaining ring requires torquing to 200-300 ft-lbs and that the gap between the lock nut and the casing housing should be measured and recorded. Once this step was complete, four set screws should be installed and torqued to 200 ft-lbs to prevent the lock nut from vibrating loose. Throughout the Commissioning Procedure warnings are given for failure to follow the correct procedures.
53. Crew acknowledged: that proper manufacturer's specifications for installation of the wellhead were not followed by the FMC Technicians; that the split ring and set screws were not adequately torqued; and that there were no records to indicate correct procedures were followed.
54. Therefore, I find that Crew failed to ensure that all tools and equipment used in well operations were installed in accordance with the manufacturer's specifications or sound engineering practices.

Did Crew exercise due diligence in its efforts to ensure that all tools and equipment used in well operations were installed and operated in accordance with the manufacturer's specifications or sound engineering practices?

55. In its Response, Crew states that it demonstrated due diligence prior to and during the installation of the DTO wellhead by ensuring its consultants and staff were made aware of and familiar with the installation procedures of the DTO wellhead and having personnel attend a one day training and review at the FMC facility. Crew maintains it proactively identified technical issues and worked with FMC to optimize installation methods when running the production casing string and diligently identified installation issues that FMC responded to and confirmed that correct installation in the field had occurred.
56. A reasonable step that Crew could have taken to prevent the contravention would have been to use the Commissioning Procedure document as it was intended and have the FMC Technicians initial and date each step of the process during installation and have a review and final sign off done by Crew management to ensure all the required actions had been completed. Given that Crew was aware of and familiar with the requirements for proper installation including the need for torquing the wellhead to a particular degree, providing additional supervision and oversight of the installation process was a reasonable step that Crew could have taken to confirm the equipment was installed to the manufacturer's specifications.
57. Therefore, I find Crew failed to exercise due diligence in its efforts to ensure all tools and equipment used in well operations were installed and operated in accordance with the manufacturer's specifications or sound engineering practices.

Did Crew contravene section 16(1)(a) of the DPR?

58. Crew failed to comply with section 16(1)(a) of the DPR. I am not satisfied that Crew exercised due diligence to prevent the contravention. As such, I find that Crew contravened section 16(1)(a) of the DPR.

If Crew contravened section 16(1)(a) of the DPR, was FMC, as Crew's contractor, directly or indirectly responsible for the act or omission that constituted the contravention?

59. Section 16(1)(a) of the DPR requires **well permit holders** to ensure that all tools and equipment used in well operations are installed and operated in accordance with the manufacturer's specifications or sound engineering practices. Again, FMC is not the well permit holder. I must therefore consider, in accordance with section 62(4) of the OGAA, if FMC, as Crew's contractor, had a role (direct or indirect) in the contravention of section 16(1)(a).

60. The Commissioning Procedure outlined the manufacturer's specifications for installation of the DTO Wellhead. FMC technicians admittedly did not follow those procedures which resulted in the DTO wellhead not being installed in accordance with the manufacturer's specifications.
61. I find that FMC had direct responsibility for the failure to ensure that the tools and equipment used in well operations were installed in accordance with the manufacturer's specification or sound engineering practices.

Did FMC exercise due diligence in its efforts to ensure that all tools and equipment used in well operations were installed and operated in accordance with the manufacturer's specifications or sound engineering practices?

62. FMC does not raise the defense of due diligence; however, states it has implemented additional measures to ensure correct installation procedures are adhered to in the future. These measures include: a quality management system that outlines specific requirements for personal competence; training and awareness; detailed document requirements; and service performance validation. FMC technicians are provided with a copy of the Commissioning Procedure and a wellhead service job package that must be used as a condition of employment. Review of contingency plans are completed, management change forms are utilized and field service assessments are completed.
63. FMC states that technicians will now have to attend formal classroom training and instruction and are provided on the job training. Torque requirements and installation procedures are supplied to employees, competence assessments are completed for each aspect of wellhead installation at the FMC training facility and further assessment is done on individual sites. At present, more emphasis is put on the critical importance of ensuring the proper specifications for installation are followed.
64. The Commission acknowledges FMC's attempt to implement actions to prevent another occurrence; however, it is reasonable to expect that as the leading technical specialists for the DTO wellhead, FMC should have had, at minimum, a number of these measures in place prior to the Incident.
65. FMC has failed to satisfy me that it exercised due diligence in its efforts to ensure that all tools and equipment used in well operations were installed and operated in accordance with the manufacturer's specifications or sound engineering practices.

Did FMC contravene section 16(1)(a) of the DPR?

66. I find that FMC had direct responsibility for the contravention of section 16(1)(a) of the DPR. I am not satisfied that FMC exercised due diligence to prevent the contravention. As such, I find that FMC contravened section 12(1) of the DPR.

Section 37(1)(a) of the OGAA:

Did Crew fail to prevent spillage?

67. On January 23, 2017, Crew reported the Incident to the Commission stating it had experienced a complete wellhead collapse and failure which resulted in the Well free-flowing water and sand – hydraulic fracturing returns. Produced water poured out of the casing, overflowing the cellar and spilling out onto the lease pad. Crew submitted a post incident report on April 3, 2017 indicating that an estimated 250 m³ had been spilled.

68. Spillage is defined in section 1 of OGAA Section as “petroleum, natural gas, oil, solids or other substances escaping, leaking or spilling from: (a) a pipeline, well, shot hole, flow line, or facility, or (b) any source apparently associated with any of those substances”. In this circumstance the substance that spilled from the Well was produced water.

69. Therefore, I find that Crew failed to prevent spillage.

Did Crew exercise due diligence in its efforts to prevent spillage?

70. In its Response, Crew acknowledged the findings and conclusion outlined in the Report. Crew recognized in its discussion and correspondence with Commission staff that an established and documented procedure of review, monitoring and sign off of installation processes was a reasonable step that ought to have been taken prior to the Incident occurrence.

71. For these reasons, Crew has not demonstrated to my satisfaction that it exercised due diligence to prevent the contravention.

Did Crew contravene section 37(1)(a) of the OGAA?

72. I find that Crew failed to prevent spillage. I am not satisfied that Crew exercised due diligence to prevent the contravention. As such, I find that Crew contravened section 37(1)(a) of the OGAA.

Did FMC fail to prevent spillage?

73. Section 37(1)(a) requires a permit holder, an authorization holder and a person carrying out an oil and gas activity to prevent spillage. With respect to the Incident, I find that FMC was a person carrying out an oil and gas activity. The definition of oil and gas activity in section 1 of the OGAA includes the exploration for and development of petroleum, natural gas or both. By installing the DTO wellhead on behalf of Crew, FMC was involved in the development of petroleum or natural gas.

74. As discussed above, approximately 250 m³ of produced water spilled from the Well.

75. The Report, as well as the FMC Response, reference the Failure Investigation produced by FMC on June 12, 2017 which identifies that the set screws in the DTO were not torqued adequately as per the wellhead installation procedure. This resulted in the Incident. The DTO wellhead was supplied and installed by FMC. I find that the failure by FMC to follow its own documented installation procedure and process was at least partially responsible for the spillage.

76. Therefore I find that FMC failed to prevent spillage.

Did FMC exercise due diligence in its efforts to prevent spillage?

77. In its Response, FMC did not provide any evidence to demonstrate it exercised due diligence to prevent spillage. Although FMC does not contest the circumstances surrounding the Incident, no formal explanation of why FMC personnel did not follow the Commissioning Procedure has been offered.

78. A reasonable step that FMC could have taken prior to the Incident would have been to implement a comprehensive training program to ensure that all technicians sent out to the field had practical experience and knowledge of the installation requirements. Alternatively, at least one senior technician could be assigned to all job sites to provide monitoring and guidance until such time as junior technicians can be certified as fully competent. In addition, a sign off practice could have

been established to verify and acknowledge that the appropriate torquing had taken place and all requirements for installation had been completed.

79. For the above reasons, FMC has failed to satisfy me it took all reasonable steps to prevent spillage.

Did FMC contravene section 37(1)(a) of the OGAA?

80. I have found that FMC failed to prevent spillage and further did not act diligently to prevent that spillage. As such, I find that FMC contravened section 37(1)(a) of the OGAA.

Section 63 of the OGAA

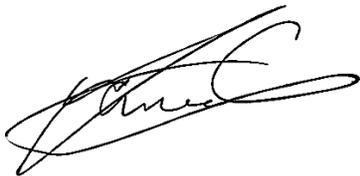
If Crew is found to have contravened sections 9(1), 12(1) and 16(1)(a) of the DPR and/or section 37(1)(a) of the OGAA what if any, administrative penalty to impose?

81. Section 63 of the OGAA sets out factors that the Commission must take into consideration when determining whether or not to impose an administrative penalty. In the following paragraphs, I consider the applicability of those factors to this contravention.
82. There is no evidence of any previous contraventions, administrative penalties or orders issued to Crew.
83. The contravention was of moderate gravity and magnitude. The spillage was cleaned up and remediated; however, the wellhead collapse and failure resulted in an uncontrolled flow which posed a serious safety risk and was classified as a Level 3 Incident.
84. There was no harm to others as a result of this incident.
85. The contravention was not repeated or continuous and Crew took immediate measures to correct and mitigate following the Incident.
86. The contravention was not deliberate but attributed to improper installation of the DTO wellhead.
87. Crew derived no economic benefit from the contravention.
88. Crew immediately activated its emergency response plan and responded quickly following the Incident to control the well, which it had under control within 12 hours and subsequently remediated the spillage.
89. In consideration of the foregoing, I find that Crew contravened sections 9(1), 12(1) and 16(1)(a) of the DPR and section 37(1)(a) of the OGAA. I am imposing an administrative penalty of \$10,000.

If FMC is found to have contravened sections 12(1) and 16(1)(a) of the DPR and/or section 37(1)(a) of the OGAA what if any, administrative penalty to impose?

90. There have been no previous contraventions, administrative penalties or orders issued to FMC.
91. The contravention was of moderate gravity and magnitude. The wellhead collapse and failure resulted in an uncontrolled flow and spillage that posed a serious safety risk and was classified as a Level 3 Incident.
92. There was no harm to others as a result of this incident.

93. The contravention was not repeated or continuous and FMC worked with Crew to remediate and investigate the failure.
94. The contravention was not deliberate but attributed to a lack of training and improper installation of the DTO wellhead, in a situation where FMC acknowledged they are one of the leading technical specialists for the DTO wellhead.
95. FMC derived no economic benefit from the contravention but rather incurred significant expenses that must be paid to Crew.
96. FMC assisted Crew with reclamation of the site following the Incident, performed an investigation into the root cause and has subsequently implemented a quality management system and mitigation measures in its efforts to prevent a similar contravention.
97. In consideration of the foregoing, I find that FMC contravened sections 12(1) and 16(1)(a) of the DPR and section 37(1)(a) of the OGAA. I am imposing an administrative penalty of \$10,000.



Lance Ollenberger
Vice President, Operations
BC Oil and Gas Commission

Date: July 23, 2018