



This form will report compliance with your permit as determined by an Environment Agency officer

Site	Preston New Road Exploration Site EPR/AB3101MW		Permit Ref	UP3431VF		
Operator/ Permit holder	Cuadrilla Bowland Limited					
Date	22/10/2018		Time in	09:15	Out	17:30
What parts of the permit were assessed	Hydraulic Fracture Plan compliance, management of natural gas					
Assessment	Site Inspection	EPR Activity:	Installation	X	Waste Op	Water Discharge
Recipient's name/position	HSE&P Manager					
Officer's name	EA Officers		Date issued	12/11/2018		

Section 1 - Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations. A detailed explanation and any action you may need to take are given in the "Detailed Assessment of Compliance" (section 3). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our [Compliance Classification Scheme](#) (CCS). CCS scores can be consolidated or suspended, where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your [local office](#).

Permit Conditions and Compliance Summary

Condition(s) breached

Permit Condition	Compliance	Condition(s) breached
a) Permitted activities	1. Specified by permit	A
b) Infrastructure	1. Engineering for prevention & control of pollution	N
	2. Closure & decommissioning	N
	3. Site drainage engineering (clean & foul)	N
	4. Containment of stored materials	N
	5. Plant and equipment	N
c) General management	1. Staff competency/ training	N
	2. Management system & operating procedures	C4
	3. Materials acceptance	N
	4. Storage handling, labelling, segregation	N
d) Incident management	1. Site security	N
	2. Accident, emergency & incident planning	N
e) Emissions	1. Air	A
	2. Land & Groundwater	A
	3. Surface water	N
	4. Sewer	NA
	5. Waste	N
f) Amenity	1. Odour	A
	2. Noise	N
	3. Dust/fibres/particulates & litter	A
	4. Pests, birds & scavengers	N
	5. Deposits on road	N
g) Monitoring and records, maintenance and reporting	1. Monitoring of emissions & environment	A
	2. Records of activity, site diary, journal & events	N
	3. Maintenance records	N
	4. Reporting & notification	A
h) Resource efficiency	1. Efficient use of raw materials	N
	2. Energy	N

KEY: C1, C2, C3, C4 = CCS breach category (* suspended scores are marked with an asterisk), A = Assessed (no evidence of non-compliance), N = Not assessed, NA = Not Applicable, O = Ongoing non-compliance – not scored

Number of breaches recorded	1	Total compliance score (see section 5 for scoring scheme)	0.1
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If the Total No Breaches is greater than zero, then please see Section 3 for details of our proposed enforcement response

Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- the part(s) of the permit that were assessed (e.g. maintenance, training, combustion plant, etc)
- where the type of assessment was 'Data Review' details of the report/results triggering the assessment
- any non-compliances identified
- any non-compliances with directly applicable legislation
- details of any multiple non-compliances
- information on the compliance score accrued inc. details of suspended or consolidated scores.
- details of advice given
- any other areas of concern
- all actions requested
- any examples of good practice.
- a reference to photos taken

This report should be clear, comprehensive, unambiguous and normally completed within 14 days of an assessment.

This was the third of a series of visits assessing hydraulic fracturing activities for Well 1z.

Inspection topics:

- Microseismic Monitoring
- Methane Levels
- Daily morning reports

Microseismic Monitoring

Fracturing at stage 13 was performed during the inspection. Prior to fracturing commencing, EA officers attended the safety briefing for Cuadrilla staff and contractors. Following this, the microseismic data was available to view throughout the fracturing operation along with fracturing fluid flow and other parameters. The frac started at approximately 11am and began with a mini frac (no proppant) followed by the main frac, injecting a total of 384.4m³ of fluid. Four frac pumps were operating to provide the required frac fluid injection pressure.

Microseismic data was in the range of -2.66 to -0.21 at 3pm following this main frac. Some data was still appearing due to fractures in the formation closing. The decision making, storage and retention of this data was reviewed and found to be sufficient to allow for retrospective interpretation.

The data is stored including the review of each microseismic plot for a quality control check. All data is retained and it is important that these are held by Cuadrilla to meet permit requirements. Repositioning of the required microseismic activity following QC checks of p & s arrivals could be seen during the frac.

All downhole microseismic geophones were shown to be working and communicating. A QC signal check is carried out in the morning to demonstrate good communication with the downhole geophones. Confidence is high with geophone operation from picking up the location of the frac sleeve closing during the morning.

Microseismic data was reviewed for stage 3 on Thurs 18th and stage 12 on Friday 19th. Trailing events were picked up for stage 3, this contributed to the decision to move to stage 12. All microseismic activity was displayed on one diagram and confirmed that all fractures remained within the permit boundary.

Methane levels

On Friday 19th October at 10:40 a very low level of methane was measured on the site boundary at 11.74 parts per million (ppm) for a period of 5 minutes. Background methane is typically recorded between 1.5-3ppm when well operations are not performed including hydraulic fracturing and flow back although, background levels have been recorded above 11ppm. We were informed on site by Cuadrilla staff that well operations at the time involved flowing back injection fluid. We acknowledge that the level of methane detected was significantly below anything that would have an impact on human health or constitute a risk of explosion. As expected, it was not picked up on personal gas alarms and lasted a short period of time

In reviewing process management we understand that the source of the recorded methane on the 19th October was the use of specific tanks in managing the return fluid to the surface where entrained gas was not anticipated. In this respect, we consider that the process set up does not conform to the wording of section 2.3 & 4.5 of the Waste Management Plan (WMP).

Section 2.3 of the WMP states "*Between stages of hydraulic fracturing a mixture of injected hydraulic fracturing fluid and any produced fluid present, which we refer to together as flowback fluid, will return up the wellbore to the surface lifted by the release of pressure in the well. This flow back fluid will be captured and stored in enclosed containers and subsequently reused wherever possible*".

The tanks used in this operation were not enclosed and could be considered a potential emission point.

Section 4.5 states that "*flow back shall be stored at the surface in enclosed steel containers on top of the well pad membrane within the perimeter fence line.*"

Due to the low levels of methane recorded we have categorised this as a Category 4 breach of permit condition 2.3.1(a) which states:

"The activities shall, subject to the condition of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency".

There is currently no reference to written procedures in the use of these tanks in the Waste Management Plan. Further information is required for the management of gas at the choke during the earlier stages of flowback between hydraulic fracturing stages.

Action: The operator must ensure that operations are consistent with procedures set out and agreed in the Waste Management plan. We require further details of the use of these tanks to enable us to fully assess if their use is appropriate. This should include details of the configuration, use and control.

Any revision to the WMP must show how any emissions are controlled. The overall aim being to minimise emissions that should only occur for safety purposes.

Since the 19th October the company have provided information requested and the Environment Agency has been reassured by Cuadrilla that no further release from these tanks has been recorded. Flowback containing small quantities of natural gas has been sent through the separator and subsequently to the flare. The issue is currently under review.

Daily Morning Reports

The daily morning reports for activities taking place on 18th - 21st October were reviewed and contained the following information.

- 18/10/18 - main frac of 393.8m³ occurred containing injection water with proppant. Flow back produced (97.03m³) stored for reuse.

Microseismic events showed plots below the lateral section of the well to a height of 106.87m and laterally to a length of 193.87m.

- 19/10/18 - a frac of stage 12 of 33.9m³ containing slickwater without proppant. There was some difficulty injecting in to the formation.
- 20/10/18 - main frac of stage 12 of 221.6m³ containing injection water with proppant. Flow back volume of 22.49m³ stored for reuse.

Microseismic events showed plots below the lateral section of the well to a height of 98.9m and laterally to a length of 201.6m

- 21/10/18 - No operations were performed.
- 22/10/18 - main frac of stage 13 of 384.8m³ that contained injection water with proppant. Flow back volume of 33.32m³ stored for reuse.

Microseismic events showed plots below the lateral section of the well to a height of 127.08m and laterally to a length of 189.83m

No Traffic Light System events were noted during fracturing operations and there had not been a breach of the sub-surface permit boundary on these reports.



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Section 3- Enforcement Response **Only one of the boxes below should be ticked**

<p>You must take immediate action to rectify any non-compliance and prevent repetition. Non-compliance with your permit conditions constitutes an offence and can result in criminal prosecutions and/or suspension or revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below.</p>	
<p>Other than the provision of advice and guidance, at present we do not intend to take further enforcement action in respect of the non-compliance identified above. This does not preclude us from taking enforcement action if further relevant information comes to light or advice isn't followed.</p>	X
<p>In respect of the above non-compliance you have been issued with a warning. At present we do not intend to take further enforcement action. This does not preclude us from taking additional enforcement action if further relevant information comes to light or offences continue.</p>	
<p>We will now consider what enforcement action is appropriate and notify you, referencing this form.</p>	

Section 4- Action(s)

Where non-compliance has been detected and an enforcement response has been selected above, this section summarises the steps you need to take to return to compliance and also provides timescales for this to be done.

Criteria Ref.	CCS Category	Action Required / Advised	Due Date
See Section 1 above			
C2	C4	The operator must ensure that the procedures set out in the Waste Management Plan are followed and update the Waste Management Plan to reflect the on site set up and how flowback containing small quantities of natural gas will be managed to minimise cold venting.	12/11/2018

Section 5 - Compliance notes for the Operator

To ensure you correct actual or potential non-compliance we may

- advise on corrective actions verbally or in writing
- require you to take specific actions in writing
- issue a notice
- require you to review your procedures or management system
- change some of the conditions of your permit
- decide to undertake a full review of your permit

Any breach of a permit condition is an offence and we may take legal action against you.

- We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required.
- Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and or suspension or revocation of the permit.
- A civil sanction Enforcement Undertaking (EU) offer may also be available to you as an alternative enforcement response for this/these offence(s).

See our Enforcement and Civil Sanctions guidance for further information

This report does not relieve the site operator of the responsibility to

- ensure you comply with the conditions of the permit at all times and prevent pollution of the environment
- ensure you comply with other legislative provisions which may apply.

Non-compliance scores and categories

CCS category	Description	Score
C1	A non-compliance which could have a major environmental effect	60
C2	A non-compliance which could have a significant environmental effect	31
C3	A non-compliance which could have a minor environmental effect	4
C4	A non-compliance which has no potential environmental effect	0.1

Operational Risk Appraisal (Opra) - Compliance assessment findings may affect your Opra score and/or your charges. This score influences the resource we use to assess permit compliance.

Section 6 – General Information

Data protection notice

The information on this form will be processed by the Environment Agency to fulfill its regulatory and monitoring functions and to maintain the relevant public register(s). The Environment Agency may also use and/or disclose it in connection with:

- offering/providing you with its literature/services relating to environmental matters
- consulting with the public, public bodies and other organisations (e.g. Health and Safety Executive, local authorities) on environmental issues
- carrying out statistical analysis, research and development on environmental issues
- providing public register information to enquirers
- investigating possible breaches of environmental law and taking any resulting action
- preventing breaches of environmental law
- assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Information Regulations request.

The Environment Agency may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.

Disclosure of information

The Environment Agency will provide a copy of this report to the public register(s). However, if you consider that any information contained in this report should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within 28 days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.

Customer charter

What can I do if I disagree with this compliance assessment report?

If you are unable to resolve the issue with your site officer, you should firstly discuss the matter with the officer's line managers. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 03708 506 506 (Mon to Fri 08.00–18.00) and ask for the Customer Contact team or send an email to enquiries@environment-agency.gov.uk. If you are still dissatisfied, you can make a complaint to the Ombudsman. For advice on how to complain to the [Parliamentary and Health Service Ombudsman](#), phone their helpline on 0345 015 4033.