



Ministry  
of Defence

Ministry of Defence  
Defence Infrastructure Organisation  
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Our Ref: 407/FYLD/03

Your Ref: NYM/2017/0533/CVC

Date: June 20<sup>th</sup> 2018

Rob Smith  
Senior Minerals Planner  
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Dear Rob

**RE: APPLICATION FOR VERIFICATION CHECK OF CONDITION 30 OF PLANNING APPROVAL NYM/2014/0676/MEIA AT WOODSMITH MINE (FORMERLY DOVE'S NEST FARM & HAXBY PLANTATION), SNEATONTHORPE, GRID REFERENCE 489495 505142**

Further to your e-mail dated 19 February to the Ministry of Defence (Fylingdales Safeguard), ref NYM/2017/0892/CVC regarding the application to discharge condition 30 (Blasting and Vibration Management Plan), relating to planning consent Ref: NYM/2014/0676/MEIA, Details of how Sirius intends to comply with condition 31 (installation, maintenance and operation of equipment) and condition 32 (ground vibration during construction/ blasting) are also included in the document. I am writing to provide comments on the Blasting and Vibration Management Plan (BVMP) submitted by Sirius Minerals Ltd. (SML) following our review that has specifically focussed on the RAF Fylingdales facility.

The overall observation from the review is that whilst the BVMP provides a good basis for the establishment of on-going monitoring and management of vibration, the submitted document lacks detail in certain areas that require the provision of further information.

We therefore suggest the BVMP would allow the condition to be conditionally discharged so that appropriate control, via the planning system, remains in place for additional detail to be agreed between SML and MOD. The additional details that require agreement from a MOD perspective are listed below:

NYMNPA

20/06/2018

## **Monitoring Instrumentation and Siting**

The BVMP proposes the use of a Syscom MR3000C to monitor vibration, which is welcomed. However, as written it is not clear whether it is proposed to use the optional specification to detect vibration in the range 0.5  $\mu\text{m/s}$  to 100 mm/s. This is desirable and this point should be clarified.

The Syscom MR3000C has several modes of operation and the BVMP does not indicate how the equipment will be set up. It should be clarified whether background, timed or trigger recording (or a combination thereof) will be used. The BVMP should also detail equipment settings such as the period and duration of background recording files, the pre- and post-event durations for triggered recordings, and the triggers to initiate recordings (e.g. whether vibration in any individual axis, or all axes, must exceed a proposed threshold value).

The BVMP should provide further detail on how remote access to the MR3000C will be facilitated. RAF Fylingdales typically has poor mobile phone reception and so it might be necessary to use an external Global System for Mobile communications (GSM) antenna or other equipment to ensure that (1) results can be viewed in a timely manner after each blast and (2) alerts issued by the equipment regarding breaches of threshold levels are received. Other avenues that could be explored are the equipment's wired local area network (LAN) and Wi-Fi capabilities.

It is understood that shaft construction activity has commenced on site. In this context the wording of Section 2.4 should be updated to state that the seismograph will be established well in advance of any blasting activity in order to establish a suitable baseline from which background vibration levels can be established.

## **Blast Vibration Monitoring**

Paragraph 3.8 of the BVMP indicates that the peak component particle velocity (the greatest value in any axis) will be reported. It is recommended that the peak particle velocity for each of the longitudinal, transverse and vertical components is measured and reported (as set out in Section 4.1 (b) and as indicated in monitoring report template Appendix 1 – Table 2). It is appropriate to also report the peak true resultant particle velocity (the greatest instantaneous vector sum of all three axis) associated with each blast. This will often, but not always, occur at the same time in the recording as the peak component particle velocity.

## **Blast Monitoring Results**

In addition to the summary information set out in paragraph 4.1, the 'event' and 'background' data files (i.e. those with '.XMR' and '.BMR' file extensions) from the MR3000C shall be retained, to provide traceable evidence of the reported levels and enable further post processing if necessary in the future. If a blast exceeds 0.023 mm/s when measured at RAF Fylingdales then the associated event ('.XMR') file shall be provided to the MOD along with the monitoring report.

In relation to paragraph 4.1 it is not clear what 'each monitoring exercise' will comprise. Sirius Minerals PLC should confirm whether this means the monitoring associated with each individual blast. The timescales for delivering the results are not stated, and they should be sent to the MOD as a matter of course rather than on request. We recommend that copies of the Blast Vibration Monitoring Reports for RAF Fylingdales should be provided to MOD on a monthly basis, except in the case when the stated vibration value is exceeded. If the stated vibration value is exceeded the report should be submitted to the MOD within 12 hours.

The MOD requests remote access to the MR3000C so that it may review monitoring data stored in the machine at its convenience.

A two year retention period for the monitoring data is considered short; typically vibration monitoring data is stored for much longer periods in case of problems that may take longer to develop. It is suggested that the reports, event and background data files arising from the vibration monitoring at RAF Fylingdales are retained for a period of seven years after blasting associated with Woodsmith Mine has ceased.

### **Blast Vibration Monitoring Report Template**

The proposed Blast Vibration Monitoring Report template for RAF Fylingdales is provided in Appendix 1 of the BVMP, and it is recommended that:

- i) Section 3.0: includes a section on instrumentation calibration and the calibration certificate should be provided in an Appendix to each monitoring report.
- ii) Section 3.2: includes an instrument serial number in the table, which can then be cross-checked against the calibration certificate.
- iii) Location maps: include a location map for the monitoring location (showing the location relative to the mine site) and a detailed location map for the monitoring instrument at RAF Fylingdales.
- iv) Table 1: Add Blast Location (national grid co-ordinates); Blast Depth (metres below ground level (mbgl)); and Distance from Blast Location to RAF Fylingdales Monitoring Station (m)

### **Other matters**

The procedure / specific actions to be implemented if the stated vibration limit is exceeded are not clear. As this is a critical aspect of Condition 30 it is recommended that this is addressed in a new section – *Section 5.0 – Contingency Plan: Breach of Vibration Limit*. This should detail the measures to be implemented as per the requirements of condition 30:

- i) Procedure for communication of the breach to MOD and the MPA
- ii) Details of specific actions to be taken if the stated vibration level of 0.023 mm/sec is exceeded.
- iii) Technical changes to the blasting / mining methods to ensure the blasting operations comply with the stated vibration level. (Note: It is envisaged that blasting operations would be suspended until these measures are reviewed by MOD / NYMNPA.)

I trust the above provides enough information for us to take this matter forward, and look forward to hearing from you in due course.

Yours sincerely

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