MEMORANDUM

Mandated legal requirements relating to the AWS Alarm & Indicator Units and AWS Indicator Units

This Memorandum relates to the RSSB briefing paper entitled "Luminosity issues associated with 'AWS Alarm & Indicator Units' and 'AWS Indicator Units'", Issue 2 (March 2016).

Following the production and circulation of the above briefing paper, the HSE (Health and Safety Executive) has reviewed its content and confirmed that the AWS 'sunflower', when painted with tritium-based material, shall comply with the requirements set out in the Ionising Radiations Regulations 1999 (IRR99). Initial indications are that circa 5000 devices of this type may be in circulation in the UK rail industry.

It should be noted that there is no radiation risk to the end user of these devices whilst the yellow paint on the 'sunflower' disc remains sealed within its housing. Companies required to dismantle the device for repair will need to ensure appropriate measures are put in place to mitigate the radiation risk to their employees and the environment.

The HSE actively enforces these regulations, which require certain mandatory actions from "radiation employers". In this instance, this includes TOCs, FOCs, RoSCos, train maintainers, distributors and repair service suppliers. Following a meeting with the HSE held on 04 April 2016, they appreciate the magnitude of the issue and have therefore informally agreed to allow rail companies in contact with this variant of the device until 04 July 2016 to comply with the regulations.

It is not clear when the device is fitted in the cab whether it contains tritium paint. This can only be established by cross-checking the serial number and modification number located on the side of the device against the details contained in the briefing paper. Further, there is a risk due to shortfalls in configuration control at the repairers that all devices must be considered as containing tritium unless proven to be otherwise.

For those companies who may have these devices four options exist:

1. Replace the device with a new electro-mechanical device which does not contain the tritium paint at a cost of circa £1000 per unit.

2. Return the device to the supplier for potential upgrade to an LED based variant at a cost of circa £500 per unit. This will require the engineering change process to be followed.

3. Purchase a new LED based variant at cost of circa £1000 per unit. This will require the engineering change process to be followed.

The options above avoid the ongoing need to comply with the regulations and will have long-term maintenance/reliability benefits. However, as a consequence of the long lead time to manufacture and install replacement devices, notification to the HSE will be required, together with the actions identified below:

4. Continue to use these devices and change them out through natural attrition. Whilst these devices remain in service there is likely to be a requirement to undertake periodic radiation testing.

The legal obligations contained within IRR99 include:

- Notification to the HSE – all affected rail companies shall do this as a first step. There is an online form on the HSE website: here. See the attached example for guidance.
- Risk assessment – there shall be a risk assessment in place which should be reviewed periodically. Refer to the template risk assessment in the RSSB briefing paper. (In the event of breakage to the housing, exposing the 'sunflower' disc, the HSE suggests that stepping away and opening windows may suffice.). It is for individual companies to assess any additional risks posed by the use of the devices in their workplace which are not covered in the template. The risk assessment shall also consider loss, theft, fire etc.
- Contingency plans – those companies who are required to dismantle the device shall have a contingency plan in place if their risk assessment concludes that a radiation accident is reasonably foreseeable.
- Procedural controls (or Local Rules) should be drawn up where identified by the risk assessment, which detail the key working instructions for managing the devices.
- Appropriate training in radiation protection must be provided to employees including understanding the technical and administrative requirements of the Regulations (IRR99).
- The companies shall appoint Radiation Protection Supervisor(s) to help meet the requirement of the Regulations (IRR99) and take advice from a Radiation Protection Adviser (RPA). RSSB is endeavouring to seek the advice of an RPA on behalf of their company.
- 'Radiation employers' shall co-operate with each other where employees are exposed to the risk associated with this device.
- Storage and signage. When the devices are not installed they must be placed in a safe storage area which is clearly labelled as containing radioactive devices.
- The regulations require that regular testing for leakage of radioactive material (or leak test) is undertaken at suitable intervals, not exceeding 24 months. The test should be conducted in accordance with ISO 9978 "Radiation protection – Sealed radioactive sources – Leakage test methods". An application to the HSE for an exemption is being considered by RSSB on behalf of the industry. This will be based on the test results obtained from testing up to 10% of known tritium-containing devices. It is anticipated the cost associated with this testing will be circa £100 - £150 per test. This cost is likely to be met by the 'radiation employers'.

As the electro-mechanical AWS alarm and indicator unit may contain tritium they should all be regarded as containing radioactive material. The keeping and use of radioactive material and the accumulation and disposal of radioactive waste is regulated by the Environment Agency (in England). Because of the nature of the potential radioactive material within a device, the devices can be kept and used on site without a need for an environmental permit from the Agency. Under

the exemption the devices must be kept secure when not installed and any losses should be reported to the Agency.

When considering disposal, disposal of these devices is straightforward, as detailed below:

- One device can be disposed of per 0.1 m^3 of normal refuse (EWC Code 20.03.01) to go to landfill. **Under no circumstances** should it be disposed of as WEEE (Waste Electrical and Electronic Equipment).

The Office for Nuclear Regulation (ONR) regulates the transport of radioactive material (for Class 7, i.e. radioactive, goods). Compliance is met by:

- Transporting the devices as an "Excepted Package" in accordance with The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 ("CDG 2009").

As a consequence of the HSE's involvement in this issue, the HSE has suggested that employers should also consider the other occupational health risk associated with sources of ionising radiation that may affect their employees, e.g.:

- Americium-241 isotope, commonly found in ionisation-type smoke detectors; and
- Radon gas that may be found in tunnels and basements of buildings. Some parts of the country are at higher risk than others, due to the presence of naturally occurring radioactive material within the ground.

Sources of non-ionising radiation may also be in the workplace such as optical radiation and electromagnetic fields. Employers are required to ensure that these sources are managed accordingly. These are not subject to the requirements of IRR99 etc.

Memorandum produced by the RSSB AWS Working Group on behalf the Train Control Technical Sub Group (TCTSG).

21 April 2016

Example of the HSE notification web form "IRR6", populated for guidance:

HSE

Health and Safety Executive

The Ionising Radiations Regulations 1999

IRR6 - Notification of work with ionising radiation

Zoom 100% ▾ KS i ?

Please note - this form is for the notification of work with ionising radiation only.

Radiation incident reports (required under Ionising Radiations Regulation 25, 30 or 32) and HIRE assessment reports (required under Radiation Emergency Preparedness and Public Information Regulations) should be e:mailed to: irrnot@hse.gsi.gov.uk.

Follow the guidance provided on the HSE website: http://www.hse.gov.uk/riddor/report.htm if you intend to submit a RIDDOR notification in relation to a radiation incident.

*What is being notified? Work with ionising radiation for the first time (other than the above) ▾

*Into which category do the source/sources of ionising radiation fall (select all that apply)?

☑ Sealed source ☐ Unsealed radioactive substance ☐ Electrical equipment ☐ An atmosphere containing the short lived daughters of radon 222

About you

*Title	*Forename	*Family Name
Mr	Joseph	Bloggs

*E-Mail: joseph.bloggs@lms.co.uk

Phone No: 01234 567890

About the organisation undertaking the work

*Organisation Name: London, Midland and Scottish Railway

Address Line 1: *(eg building name)*

Address Line 2: Stanier Way *(eg street)*

Address Line 3: *(eg district)*

*Town: DERBY

County: Derbyshire

*Post Code: DE1 2RU ☑ Remember me ?

Organisation contact details (where you, as the notifier, are not the organisation contact)

E-Mail:

Phone No:

*What is the nature of the organisation's business?

Train operating company

Premises where (or from where) the work activity is to be carried out

☐ Organisation address only ☑ Organisation address and other premises ☐ Other premises only

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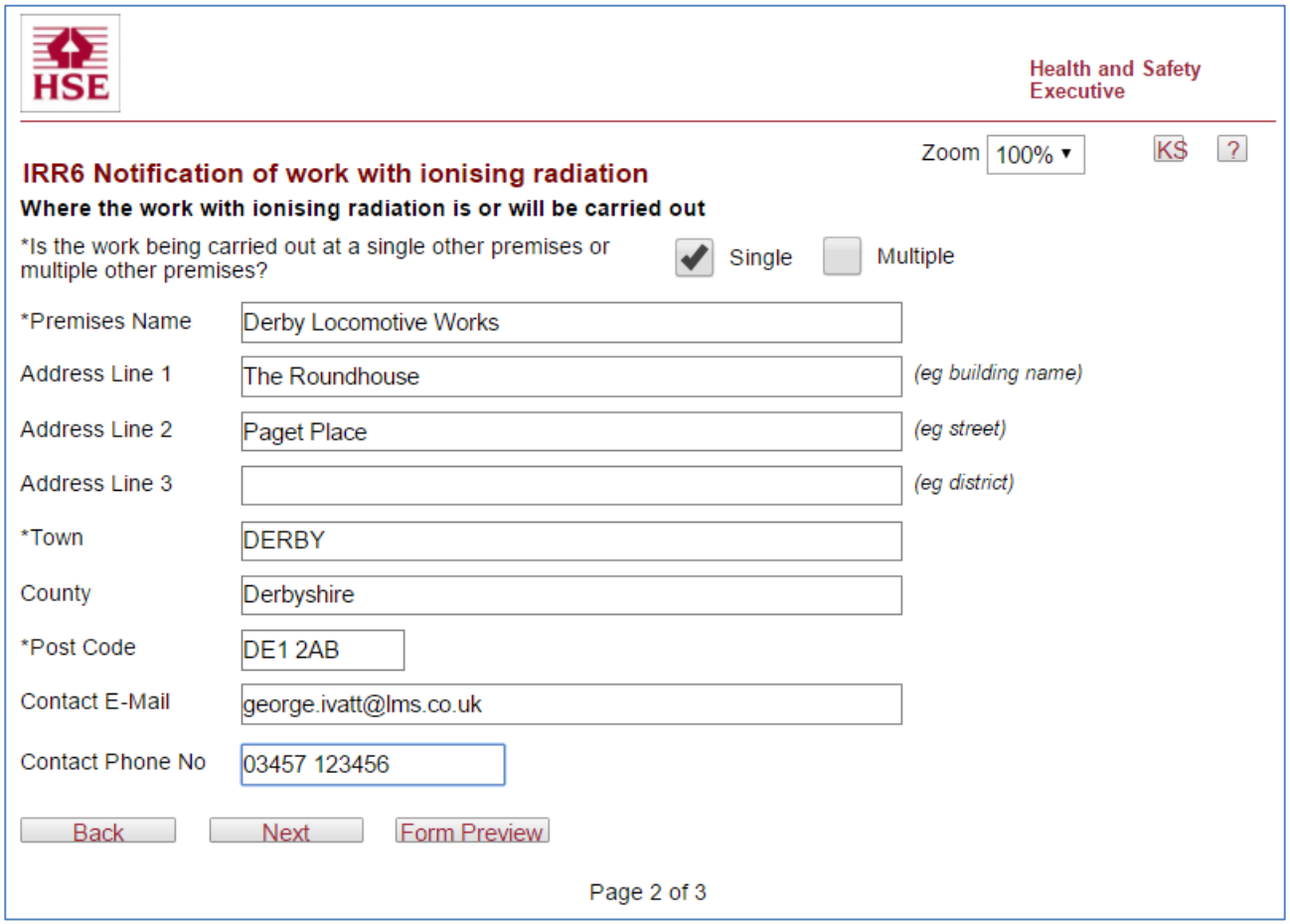

HSE

Health and Safety Executive

Zoom 100%

KS ?

IRR6 Notification of work with ionising radiation

Where the work with ionising radiation is or will be carried out

*Is the work being carried out at a single other premises or multiple other premises? ☑ Single ☐ Multiple

*Premises Name	Derby Locomotive Works	
Address Line 1	The Roundhouse	*(eg building name)*
Address Line 2	Paget Place	*(eg street)*
Address Line 3		*(eg district)*
*Town	DERBY	
County	Derbyshire	
*Post Code	DE1 2AB	
Contact E-Mail	george.ivatt@lms.co.uk	
Contact Phone No	03457 123456	

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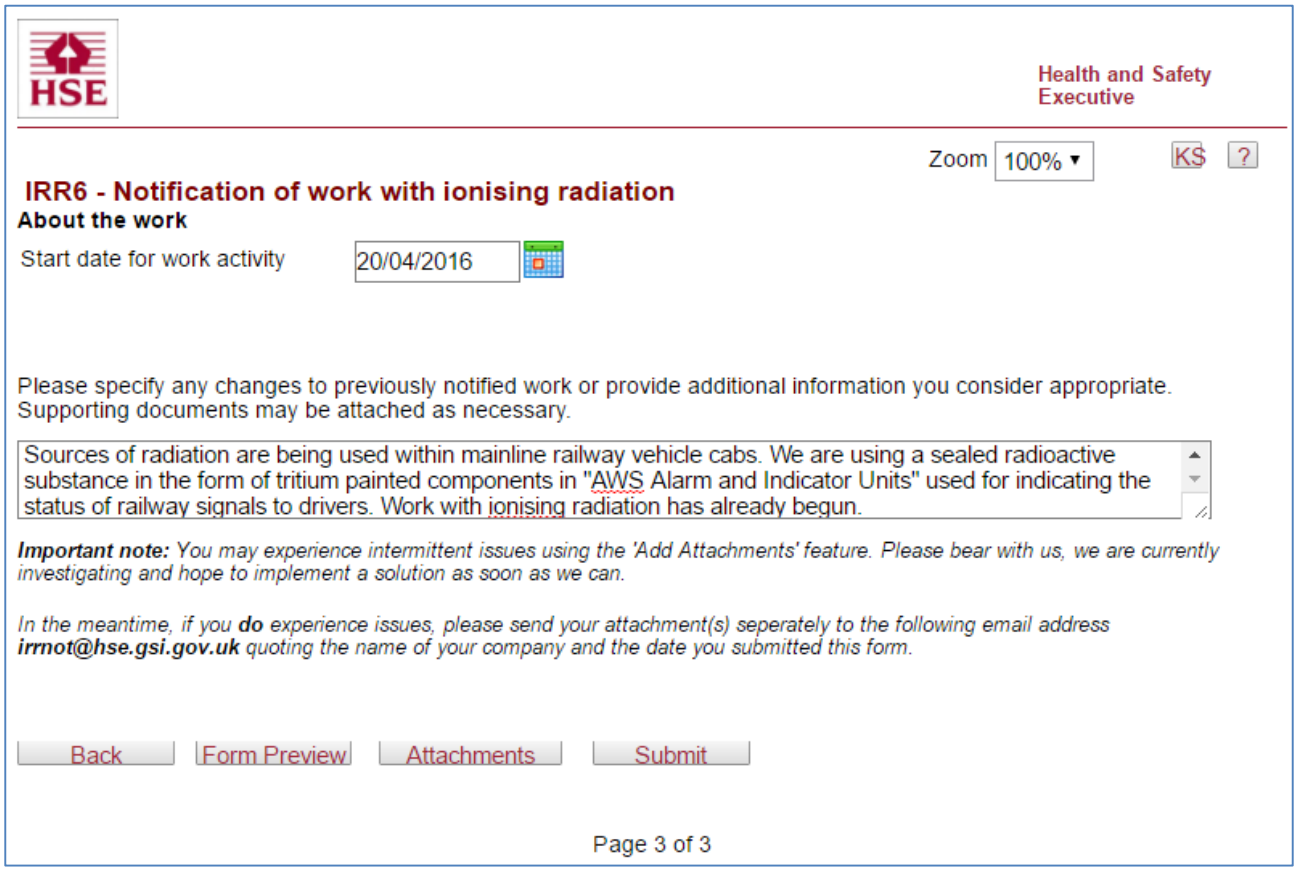

When entering the "Start date for work activity" above, it is recommended that you enter tomorrow's date (it does not accept today's date or before). This will result in the following cautionary dialogue box, as the regulations (IRR99) require notification to the HSE at least 28 days before commencing work with ionising radiation – the HSE is aware of the situation. Click on "OK".