

BAE SYSTEMS

Part B Environmental Permit PPC/B/05

LAPPC Annual Report 2018

Author: Bob Morris

Issue: One

Authorised by:

Mr Peter Winder

This is an unpublished work created on the date(s) shown, any copyright in which vests in BAE SYSTEMS.
All rights reserved

The information contained in this document/record is proprietary to BAE SYSTEMS unless stated otherwise and is made available in confidence; subject to the rights of the Ministry of Defence under DEFCON 90 (Edition 12/89), it must not be used or disclosed without the express permission of BAE SYSTEMS. This document/record may not be copied in whole or in part in any form without the express written consent of BAE SYSTEMS which may be given by contract.

If found this document should be returned to 'The Security Controller' at the address below.
BAE SYSTEMS Maritime - Submarines, Barrow-in-Furness, Cumbria LA14 1AF, United Kingdom

Contents

Executive Summary

1. Introduction
2. Non-VOC Emissions Limits
3. Reduction Scheme (No VOC abatement)
4. Future Reduction Options
5. Control Techniques
6. Review of VOC Cleaning
7. Air Quality
8. Facility Upgrades
9. Appropriate Management Systems

Executive Summary

BAE Systems Maritime – Submarines (BAES) use a Solvent Reduction Scheme for preventing and minimising emissions of Volatile Organic Compounds (VOC) and are required to submit an annual report each year, accompanied by two Solvent Management Plans (SMP), in order to demonstrate compliance with the Part B Environmental Permit issued by the Local Authority.

For the period 1st November 2017 – 31st October 2018, the annual actual solvent emissions determined from the SMP's are both less than the target emissions, demonstrating compliance with the Solvent Reduction Scheme.

All of the point source emission stacks were found to be within the limits for particulates during the annual monitoring campaign.

The Permit was varied during the reporting period at BAE Systems' request to accommodate a newly constructed Central Coatings Facility (CCF) in the Central Yard which is expected to begin operations during the first quarter of 2019.

During 2018 a trial was conducted in which Wessex primer was applied by spray as opposed to brush and roller application. The trial was a success with improvements in quality and therefore less rework was necessary. The intention is to move to this technique for future application. It is expected that using this technique will not result in any detrimental impact on our solvent management plan but it will be closely monitored.

In order to have a better understanding of our performance in terms of our solvent management plans throughout the year and to better assure the quality of data we have instigated an Integrated Work Team to oversee and manage the data process. There has been an initial meeting of this team to begin the work and a further meeting is planned in late February at which the rest of this year's meetings will be scheduled.

1. Introduction

BAE Systems Maritime – Submarines (BAES) is an installation regulated under the statutory Local Air Pollution Prevention and Control (LAPPC) Regime for Coating and Adhesive Processes. The annual solvent consumption of activities at the site is greater than 5 tonnes and therefore requires a Part B Environmental Permit, issued under the Environmental Permitting (England and Wales) Regulations 2016 (EPR16), by the Local Authority.

The activities covered by the Permit include the cleaning and painting of surfaces during the manufacture of submarines, and the use of adhesive coatings, as defined in Sections 6.4 Part B and Section 7 Part B (a) of Schedule 1 of EPR16. Surface preparation and shot blasting are directly associated activities and also regulated under the Permit.

BAES also operate a Di-isocyanate process regulated under Section 4.1 Part B of Schedule 1 of EPR16; however an exemption was granted on the grounds of triviality as the process emits prescribed substances to air in such small quantities that they are incapable of causing harm. This

activity is therefore not regulated by the Permit, although conditions on the judgement of the exemption are to be complied with.

BAES are also responsible for ensuring that the Integrated Outfit Package (IOP) arrangement (contracted to Denholm) complies with the Permit.

2. Non VOC Emissions Limits

The annual monitoring of non-VOC emissions, namely Particulate Matter, was conducted between 14th May and 18th May 2018. The report was issued to the Local Authority on the 22nd August 2018. All results were found to be within the specified limits.

3. Reduction Scheme

BAES complies with the LAPPC Regime and the EU Industrial Emissions Directive through the Solvent Reduction Scheme. This requires BAES to determine solvent consumption in the manufacturing process and to achieve emission reductions to a 'target emission' that is equivalent to those which would have been achieved if the concentration limits had been applied. The Solvent Management Plan (SMP) for 2018 contains data for the period 1st of November 2017 - 31st October 2018.

The SMP calculates a target emission for VOC by multiplying the total mass of solids in coatings, over a 12 month period, with the Target Emission Figure (0.6 – Paints / 1.2 - Adhesives) for solvent consumption between the 5 – 15 tonne threshold.

3.1. Coating of Metal and Plastic Processes (Painting)

The target emission for the reporting period for the coating of metal and plastic processes was 9,982 kilograms. The actual emission was 8,872 kilograms with a difference of 1,110 kilograms, demonstrating compliance with the reduction scheme.

3.2. Adhesive Processes

The target emission for the reporting period for the adhesive processes was 24,261 kilograms. The actual emission was 9,004 kilograms with a difference of 15,257 kilograms, demonstrating compliance with the reduction scheme.

4. Future Reduction Options

In addition to complying with the target emission, the Permit also requires that future reduction options are considered and included in the annual report. This includes mechanisms to decrease

the average solvent content of the total input and/or systems to increase the efficiency in the use of solids to achieve a reduction of the total emissions from the installation.

BAES use coatings that are based on performance requirements, VOC and health and safety criteria of the Ministry of Defence (MOD).

The MOD makes it a requirement for low VOC materials, and paint manufacturers and suppliers are reminded that any formulation changes to their existing products must be advised. They will then be required on request, to provide the Institute of Naval Medicine (INM), with full product formulation data. Failure to do so will automatically result in the withdrawal of MOD acceptance.

For the benefit of New-Building Specifications, if a paint system can offer cost benefits but one part of it has a VOC level higher than the MOD target value, the actual VOC value must be equal to or less than the current stated value. Data will be required supporting the case, including a statement that the total VOCs' emitted to the atmosphere during application, will be equal to or less than when applying a paint scheme fully in accordance with the MOD target values.

Warpaint is the main guidance document of acceptable paint coatings for in-service and new-build Royal Naval Vessels.

5. Control Techniques

BAES continue to monitor all aspects of Permit requirements for controlling and minimising VOC emissions through planned inspections and area checks.

6. Review of VOC Cleaning

BAES currently uses various solvents containing volatile organic compounds (VOCs) for the purpose of cleaning. This section looks at the processes and substances used, to identify ways for BAES to decrease its solvent emissions. The two processes under the permit that require the use of cleaning solvents are the coating of metal and plastic processes, and adhesive coatings.

BAES uses Methylene Chloride which is a designated risk phrase material (R40) as part of the cleaning process for the di-isocyanate activity to remove residues of polyurethane from the casting machines only. Although the di-isocyanate activity falls within the scope of the Environmental Permitting (England) Regulations 2010, this is exempt under triviality. Alternatives to Methylene Chloride have been explored in the past but BAES are bound by Ministry of Defence (MoD) technical specifications and, at present, no suitable alternative has been identified.

De Solv It DS1000 is a citrus based degreasing agent that BAES continues to use. It has been brought into the degreasing process to help reduce the use of Bostik M501, which is both highly volatile and flammable, and therefore has benefits in terms of fire safety and environmental impact. It is not possible to use De Solv It DS1000 for all applications as the citrus content leaves a residue that is not permitted in some quality aspects.

For the period 2017-2018, for both Painting and Adhesive processes, BAES are well within the Target Emission Factor set by the Reduction Scheme. The vast majority of the thinners are used to clean spray guns.

7. Air Quality

All of the emission stacks on site continue to meet the requirements of the Permit.

8. Facility Upgrades

7.1. Site Redevelopment Programme

Significant redevelopment of the submarine manufacturing site at Barrow was required in order to provide the facilities to manufacture the future Dreadnought class submarines. The new Central Coatings Facility, C53 is one of the new facilities where significant coating activities will be carried out. The CCF is expected to commence operations in the first quarter of 2019. BAES applied to the Local Authority for a variation of the Part B Environmental Permit PPC/B/05 to take account of the new facilities. The variation was granted in July 2018.

9. Appropriate Management Systems

BAES operate an Environmental Management System, accredited to the international standard, ISO 14001, in addition to both Health and Safety (18001) and Quality (9001) Management Systems. The EMS requires the Company to continually improve practises to remain certified. LRQA audit BAES on several occasions throughout the year and re-certify the EMS every 3 years; the Company EMS was recertified in November 2017.

References

MOD (2018) Warpaint (Issue 43). Defence Equipment and Support. Available:
<https://www.gov.uk/government/publications/warpaint>