

**BAE SYSTEMS**

Part B Environmental Permit PPC/B/05

# *LAPPC Annual Report 2021*

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Issue: One

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## **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 (SMPs), in order to demonstrate compliance with the Part B Environmental Permit issued by the Local Authority.

For the period 1<sup>st</sup> November 2020 – 31<sup>st</sup> October 2021, 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 Integrated Work Team that was set up to oversee and manage the data process has met on a monthly basis and has proved to be effective in managing the data and highlighting potential risks.

### **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 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. The Permit does therefore not regulate this activity, although conditions on the judgement of the exemption are to be complied with.

BAES are also responsible for ensuring that the Blast and Spray arrangement (contracted to Denholm) complies with the Permit.

### **2. Non VOC Emissions Limits**

The annual monitoring of non-VOC emissions, namely Particulate Matter, was begun on 16<sup>th</sup> November 2021 and completed on 17<sup>th</sup> December 2021. Due to unforeseen circumstances, the reports had not been submitted to the Local Authority. All results were shown to be within 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 2020 contains data for the period 1<sup>st</sup> of November 2020 - 31<sup>st</sup> October 2021.

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 7,852.0 kilograms. The actual emission was 7,164.0 kilograms with a difference of 688 kilograms, demonstrating compliance with the reduction scheme.

### **3.2. Adhesive Processes**

The target emission for the reporting period for the adhesive processes was 13,878.9 kilograms. The actual emission was 1,677.0 kilograms with a difference of 12,201.9 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, 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. The new waste storage facility for tiling material has been an asset for proper control and management of the waste.

## 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 2016, 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.

1. For the period 2020-2021, 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 specified emission stacks on site continue to meet the requirements of the Permit.

## **8. Facility Upgrades**

Nothing to report other than previous year comment that the GRP facility in C10 has been moved to D16 meaning that coatings operations are no longer undertaken in this facility.

## **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 2020.

# References

MOD (2019) Warpaint (Issue 45). Defence Equipment and Support. Available:  
<https://www.gov.uk/government/publications/warpaint>