

## INFORMATION NOTE

### Pressure Vessels with a Flexible Membrane

Number: IN 01/08

Property Directorate Sponsor: Peter Meakin	Date of issue: 05 February 2008
Contact if different from Property Directorate Sponsor:  Sean McGovern, SAA Mechanical Tel: 0121 311 2069 E-mail: <a href="mailto:Sean.mcgovern@de.mod.uk">Sean.mcgovern@de.mod.uk</a>	
Who Should Read this: <b>Defence Estates (DE) Deputy Directors Estates Management, DE Advisors, DE Project Managers, DE Facility Managers and Maintenance Management Organisations</b>	
When it takes effect: Immediately	When it is due to expire: 31 <sup>st</sup> December 2012

**Document Aim:** This Information Note (IN) deals with the sizing of vessels with flexible membranes that are made up of two chambers with different fluids, in order to determine whether or not they require a Written Scheme of Examination as defined by the Pressure Systems Safety Regulations 2000 (PSSR 2000).

#### Written Scheme Calculation

1. While compressed air and nitrogen in vessels with two chambers is likely to be above 0.5 barg and therefore a relevant fluid, there is also a need to determine whether the vessel exceeds a pressure x volume product of 250 Bar Litres, above which PSSR 2000 requires a Written Scheme of Examination.
2. The Health and Safety Executive (HSE) have been asked to confirm their formal position, as PSSR 2000 does not give a clear indication as to which pressure or volume to use for this calculation
3. The HSE's written response to this issue is based on guidelines agreed at European level by all member states and is as follows:

To determine the pressure x volume (Bar Litre) product for vessels with flexible membranes that are made up of two chambers with different fluids, the following formula should be used.

***The total volume of the vessel x the design pressure for the flexible membrane***

4. Vessels that contain a relevant fluid and exceed 250 Bar Litres using this formula will require a Written Scheme of Examination in order to comply with PSSR 2000.
5. Where systems contain such vessels, the assessment of the 250 Bar Litre thresholds should be checked for conformity to the above criteria and Written Schemes of Examination should be amended by the Competent Persons as appropriate.

#### Background

6. Pressure systems that range from steam boilers with district heating systems through to simple compressed air installations are to be found on the Defence Estate.
7. Maintenance Management Organisations assume the responsibilities of the User, as defined in PSSR 2000 and are therefore responsible for the Written Schemes of Examinations, arranging for associated Competent Person examinations.
8. While for most pressure systems it is clear whether or not they fall within the scope of PSSR 2000 and require a Written Schemes of Examination, the position for vessels with flexible membranes that are made up of two chambers with different fluids is less straightforward.
9. This IN applies to pressurisation and expansion vessels on heating or cooling systems that contain water on one side of a flexible membrane and either compressed air or nitrogen on the other.