

## Preesall Underground Gas Storage Facility

### Written response to Annex 2 Agenda items for Issue Specific Hearing on 19 September 2012

1. Discussion and understanding of the powers to be provided by the Order to govern the design of underground storage caverns: Article 3, the authorised development Work No 1A, approved development plans and R6 (1).

These do not appear to be matters the Competent Authority (CA) can comment on.

2. Discussion and understanding of the constraints imposed by R6 as minimum standards and that no subsequent approvals concerning cavern design are required from WBC pursuant to the Order.

These do not appear to be matters the CA can comment on.

3. The intended design process for the caverns by the Applicant - components, timing and sequence.

As above, the timing of the Safety Report assessment process by the CA is outlined in Section 8 below.

4. The programme of further geological studies and surveys subsequent to the Order and whether these are required by/approved by HSE.

See response to item 6.

5. Role of BS EN 1918 -3:1998 - to be superimposed upon the criteria in R6 or already subsumed within it.

See response to item 6.

6. Preparation of the Pre-Construction Safety Report by the Applicant - contents and timescale, inclusion of wellheads and other construction elements as well as caverns, and HSE/EA requirements in terms of details of cavern design.

The PCSR must be submitted within a “reasonable period of time” prior to construction of a COMAH facility. The pre-construction parts of a safety report may be provided as a ‘rolling’ submission of agreed documents which, taken together, contain all the information needed at the pre-construction stage. For underground gas installations there are typically two PCSRs – one relating to cavern storage and another relating to above ground installations.

When the CA assesses a PCSR it is looking for a demonstration that adequate safety and reliability have been incorporated into the design, the application of good practice, and for concepts which reduce the risks to being As Low As Reasonably Practicable (ALARP). The CA will expect to see a demonstration of compliance with all applicable legislation, technical standards and industry codes of practice. In the case of underground gas storage sites these will usually include but not be limited to:

- BS EN 1918:1998, British Standard: Gas Supply Systems – Underground Gas Storage: Part 3, functional recommendations for storage in solution-mined salt cavities and Part 5 (Functional recommendations for surface facilities)
- American Petroleum Institute, Recommended Practice 1114, 1st Edition June 1994, Design of solution-mined underground storage facilities.
- American Petroleum Institute, Recommended Practice 1115, 1st Edition September 1994, Operation of solution-mined underground storage facilities.
- [HSE Research Report RR605](#) - An appraisal of underground gas storage technologies and incidents, for the development of risk assessment methodology
- [HSE Research Report RR606](#) - Scoping calculations for releases from potential UK Underground Gas Storage facilities.

- ISO 10423 (API spec 6A) specification for Wellhead and Christmas Tree equipment

In addition, adherence to relevant standards contained in The Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996 will be viewed as good practice.

The PCSR will be expected to provide demonstration of integrity for all wellheads, caverns, and above ground installations which could have an impact on safety. In particular, there should be evidence of compliance with the requirements contained in the HSE Semi-Permanent Circular enforcement standard 185 "Natural Gas Salt Cavity Storage – Guidance to Inspectors on Borehole and Cavern Design, Cavern Leaching and Operation of the Borehole and Cavern".

In relation to caverns and boreholes, the PCSR will therefore be expected to include:

- A valid geological assessment
- Evidence of geomechanical tests
- Design data for borehole conductors, casings, and cement
- Evidence of manufacture, inspection and testing of wellhead equipment to applicable ISO or API standards
- Evidence of manufacture, inspection and testing of production completions to applicable ISO or API standards
- Evidence of compliance with relevant standards for deviated drilling (if applicable)
- Assurance that annuli monitoring will be carried out where required.

In addition, the PCSR should provide information on:

- The design of solution mining / leaching wellheads and completions
- Snubbing and de-watering operations
- Cavern operating procedures including:
  - Casing seat pressures, maximum and minimum operating pressures and rates of pressure change
  - Gas injection rates
  - Cavity testing surveys (including Mechanical Integrity testing and Sonar testing)
  - Geophysical logging and subsidence surveys
  - Cavity monitoring and maintenance procedures.

In relation to caverns and boreholes, compliance with the above, should normally meet the requirements of Schedule 4 of the COMAH Regulations, Part 2.

All Safety Reports are assessed against the criteria contained within the HSE Safety Report Assessment Manual which is available at <http://www.hse.gov.uk/comah/sram/index.htm> . Assessment will be undertaken by inspectors who are experienced in major hazards work, and will always include an assessment by well engineers and a geology specialist. The above ground installation will also be fully assessed. Unless there is reason to show otherwise, the following separate assessments will be carried out: Process safety (fire and explosion), Electrical engineering, Control and Instrumentation, Gas and Pipelines (transmission), Mechanical Engineering, Predictive (major accident risk assessment), Human Factors, Emergency response, and Safety Management Systems.

Once started, the Pre Construction Safety Report assessments should not normally take more than 12 weeks to complete.

## 7. Consultation requirements - statutory bodies, local authorities, public.

Consultation under the COMAH Regulations is limited to the following:

Regulation 9(3) contains a duty on the operator to consult with employees, the EA, Emergency Services and the Health Authority and Local Authority regarding preparation of the on-site emergency plan.

Regulation 10(6) requires the local authority to consult the operator, the competent authority, the Agency, the emergency services, each local health authority and appropriate members of the public on the preparation of the off-site emergency plan.

Regulation 14(1) requires that people and establishments liable to be affected by a major accident at an establishment must be given specified information about the establishment, the major accident hazards and the safety measures that are in place. The CA determines the area around that establishment to which this duty applies but it is the operator who is required to provide the information. The area which the CA determines is known as the public information zone (PIZ). The PIZ does not cover areas where a major accident might cause only environmental damage.

Schedule 3, paragraph 7 to the Regulations requires that the operator provides details in his notification to the CA of the elements in the immediate environment which are liable to cause a major accident (or to aggravate the consequences of a major accident). The CA will use the information provided to set a consultation distance around the establishment for land-use planning purposes.

#### 8. Competent authority approval processes, and powers controlling construction.

Prior to the CA assessment and inspection process, HSE will advise the Hazardous Substances Authority (HSA) regarding the granting of Hazardous Substances Consent. HSE assesses the risks based on the consent particulars and, in some cases, other plant features which have the potential to significantly affect the risk to people. If HSE does not advise against the HSA granting the consent, it will also recommend whether the consent should be granted subject to any conditions. HSE limits its advice to health and safety issues within its expertise and to those which are covered by the Health and Safety at Work Act. Where consent is granted, HSE will set a consultation zone around the major hazard site and notify the HSA (and the planning authority if different.) Whenever a development is proposed within the consultation zone HSE must be consulted for its advice as to the advisability or otherwise of locating the particular development there.

The CA assessment process begins with a full assessment of the Pre Construction Safety Report (PCSR) which must be submitted to the CA before construction starts. The operator must ensure that the construction and operation of an establishment does not start until he has received from the CA the conclusions of its examination of the relevant report. This does not prevent early preparatory work such as levelling or extending services to the site. However, any work to do with the drilling of boreholes, positioning of processes, storage, pipelines, control rooms or offices which may have a significant impact on safety, must not be started before the competent authority has communicated the conclusions of its examination of the PCSR. Although the CA authority cannot prohibit construction work, it will make it clear to an operator if it has identified a deficiency which is sufficiently serious for it to prohibit operation when construction is complete. A failure by the operator to wait until he has received the PCSR assessment conclusions from the CA will therefore present a considerable business risk.

The Pre-Operational Safety Report (POSR) assessment must be completed by the CA and the conclusions communicated to the operator before dangerous substances are introduced into the plant. The pre-operation part of the safety report should include those elements which it was unreasonable to expect at the pre-construction stage. These elements will usually provide additional detail on operational systems of prevention, control and mitigation, together with safety management systems.

At the end of the COMAH Safety Report assessment, the CA will inform the operator:

- Whether it achieves the required purposes specified in Schedule 4, Part 1 of COMAH,
- Whether the report contains the minimum information specified in Schedule 4, Part 2 of COMAH.

If the Safety Report does not demonstrate compliance with the above Schedule, it will have to be re-submitted containing the required information. Regulation 18(2) of COMAH provides that the CA, may prohibit the operation or bringing into operation of any establishment or installation (or any part) if the operator has failed to submit any notification, safety report or other information required by the COMAH Regulations within the required time.

The CA does not provide a specific statement of approval to the operator. If the report fulfils the requirements of Schedule 4 parts 1 and 2, the site will be permitted by the CA to commence operations.

When construction work begins, the site is likely to be visited by inspectors from the CA a number of times to ensure that the work is being carried out in compliance with the Health and Safety at Work Act and applicable Regulations, including the Construction (Design and Management) Regulations. These inspections provide an opportunity to ensure work is being carried out safely and to verify compliance with design specifications.

At any stage the CA may serve a Prohibition Notice under Regulation 18(1) of COMAH to prohibit the operation or bringing into operation of any establishment or installation (or any part) where the measures taken by the operator for the prevention and mitigation of major accidents are seriously deficient.

#### 9. Appeal mechanisms against non-decision by the competent authority and how disagreement is handled.

The primary duty of the CA, regarding Safety Reports is to carry out an assessment. There is no provision for an appeal against a decision by the CA concerning its assessment of a Safety Report. The only appeal mechanism under COMAH regarding a Safety Report is a provision for an operator to appeal to the Secretary of State regarding a refusal by the CA to exclude information from the Public Register.

Following the formal assessment of a safety report, under Regulation 19 of COMAH, the CA is under a duty to organise an adequate system of inspections while the establishment is operational. This is developed towards the end of the POSR assessment. The inspections must be sufficient to enable planned and systematic examinations of an establishment to ensure that the operator is continuing to carry out his duties under COMAH. If at subsequent inspections or other interventions serious deficiencies are found, the CA may serve a Prohibition Notice under Regulation 18(1) of COMAH. The appeal mechanism for Prohibition Notices served under the COMAH Regulations is the same as for Prohibition Notices served under the Health and Safety at Work etc. Act 1974 (HSWA). The provisions for appeal against enforcement notices are set out in Section 24 of HSWA. A Prohibition Notice will remain in force unless an appeal has been upheld or the matters which gave rise to it are addressed.

#### 10. Examples of where the processes proposed have been operated.

These include salt cavity natural gas storage sites at Hornsea, East Yorkshire; Seal Sands, Teesside; Holford, Cheshire; and Hole House, Cheshire.

#### 11. Other matters

Further information can be found at:

[http://www.hse.gov.uk/foi/internalops/hid\\_circs/enforcement/spcenf185.htm](http://www.hse.gov.uk/foi/internalops/hid_circs/enforcement/spcenf185.htm) *Natural Gas Salt Cavity Storage – Guidance to Inspectors on Borehole and Cavern Design, Cavern Leaching and Operation of the Borehole and Cavern*

[http://www.hse.gov.uk/foi/internalops/hid\\_circs/technical\\_general/spc\\_tech\\_gen\\_42.htm](http://www.hse.gov.uk/foi/internalops/hid_circs/technical_general/spc_tech_gen_42.htm) *Well construction Standards.*

<http://www.hse.gov.uk/gas/supply/saltcavity.htm> *Salt cavity natural gas storage - Consent and operational issues*

The information at the above links is also contained in the PDF documents attached below.

The full Safety Report Assessment Manual may be viewed or downloaded at:

<http://www.hse.gov.uk/comah/sram/index.htm>

The HSE guidance *A guide to the Control of Major Accident Hazards Regulations 1999 (as amended)* (Ref L111) is freely downloadable from the HSE website at

<http://www.hse.gov.uk/pubns/books/l111.htm>