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ISIS directive
For BT people

SFY/HSH/D051

Issue 12, 22-Feb-2021
Use until 22-Feb-2022

Published by OR Access Engineering & Innovation

Privacy- None

Water Test

Health & Safety Handbook : Section 5 - Job Specific

About this document ...

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Content approval

This is the Issue 12 of this document.
The information contained in this document was approved on 22-Feb-2021 by Andrew Debbage, Senior Manager, Civils Field Projects & Cost Avoidance/Reduc

Version History

Version No.	Date	Author	Comments
Issue 12	22-Feb-2021	Carl Morrell	Section 3 updated
Issue 11	18-Feb-2020	Carl Morrell	Section 1 ppg20 replaced with note
Issue 10	21-Aug-2019	Carl Morrell	Change of author and approver
Issue 9	19-Sep-2016	ISIS co-ordinator .	Approver change
Issue 8	07-Mar-2015	Document Manager T	Document migrated onto new platform with no content change
Issue 8	20-Sep-2013	ISIS co-ordinator .	section 9 - EA□s guidance document □Dewatering of Underground Ducts and Chambers PPG20□ link provided (AT255)
Issue 7	3-Jun-2011	Chief Engineer AEI Technical Documentation Team	Change of Author & Approver
Issue 6	23-Feb-2011	C Morell	Migration to ISIS

Table of Content

1 *Water Test: Introduction*

BT's underground network of ducts and jointing chambers acts as a drainage channel in many cases for rainwater and for groundwater, which may enter via duct joints. Whilst this water is in the majority of instances harmless, circumstances do arise in which water becomes contaminated.

Pumping out of jointing chambers is a frequent operational requirement prior to commencing external underground activities. Water is typically pumped into roadside storm drains or other roadside drainage facility, and can and does make its way into natural waterways. It is a requirement that any such water is tested to ensure that it is visibly free of pollution.

A water test must be carried out prior to any water pumping operations in BTs underground network, and appropriate action taken if polluted water is observed. The outflow from the Water Pump must also be monitored regularly.

Failure to comply with this requirement by BT or its contractors may result in prosecution by the Environment Agency or other equivalent regulatory bodies responsible for waterways, and may result in additional constraints being imposed on BT's operations concerning discharge of water into drainage systems.

The Environment Agency (EA) is responsible for the protection of "controlled waters", which includes all watercourses and water contained in underground strata. It is an offence under the Water Act 2003 to cause pollution to such waters.

Note: For further information and understanding see Environment Agency guidance Temporary dewatering from excavations to surface water

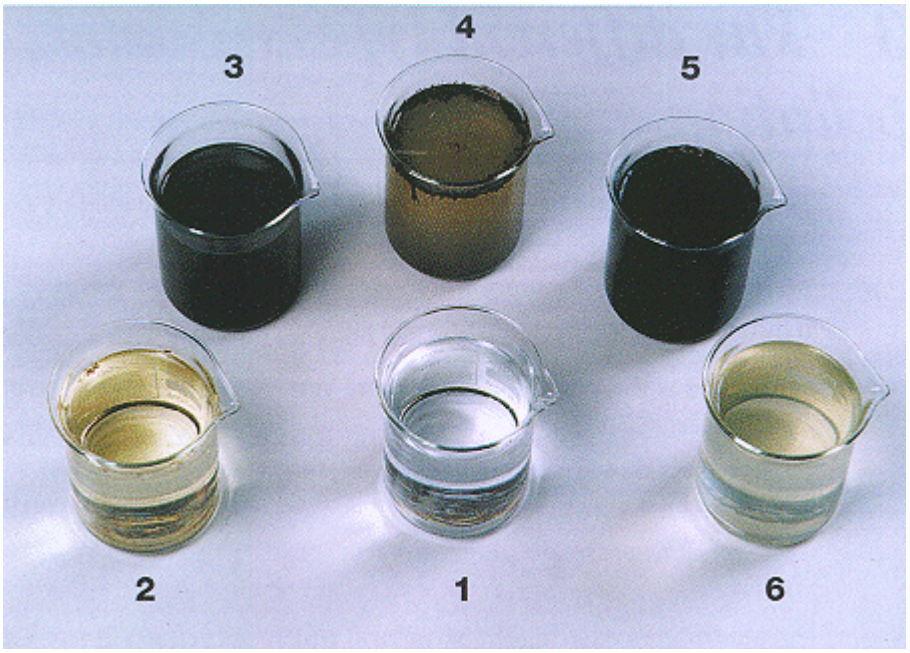
2 *Different Types of Water Pollution*

The water test required is a simple operation designed to identify pollutants in the following three categories:

- Petrol and oil contamination, where a film of contaminating fluid will appear on the surface of the water possibly together with a distinctive smell.
- Dirty water contamination, potentially from sewage or other foul water source, which will discolour the water, may result in solid particles in suspension and may be accompanied by an unpleasant or distinctive smell.
- Silt, or very fine solids, drawn in from the surrounding strata by groundwaters entering the structure, which can remain in suspension in the water in the

form of a cloudy discolouration, or which may settle to the bottom of the water in the structure to form a layer of sludge but is easily disturbed. The prevention of silt entering natural waterways is as important as prevention of other contaminants, and requires care in pumping operations even though silt has not been identified by water test, *see pumping guide section*.

Typical examples of polluted water samples are illustrated below. These illustrations are for guidance only - use your judgement, and call for assistance if required.



Typical examples of polluted water

1. Pure Water
2. Sewage
3. Silted water
4. Silted water
5. Oil
6. Discoloured Water

Note: Both silted and discoloured water may be of many different colours depending upon the local rock and soil.

3 *Safety Guidance*

Suitable gloves such as Gloves Leather 2 or Gloves PVC should be worn during the water test. Suitable protective clothing should be worn during pumping operations. “When pumping the whole of the worksite must be

fully enclosed using barriers. The “worksite” to include any/ all tools, equipment. For instance box lids, lifters, pumps, blowers etc . ”

Attention is drawn to the relevant job specific sections applicable to external work in the Health and Safety Handbook SFY/HSH/A001.

No other special additional safety precautions are required to undertake the water test.

4 When to Test

- The test **must always** be carried out as part of the initial access procedure for underground jointing chambers, to be conducted during the standard entry precautions for gas detailed in SFY/HSH/D050.
- A water test is required for **every** chamber containing water that needs to be removed wholly or in part for operational or safety reasons, *see pumping guide*.

Note: Water present in a chamber that does not need to be removed for operational or safety reasons need not be tested.

5 How to Test

- Using a clean Water Test Cup (I/C 075886) attached to a length of draw rope, carefully take a sample from the surface of the water and withdraw the cup from the chamber.
- Visually examine the water in good light for the presence of:
  - unnatural discolouration
  - unusual distinctive or unpleasant smell
  - cloudy suspension or visible suspended solids
- If any of the above characteristics are observed, the water is deemed to be polluted. Follow the section *"What to do if polluted water is found"*.
- If the water is observed to be unpolluted, pumping out may proceed in accordance with *"pumping guide"*.

  Return the sample to the water in the chamber. Clean the Water Test Cup with synthetic rag or suitable alternative.

6 What to do if polluted water is found

- Do not perform any work in the chamber or work space
- Replace the chamber cover. Inform your Control Centre, and provide the following information :

- your name and your Operational Unit Code (OUC)
- clear details of where the polluted water has been identified
- any information you have on the nature of the pollutant

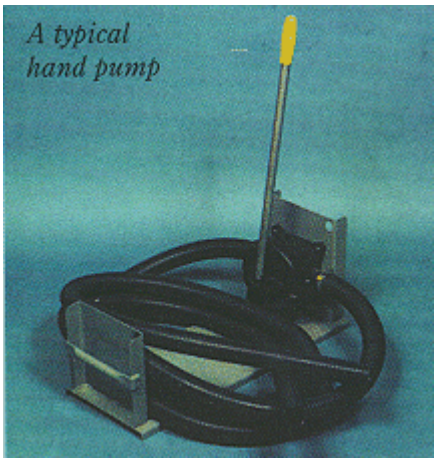
Control Centre procedures for dealing with polluted water in underground plant are detailed in EPT/UGP/F021.

The Control Centre will initiate arrangements for the polluted water to be removed by specialist contractor for disposal to a licensed waste disposal site. If petrol or oil contamination is suspected, the Control Centre will also initiate action by the Local Authority Petroleum Officer who will investigate the incident.

The Control Centre will inform you when the pollution has been cleared.

All gas precautions must be repeated prior to commencing work.

7 Pumping Guide



- Dewatering should be undertaken carefully to minimise the disturbance of silt.
- Follow all operating instructions for standard BT pumps.
- Where specialist equipment is being deployed, only trained people should carry out pumping or disposal operations.
- Lower the suction end of the pump using a suitable length and type of rope, e.g. draw rope secured to the handle of the pump body (never use the electric cable or hose to support the weight of the pump), position to just off the bottom of the chamber and always above the point where any settled solids in the water could be drawn into the pump. This may be achieved by suspending the suction end with the rope, from a convenient and suitable anchorage point, e.g. manhole step, LMC4 or cover roller etc.
- Any settled solids remaining at the bottom of the chamber after pumping should be removed by a Gulley Sucker. Gulley sucking guidance can be found in the following ISIS documentation "Gully Sucking and De-Silting

Contract" EPT/UGP/F021, contact the Control Centre for further assistance.

- Do not pump water onto a footway, or into the main running surface of a carriageway.
- Take care to position discharge hoses to avoid hazardous trips for pedestrians and other road users.
- Take care to avoid any water freezing over to form icy patches in frosty weather.
- Run the discharge hose **directly into** the nearest drain or ditch. Wherever possible, pumped discharges should be directed across grass covered ground to reduce any suspended solids load. Regular monitoring of the pump outflow must take place to ensure that the water being discharged remains clear and that silt is not being discharged. .
- Take care to avoid any water running into premises.
- Do not suspend a submersible pump by its electric cable.

Do not add fuel to a petrol-driven pump whilst the engine is running.Operate petrol-driven pumps and generators **only** in well ventilated and unconfined areas.

A typical Petrol Engine Driven Suction Pump.

7.1 Pumping Equipment & Performance

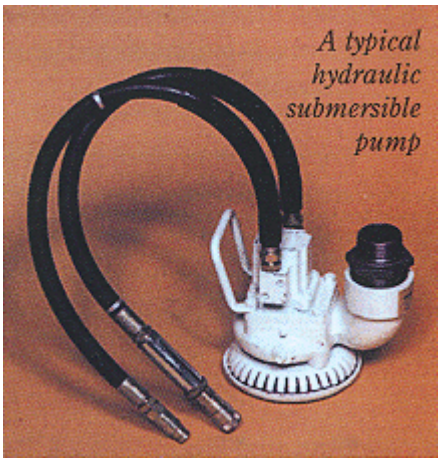
Standard BT portable pumps should normally be used. Two design types of pump are available:-

Suction lift pumps - Pump Portable 2" and Trailer Motor Pump are limited to operating to depth of 7 metres.

Submersible Pumps - electric Pump Submersible 3A used singly will operate from a maximum depth of 12 metres and can be connected and operated in series for greater depths. Hydraulic pumps typically operate from a maximum depth of 25 metres.

When high volume, continuous de-watering work at depths in excess of 12 metres is required, advice and high capacity specialist pumping equipment is available via Field Equipment Support Centres (formerly known as Mechanical Aids Centres).

7.2 Additional Information



As a general rule the volume of water that can be pumped is governed by the limitations of disposal.

For higher volumes, it may be necessary to use more than one disposal point.

When water is drawn from adjoining structures in the underground network, to expedite works additional pumping at these points should be considered.

8 *Responsibility of BT people for contractors work*

The Contract Quality Liaison Officer is responsible for seeing that contractors carry out the terms of their contract which may include requirements for the contractor to carry out water tests.

9 *Reference Guide*

Environment Agency guidance Temporary dewatering from excavations to surface water

SFY/HSH/D050 - Gas Precaution Section - Health and Safety Handbook

EPT/UGP/F021 - Gully Sucking and De-Silting by Contract

Note: This document was migrated to ISIS at Issue 6. If you require previous versions of this document please contact the author to see if they are available.

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