

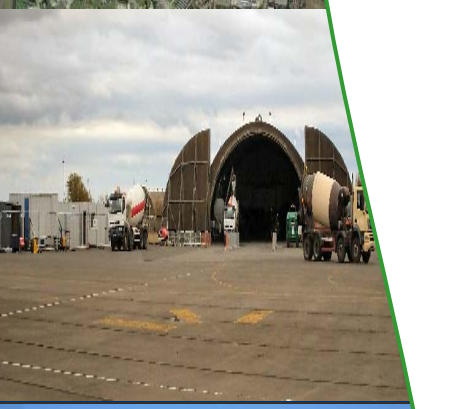

POL System – Clean and Make Safe,
Upper Heyford, Oxfordshire

# Contract Completion Report

February 2012

**On behalf of:**

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**REPORT TITLE:** Contract Completion Report

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**CLIENT NAME:** Dorchester Group Limited



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| Issue: 0 | Initial for internal review / approval | |
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| Revision B | Final | |

## Contents

# Appendices

## 1.0 Introduction

1.1 Vertase F.L.I. Limited (VertaseFLI) has completed the Clean & Make Safe de-commissioning works at the former RAF/ USAF air base at Upper Heyford, Oxfordshire on behalf of Upper Heyford LP (client). The works were overseen by a full time site based supervising engineer from Waterman Energy, Environmental & Design Limited (Waterman). This report presents factual information and confirmation of all works completed.

1.2 This report does not repeat or duplicate the works specification, site investigations or de-commissioning method statement (DCMS). In the first instance, reference should be made to the DCMS issue 2 dated 11th August, 2011. A copy of the DCMS is enclosed at **Appendix O**. However, for ease of reading, the following is a summary of works completed:

(i) Obtain regulatory approval for the works.

(ii) Undertake survey of tanks and fuel pipeline distribution network.

(iii) Empty and clean tanks and fuel pipe line distribution system.

(iv) Fill, where necessary, tanks and fuel pipe line distribution system.

(v) Compile record of works completed.

1.3 The works were completed fully in accordance with the works specification and the DCMS save for one minor variation relating to limited sections of fuel pipeline distribution network (please see section 6.2 'Pipeline Filling' for further detail). Additional lengths and larger diameters were encountered on the fuel pipeline distribution network, and additional tanks were incorporated into the works. The total number of POL tanks de-commissioned was 71 plus a further 28 additional tanks giving a total number of tanks of 99 (original number 67). Three more additional tanks (UST 5, UST 19 and UST 24) and one Interceptor (UST 1) were identified, but were not incorporated into the works due to access restrictions. The total length of fuel pipe line system de-commissioned was circa 23km (original estimate 13km).

1.4 There were no accidents during the works, although there were two incidents relating to a minor fuel spills. The reports relating to the fuel spills and the corrective action taken is included at **Appendix I**.

1.5 As stated in the DCMS, extensive operational risk assessments and method statements were prepared for various activities throughout the works. These risk assessments were assessed and approved by Waterman and the CDMC.

Waterman maintained a full time presence throughout the works as resident engineer to ensure all activities were completed in accordance with the aforementioned risk assessments and method statements, together with the wider works specification.

1.6 In accordance with the DCMS, a dilapidation survey was undertaken before and after the works with Waterman which confirmed the site was returned in the same condition save for the works as described herein.

1.7 During investigations of two number valve pits, a small volume of TPH impacted soil and free product was encountered. This free product is assumed to be derived from the POL pipework that entered the valve pits. The contamination was contained by the concrete lined valve pit. Free product was removed by vacuum tanker and the contaminated soil exported to a suitably licensed facility.

## 2.0 Regulatory Approvals

2.1 Appropriate regulatory approvals were satisfied following approval of the DCMS and authorisation to discharge treated waters to land. Copies of the approvals are included at **Appendix A**.

## 3.0 Tank and Fuel Pipeline Distribution Network Survey

### 3.1 Tanks

3.1.1 A walkover survey was undertaken prior to works commencing to record, as far as reasonably practicable; tank locations, size and contents (quality and quantity). A photographic record was also taken at each location.

3.1.2 The client also instructed VertaseFLI to de-commission additional tanks unasscoiated with the POL infrastructure later in the works and, as the quality and methodology for dealing with contaminated tank water was by then well established, further sampling of tank water from the additional tanks was deemed unnecessary. Furthermore, a majority of these additional tanks were nominally empty.

3.1.3 Details of tank locations are provided on drawing 2862_17 enclosed in **Appendix B**.

3.1.4 Details of tank reference, volume and approximate volume of contents are provided on the summary sheets enclosed at **Appendix C**. These summary sheets also provide details of analysis certificates for tank contents. Actual chemical analysis certificates of tank contents are enclosed at **Appendix F**.

3.1.5 A comprehensive photographic record of all works has been completed. A register of photographs is included at **Appendix D.** Due to the volume of photographs we have attached a CD containing all photographs, although we have enclosed some example photographs of the general works in this report at **Appendix D**.

### 3.2 Fuel Pipeline Distribution Network

3.2.1 The fuel pipeline distribution network (pipeline) consisted of two known pipeline systems; a previously de-commissioned pipeline, and the most recently used pipeline. Works were completed to both pipeline systems.

3.2.2 A number of methodologies were employed to identify and confirm the location of the pipeline. This included reference to historic construction/ installation drawings, land surveying using CAT & Genny, specialist surveying company (Subsight Limited) and trial pitting. Pipe diameters were originally identified as being either 4" or 6" but some lengths were confirmed as 8". It was originally envisaged that pipeline length was circa 13 km but the final length was circa 23 km.

3.2.3 The location of the de-commissioned pipeline is shown on drawing 2862_17 enclosed at **Appendix B**.

3.2.4 Historic drawings identified pipeline that was not confirmed by the aforementioned extensive on site surveying activities. It is concluded that these sections of pipeline were either not installed or have been subsequently removed. The latter would appear more likely given that the sections in question are predominately beneath development that occurred after the date the historic drawing was issued. For completeness, we have included the location of these 'missing' sections of pipeline together with trial pit locations undertaken as part of the investigation works which confirmed their absence. The aforementioned drawing shows trial pits that were used as access pits to cut the pipeline whilst and trial pits and which confirmed the absence of pipeline. All trial pits were re-instated with the works specification.

### 3.3 Asbestos

3.3.1 During tank access works, most tank lids were found to be sealed with either a cork or asbestos gasket. Where asbestos gaskets were present and required removal to facilitate the works, they were removed under controlled conditions by suitably qualified persons. Records of where asbestos gaskets were removed are detailed in the summary sheet enclosed at **Appendix C**.

Consignment notes relating to the offsite disposal of asbestos materials are enclosed at **Appendix G**. It should be noted that not all tank lids required removal to facilitate the works and asbestos gaskets may still be present on some of the remaining in-situ lids. Photographs of a typical asbestos gasket are enclosed at **Appendix D.**

# 4 Tank and Pipeline Emptying

## 4.1 Tank Emptying

4.1.1 Whilst some tank water contained significant concentrations of dissolved phase hydrocarbons, no tank contained sufficient LNAPL to warrant separate removal. All waters were pumped directly to one of four of our own mobile waste water treatment plants (WWTP).

4.1.2 Environmental monitoring during waste water discharge confirmed all waste waters discharged from the WWTP complied fully with the discharge criteria as agreed with the Environment Agency. Monitoring included sampling of soils in discharge areas before and after discharge; monitoring of treated water leaving the WWTP and; monitoring of groundwater monitoring boreholes adjacent to discharge areas which were only monitored whilst discharge was occurring at any particular discharge area. It should also be noted that groundwater monitoring boreholes were frequently found to be dry. Pre and post discharge monitoring/ validation of groundwater and soils confirmed the works had no impact on residual site conditions. Analysis certificates for the aforementioned monitoring and testing are enclosed at **Appendix F.**

4.1.3 Waste waters following treatment were either utilised in the manufacture of tank fill, or discharged to one of nine discharge areas. Three further discharge areas (Discharge Areas 3, 5, and 9) were deemed suitable for use but were not actually utilised. The location of the discharge areas is shown on drawing 2862_11F enclosed at **Appendix B.**

4.1.4 It should be noted that soil sampling prior to discharge in some proposed discharge areas showed slightly elevated concentrations of TPH or were in close proximity to areas where groundwater was already impacted by TPH. Therefore, proposed discharge areas 10 – 14 inclusive were not utilised for the discharge of treated tank water and have not been included on the final as-built drawing.

4.1.5 Approximately 9,125,000 litres of waste water was removed from the tanks and pipeline. Following treatment, approximately 3,500,000 litres was utilised in the manufacture of tank fill leaving approximately 5,400,000 litres which were discharged to the various discharges areas. To expedite completion of the works, contaminated water contained within the final lengths of pipeline was collected and exported from site. Approximately 225,000 litres was exported from site and consignment notes are contained at **Appendix G**.

### 4.2 Pipeline Emptying

4.2.1 The pipeline was either empty or predominately full of contaminated water. This water was decanted and treated in the WWTP.

## 5 Tank Cleaning

5.1 All tanks were entered and cleaned by a specialist tank cleaning contractor. Washings were transported to our WWTP. Sludges were exported from site by vacuum tanker. Records relating to offsite disposal of tank sludges are enclosed at **Appendix G.** Internal inspections and photographs were taken of the tanks. None of the tanks showed any obvious signs of rupture or leakage. Photographs of internal inspections are enclosed at **Appendix D**. Gas free certificates issued during the works are included on a CD enclosed at **Appendix E.**

## 6 Tank and Pipeline Filling

### 6.1 Tank Filling

6.1.1 We undertook bench trials to design the optimum mix for the grout. Final design mix consisted of PFA to which was added 1.5% OPC and 27% water. The bench design report is enclosed at **Appendix K.** During the filling of initial tanks, moulds were taken during batching to confirm the grout cured in a reasonable time and to a reasonable strength. It was found that grout manufactured by the batching plant cured considerably faster than the bench trials so the moulds were soon discontinued. Waterman inspected every tank upon completion of filling to confirm each filled tank was free of floating water, topped up with grout following initial shrinkage and that the grout had fully cured. The top 150mm of the access chambers utilised by the works was also capped with a concrete plug to prevent any erosion of the PFA grout.

6.1.2 A total of 99 tanks were de-commissioned. Of these, 19 were not filled with PFA/ OPC grout. As specified in the DCMS, Type 1 tanks were not filled except Type 1 tanks POL 23A and POL 25A which were only part filled with 1m depth of grout. Above ground fuel storage tanks were not filled.

There was a labelling error to drawings contained in the DCMS whereby POL25A and 25B were transposed. The drawings contained in this report are correct. Full detail on tank de-commissioning is provided on the summaries enclosed at **Appendix C.**

### 6.2 Pipeline Filling

6.2.1 The pipeline was filled in accordance with the DCMS. Full detail on pipeline de-commissioning is provided on the summary enclosed at **Appendix C** and on drawing 2862_17 at **Appendix B.**

6.2.2 This drawing shows locations where the pipe was actually cut to facilitate removal of contaminated water contained therein and subsequent filling with foam. This cutting to allow decanting and filling of the pipework entailed the removal of approximately 600mm length of pipe at each cutting location. Furthermore, at all valve pit locations, the pipeline was either already severed or was subsequently severed to allow access for decanting and foam filling. The result of this activity is that the pipeline was regularly severed (typically every 150m) thus ensuring clear pathway breaks along the entire pipeline network.

6.2.3 As mentioned previously, significant additional lengths of pipeline were discovered during the various survey works. Whilst a majority of this was de-commissioned in accordance with the DCMS, a number of small sections were handled differently. These sections relate to a single line of 4” pipework positioned between a fuel dispense point valve pit and fuel dispensing point embedded in concrete aprons. In order to fill pipeline, it is necessary to have access to both ends of a section. The fuel dispense points were not always accessible because they had either been capped off with concrete, filled with sand, could not be found or could not be accessed without extensive civil works to the concrete apron (which was unlikely to receive permission from English Heritage). Each of these fuel dispense points was connected to a nearby valve pit. On inspection, the pipeline serving the fuel dispensing points were found to be severed in the valve pits from any other pipework/ infrastructure and, the pipeline empty of any residues. This was obviously done as part of the de-mobilisation of the USAF. We have included a schematic (Drawing 2862_18) of a typical arrangement at **Appendix B**. This was confirmed at all known fuel dispense points via duel inspection by engineers from VertaseFLI and Waterman.

6.2.4 Confirmation that all fuel dispense points were severed at the valve pits and the pipeline back to the fuel dispense points is empty, clearly demonstrates a pathway break at all locations.

6.2.5 In accordance with the DCMS, disturbance to the existing infrastructure was kept to an absolute minimum. It was necessary to cut out very small sections of some of the above ground pipework (not major infrastructure) to facilitate inspection, emptying and or foaming.

### 6.3 Permeameter Tests

Permeameter tests were undertaken on materials immediately surrounding the pipeline at various locations. The hydraulic conductivity within the soils on site nearby exhibited similar permeability to that immediately surrounding the pipe, i.e., all within the same order of magnitude confirming limited potential for a preferential pathway outside the pipework. Results are provided at **Appendix N**.

## 7 Type 1 Tank Venting Report

7.1 Because the Type 1 tanks were either not filled or only part filled, an inspection and review of the existing venting arrangements on these tanks was undertaken by an independent consultant. The report is contained at **Appendix J**. It concluded that the existing venting arrangements were satisfactory save for the repair of one cover which was duly completed.

## 8 Health & Safety Plan

8.1 This completion report forms part of the Health & Safety Plan. The various drawings enclosed at **Appendix B** represent final as-built drawings. Whilst we have not constructed anything requiring recording, we have utilised materials namely, OPC, PFA and foam. Product data sheets for these materials are enclosed at **Appendix H**.

## 9 Ecology Management

9.1 It was necessary to excavate site investigation and access pits at various locations across the site. In accordance with the ecological constraints plan, such works were preceded by inspection of the areas by a suitably qualified ecologist and grass cutting which was also supervised by the ecologist. An ecological report is included at **Appendix M.**