DECOMMISSIONING PROJECT

D009

P1B BUILDING

PROCESS INFORMATION

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Clariant

PROJECT NUMBER	***Decommissioning 009***
PROJECT:	*P1B Production Building*
PLANT:	*P1B*
DOCUMENT REFERENCE:	*D009/PROCESS/012* *Decontamination Summary Report*
DATE:	12th October 2012
BY:	*Jane Mills*

Sign-off:

Name	Position	Signature	Date
Jane Mills	Site Engineering Manager	Jane Mills JANE MILLS	15/10/12
Duncan Marlor	Site Manager		15/10/12

1. Summary

The Production Facility in P1B Building has been through a programme of decontamination and decommissioning to ensure that as much preparation as possible has been completed ready for demolition.

The purpose of this report is to detail the status of the equipment on the plant and to identify any potential areas of contamination that remain in the building.

This report does not waive the responsibility of the Principal Contractor to take reasonable precautions during the demolition to ensure that the work-force is not exposed to an unreasonable risk.

2. Introduction

This report details the status of all plant and equipment that have been decontaminated as part of the P1B building decommissioning project. This document along with the E.I.C summary report gives the plant status for the purposes of demolition.

Where equipment/pipework has been flushed with water, these lines have been sprayed with yellow paint. If no flushing has been completed (i.e spiral wound pipework) or where obviously visual contamination remains that cannot be removed by flushing, these items have been sprayed with BLUE paint.

These visual indications do not provide a guarantee as to the "Cleanliness" of the equipment, only that the pipework or equipment has been flushed with water or subject to a production clean.

All decontamination has been completed following D009/PROCESS/006 – Decontamination Procedure – P1B Production Building. Any amendments to the decontamination that were completed as a requirement of the physical decontamination process have been hand-written into the Decontamination Procedure document.

3. Plant Status

Table 3.1 Plant Status Summary

Equipment Number	**Decontamination Method**	**Status**
P1-19	Production boil-out completed. Receiver flushed with water	Reactor should be considered clean. Receiver should be considered contaminated.
P1-44	Production boil-out completed	Should be considered clean
P1-27	Production boil-out completed	Should be considered clean
P1-27 Receiver	Flushed with water	Potentially contaminated
Toluene Receiver	Flushed with water	Potentially contaminated with Toluene
P1-30	Production boil-out completed. Glassware flushed Receiver flushed with water	Reactor should be considered clean. Glassware is potentially contaminated with Iso-Butanol Receiver should be considered contaminated.

P1-31	Production Boil-out completed. Glassware flushed	Should be considered clean. Glassware potentially contaminated
P1-31 Receiver	Flushed with water	Potentially contaminated with Iso-Butanol
P1-32	Production boil-out completed Water tank sterilised, emptied and flushed with clean water	Should be considered clean
P1-37	Production boil-out completed	Should be considered clean
P1-36 Receiver	Flushed through as part of production boil-out of P1-37.	Should be clean
P1-17	Production boil-out has been completed.	Should be considered clean
P1-17 A/B Receivers	Receivers flushed with water	Should be considered contaminated
P1-07	Vessel not used for a number of years. Upon inspection, free from residue & odour. Receivers flushed with water	Should be considered clean. Receivers may be contaminated.
P1-08	Vessel not used for a number of years. Upon inspection, free from residues & odour. Receivers flushed with water	Should be considered clean. Receivers may be contaminated.
P1-09	Vessel not used for a number of years. Upon inspection, free from residue & odour	Should be considered clean. Glassware should be considered to be contaminated.
P1-10	Production boil-out completed. Solvent receivers flushed with water.	Should be considered clean
P1-11	Vessel not used for a number of years. Upon inspection, free from residue & odour	Should be considered clean. Glassware should be considered contaminated. Transfer lines could be contaminated.
P1-03	Production boil-out completed	Should be considered clean.
CK-100 Mill & DCE Unit	Unit washed through and swept	Mill and DCE unit should be considered contaminated with CK-100 powder
P1-01 DCE Unit located outside building	DCE Unit swept clean and visible powder removed	DCE Unit and ductwork potentially contaminated with paraben and sodium salt residues
P1-03 DCE Unit located outside building – associated with CK-100 production.	DCE Unit swept clean and visible powder removed	DCE Unit and ductwork potentially contaminated with CK-100 powder.
Scrubber unit associated with P1A/B	Legionella clean completed by Promanex	Clean
ISO-BUTYL Flaker Unit & Drier	Equipment has not been used for >5years. Flushed through with water as much as possible.	Potentially contaminated.
Vacuum System	Flushed with water as much as possible	Should be considered contaminated.

Where testing has been completed, this does **NOT** guarantee that the item is free from contamination, only that it has been tested for certain chemicals that could be present. **NO GUARANTEES ARE GIVEN ON THE CLEANLINESS OF THE EQUIPMENT.**

All utility supplies have been isolated and the plant disconnected.

ANY EQUIPMENT NOT DETAILED IN THIS REPORT SHOULD BE TREATED AS CONTAMINATED AND LIVE.

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PROJECT NUMBER	***Decommissioning 009***
PROJECT:	*P1B Building Decommissioning*
PLANT:	*P1B*
DOCUMENT REFERENCE:	*D009/PROCESS/001* *Project Scope*
DATE:	28th October 2011
BY:	*Jane Mills*

Project Approvals:

Name	Position	Signature	Date
Jane Mills	Site Engineering Manager	Jane Mills JANE MILLS	11/11/11
Paul Davies	Project Engineer		14/11/2011
John Spence	Project Engineer	JM Spence	21/11/2011
Scott Cinderby	ESHA Manager	S. Cinderby	24.11.11
Michael Macintosh	Plant Manager	MRMacintosh	24/11/11
Duncan Marlor	Site Manager		28/11/11

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1. Introduction: Business Case

Production in P1B will cease production in November/December 2011 as the material produced is due to be sourced from an external supplier. These facilities are therefore redundant and require decommissioning. The purpose of this project is to ensure that the building P1B is decommissioned in such a way to leave the plant in a known condition.

As Pontypridd site is due to shutdown, it is essential that the condition and status of all plants is known and recorded in order to reduce the potential of accidents or incidents during any future demolition activities. This project will ensure that the plant status is recorded and any isolations/equipment removals are documented.

2. Project Summary

This project details the activities and isolations required for decommissioning to ensure that the plant is left in a "known" condition and all services (e.g. power, utilities) are left "cold & dead". In order to leave the production area in a safe condition, it will be necessary to leave power to all the lighting in the building until such time that it is proposed to demolish the building.

Currently there are no items of equipment to be transferred to other Clariant production sites, therefore, all items of equipment are due to remain in the building once decontaminated and decommissioned. It is currently anticipated that this equipment may be either sold or scrapped by the demolition contractor during any demolition activities.

The main items of equipment covered by this decommissioning are:

- P1-19
- P1-44
- P1-27
- P1-27 Receiver
- Toluene Receiver
- P1-30
- P1-31
- P1-31 Receiver
- P1-32
- P1-37
- P1-36 Receiver
- P1-17
- P1-17 A/B Receivers
- P1-07
- P1-08
- P1-09
- P1-10
- P1-11
- P1-03
- CK-100 Mill & DCE Unit
- P1-01 DCE Unit located outside building
- P1-03 DCE Unit located outside building – associated with CK-100 production.
- Scrubber unit associated with P1A/B
- ISO-BUTYL Flaker Unit & Drier

- All ancillary equipment associated these vessels is redundant and requires decommissioning. This includes all transfer pumps, drain tanks/receivers (if not mentioned separately), vacuum pumps and all glassware.
- All Instrumentation and control associated with the equipment identified (Where applicable). In this building most instrumentation is local only.
- Utility supplies
    - Nitrogen
    - Cooling Water
    - Chilled Water – Chiller to be decommissioned separately.
    - Instrument Air

  - Steam – To P1B building ONLY. Steam for P6 building traverses P1A, and needs to remain in operation until June 2012.
  - Condensate
  - Electricity

The decontamination/decommissioning of any other equipment in P1A/B building is outside the scope of this project and will be dealt with separately.

All chillers will be decommissioned by an external contractor and are therefore outside the scope of the project.

3. Project Scope

3.1 Process/Production

Decontamination of P1B Building in D009/PROCESS/006 – Decontamination Procedure

3.2 Mechanical Scope

Decommissioning of P1B Building identified in D009/MECH/001 – Mechanical Project Summary

3.2 E.I & C Scope

Electrical, Instrumentation and Control decommissioning of P1B Building as identified in D009/E.I&C/001 – E.I.&C Scope Document.

3.3 Other

- Update insurance schedule to remove equipment from inspection schedule – Pressure and Lifting Equipment
- Update SAP to remove, delete/disable preventative maintenance routines.
- Review spares and assess any changes to spares holding.
- Update asset register with plant status.

4. Project Schedule

4.1 Project Schedule

Production ceases in November 2011. Process Boil-outs to remove gross contamination to occur December 2011. Decommissioning activities to start January 2012..

5. Reference Documents

- See D009 - Document Register for details of all project documents.

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CHEMICAL INFORMATION – DECOMMISSIONING PROJECT 009, P1B PRODUCTION BUILDING

Project Number: D009
Project Description: P1B - Building Decommissioning
Document Reference: D009/PROCESS/003 – Chemical Information

Products produced:

Production Building	**Reaction Vessel**	**Product**
P1B	P1-30	Iso-Butyl Paraben
	P1-07 & P1-08	Not used since 2002. Previous use manufacture of AF-366N
	P1-03	CK-100

CHEMICAL INFORMATION – DECOMMISSIONING PROJECT 009, P1B PRODUCTION BUILDING

PRODUCT	**Material**	**Form**	**MSDS Available**	**Vessel material used in**	**Purpose**
Iso-Butyl Paraben	Methyl Paraben	Solid/Powder	YES		Reaction
	Tilcon TNBT	Liquid	YES		Reaction
	Phosphoric Acid	Liquid	YES		Reaction
	Methanol	Liquid	YES		Reaction
	Toluene	Liquid	YES		Reaction

PRODUCT	**Material**	**Form**	**MSDS Available**	**Vessel material used in**	**Purpose**
CK-100	Hostaphat CC 100	Solid/Powder	YES		Reaction
	Potassium Hydroxide 50%	Liquid	YES		Reaction
	Cylclohexane	Liquid	YES		Reaction

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Clariant

PROJECT NUMBER	***Decommissioning 009***
PROJECT:	*Decommissioning of P1B Production plants*
PLANT:	*P1B*
Document Reference	*D009/PROCESS/006 Decontamination Procedure*
DATE:	25th May 2012
BY:	*Jane Mills*

The purpose of this document is to detail the decontamination procedure to be followed to achieve a "KNOWN" condition in terms of chemical contamination for the various items of equipment associated with the decommissioning project. This procedure will NOT "Clean" the equipment.

Name	Position	Signature	Date
Jane Mills	Site Engineering Manager	Jane Mills JANE MILLS	31/5/12
Paul Davies	Project Engineer		1/6/2012
John Spence	Project Engineer	JM Spence	8/6/12
Scott Cinderby	ESHA Manager	S. Cinderby	08.06.12
Michael Macintosh	Plant Manager	MRMacintosh	31/5/12
Duncan Marlor	Site Manager		15/6/12

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HEALTH & SAFETY STATEMENT

Although a Decontamination Risk Assessment has been completed, all activities during the decontamination and decommissioning are required to be completed under a permit to work issued by the Team Leader. This will include all Operator activity for the flushing of pipework as well as all maintenance/contractor activity for connecting/disconnecting pipework and hoses.

1. Reference Documents

The following documents are required for reference when using this decontamination procedure:

- D009-PROCESS-001 Project Scope
- D009-PROCESS-002 P&ID List
- D009-PROCESS-003 Chemical Information
- D009-PROCESS-004 Line List
- D009-PROCESS-005 Decontamination Register
- D009-PROCESS-007 Decontamination Risk Assessment
- QA Testing Guidelines for Materials in Chemical Information List.

P&ID's of the plant as identified in Document D009-PROCESS-002 P&ID List.

2. Equipment/Items Required

The following items of equipment will be required in order to complete the decontamination identified in the procedures. This equipment should be obtained before starting any decontamination work and identified as for "Decommissioning ONLY".

- Process Decommissioning Locks
- IBC for clean water
- Waste IBC's for collecting effluent.
- Air diaphragm pump for direct transfer of water into process vessels.
- Hose and lance assembly for connection to air diaphragm pump to empty IBC.
- Hose connection for transfer into process vessels
- Air line for connection of diaphragm pump
- A pallet truck or Fork Lift truck will be required for moving IBC's.

3. Control Overrides Required

This plant is operated in manual.

4. Procedures for Decontamination

Precautions identified in the Decontamination Risk Assessment (D009-PROCESS-D007) must be followed when completing the decontamination identified. For all line breaks or temporary pipework, a permit to work must be obtained.

4.1 P1-11 Reactor

- This vessel has not been used for a number of years. The vessel has been inspected and is free from residue and odour, therefore no other flushing is proposed.
- Line to P1-07 should be labeled as potentially contaminated.
- Disconnect line to solvent receiver from overhead condenser.
- Connect water hose to valve and flush water through to solvent receiver for approximately 20minutes to flush.
- Chilled water line to be flushed as part of utilities system.
- Vacuum line to be flushed as part of vacuum system
- Glassware should be labeled as contaminated as no means of flushing
- Nitrogen line to be disconnected and purged.
- Once utilities decommissioning completed, utilities to be isolated and jacket drained.

Process Decommissioning of P1-11 completed	
Signature: MBassett Name: M BASSETT	Date: 17.7.12

4.2 P1-10

- Production boil-out has been completed, so vessel is as clean as possible.
- Line to P1-03 has already been flushed as part of the production boil-out.
- Disconnect line to solvent receiver from overhead condenser at first valve.
- Connect water hose to valve and flush water through to solvent receiver for approximately 20minutes to flush. (Solvent receiver P1-10/P1-11).
- Disconnect both feed lines (Potassium hydroxide/DFS) from the reactor. Flush these lines without allowing material into the reactor.
- Vacuum line to be flushed as part of the vacuum system.
- Chilled water to be flushed as part of the utilities system.
- Nitrogen line to be isolated, disconnected and purged.
- Once utilities decommissioning is completed, utilities to be isolated and jacket drained.
- Once Flushing of P1-11 and P1-10 is completed, empty Solvent receiver P1-11/P1-10 and jet wash clean.

Process Decommissioning of P1-10

Signature: MBassett

Name: M BASSETT

Date: 17.7.12

4.3 P1-09

- This vessel has not been used for a significant period of time. On inspection, vessel was determined to be free from residue and odour, therefore no further flushing is proposed.
- Glassware to be labeled as contaminated as no further flushing is to be completed.
- Disconnect line from top of glassware column, and connect water line.
- Flush water through to DF-1 and P1-09 receivers in turn to clear lines. (Valves on DF-1 base to be closed to prevent flushing material to be returned back to P1-09).
- Disconnect DF-1 from P1-09 and drain vessel out. Flush with water.
- Empty P1-09 receivers and flush with water. The glass receiver should be labeled as contaminated. Rinse the metal receiver and pump residues to IBC.
- Vacuum system to be flushed as part of the vacuum system decommissioning.
- Chilled water to be flushed as part of the utilities decommissioning.
- Nitrogen to be isolated and vented.
- Once completed, all utilities should be isolated and vessel jacket drained.

Process Decommissioning of P1-09 Complete

Signature: MBassett

Name: M BASSETT

Date: 17.7.12

4.4 P1-08

- This vessel has not been used for a considerable period of time, on inspection the vessel was determined to be free from residues and odour, therefore no further flushing proposed.
- Disconnect line from top of glass column and connect water line.
- Flush water through to DF-2 and P1-08 receiver in turn to clear lines. (Valves on base of DF-2 to be isolated to prevent flushing material to be returned to P1-08).
- Disconnect DF-2 from P1-08 and drain to waste IBC. Flush through with water.
- Connect water line to double valve arrangement on line to DF-3.

- Flush through to DF-3, ensure valve to DF-2 is closed to prevent additional water into DF-2.
- Empty P1-08 receiver and flush with water. Rinse with water and pump residue to waste IBC.
- Chilled water to be flushed as part of the utilities decommissioning.
- Nitrogen to be isolated and vented.
- Vacuum lines to be flushed as part of the vacuum system.
- Once decommissioning completed, then vessel should be isolated and jacket drained.

Process Decommissioning of P1-08 complete	
Signature: MBassett Name: M BASSETT	Date: 17.7.12

4.5 P1-07

- This vessel has not be used for a considerable period of time, on inspection it was determined to be free from residues and odour, therefore it is not proposed to completed any further flushing of the vessel.
- Disconnect DF-3 from P1-07.
- Empty DF-3 to waste IBC. DF-3 should be labeled as contaminated.
- Chilled water line to be flushed as part of utilities decommissioning.
- Nitrogen line to be isolated and vented.
- Vacuum lines to be flushed as part of the vacuum system decommissioning.
- Once decommissioning completed, then vessel should be isolated and jacket drained.

Process Decommissioning of P1-07 completed	
Signature: MBassett Name: M BASSETT	Date: 17.7.12

4.6 P1-17

- Production boil-out has been completed for this vessel; therefore no further flushing is required.
- Connect water line to 15mm valve on PVC line. Using this hose, flush through glassware and receivers P1-17 A/B for a minimum of 10minutes. Drain water out of receivers to waste IBC. All glassware should be labeled as potentially contaminated.

- Chilled water line to be flushed as part of the utilities decommissioning.
- Vacuum lines to be flushed as part of the vacuum system decommissioning.
- Nitrogen lines to be isolated and vented.
- Once decommissioning completed, then vessel should be isolated and jacket drained.

Process Decommissioning of P1-17 completed

Signature: MBassett.
Name: M BASSETT.
Date: 17.7.12

4.7 P1-37 Drier

- Production boil-out has been completed on the drier and the feed into the drier was flushed as part of this boil-out. Therefore no further flushing is proposed.
- Disconnect nozzle on P1-36 receiver and wash through with water. All residues should be collected into waste IBC's.
- Vacuum lines will be flushed as part of the vacuum system.
- Nitrogen lines to be isolated and vented.

Process Decontamination of P1-37 completed

Signature: MBassett
Name: M BASSETT.
Date: 17.7.12

4.8 P1-32

- Production boil-out has been completed for this vessel. Therefore no further flushing is proposed.
- Glassware to be labelled as potentially contaminated.
- Water tank to be emptied and flushed with clean water. If there is stagnant water when flushing starts, then after emptying, fill with water and add approximately 25kg of Sodium Hypochlorite to sterilise. Empty tank and flush to remove residues.
- Vacuum lines will be flushed as part of the vacuum system.

Process decommissioning of P1-32 completed.

Signature: MBassett
Name: M BASSETT.
Date: 17.7.12

4.9 P1-31

- Production boil-out of this vessel has been completed; therefore it is not proposed to complete any further flushing.
- Disconnect glassware below condenser to P1-31 receiver.
- Connect water hose to line at specification change point. Flush water into P1-31 receiver and drain to waste IBC.
- Connect water hose to 1" valve on base of P1-31.
- Close base valve.
- Open necessary valves and flush water through line into flaker rooms.
- Vacuum line to be cleaned as part of vacuum system.
- Nitrogen to be isolated then vented.
- Once decommissioning is completed, isolate and drain jacket.

Process decommissioning of P1-31 completed	
Signature: M Bassett Name: M BASSETT	Date: 17.7.12

4.10 P1-30

- Production boil-out of this vessel has been completed; therefore it is not proposed to complete any further flushing.
- Connect water hose on vent drain line (from glass column above reactor).
- Flush water into P1-30 receiver and drain to waste IBC.
- Any water from column should be drained into P1-30 and emptied to IBC.
- In the event of draining water into P1-30, then give P1-30 a rinse with fresh water to clean.
- Once decommissioning is completed, isolate and drain jacket.

Process decommissioning of P1-30 completed	
Signature: M Bassett Name: M BASSETT	Date: 17.7.12

4.11 P1-27

- Production boil-out of this vessel has been completed; therefore it is not proposed to complete any further flushing.
- Disconnect line to P1-30 receiver from glass condenser.
- Connect water hose to line to P1-30 receiver.
- Flush water through to P1-30 receiver for approximately 10minutes.
- All glassware to be marked as contaminated.
- Chilled water line to be flushed as part of the utilities decommissioning.
- Once decommissioning is completed, isolate and drain jacket.

Process decommissioning of P1-27 completed	
Signature: M Bassett Name: M BASSETT.	Date: 17.7.12.

4.12 P1-44

- Production boil-out of this vessel has been completed; it is therefore not proposed to complete any further flushing of the reactor.
- Disconnect line from P1-19 receiver at top of P1-44.
- Connect water hose to valve and flush water into P1-19 receiver to flush.
- Isolate and drain mains water supply into vessel.
- Disconnect line from glass condenser to P1-30 receiver.
- Connect water hose to valve and flush into P1-30 receiver for approximately 10 minutes.
- All glassware to be marked as contaminated.
- Once decommissioning is completed, isolate and drain jacket.

Process decommissioning of P1-44 completed	
Signature: M Bassett Name: M BASSETT.	Date: 17.7.12.

4.13 P1-19 and P1-19 Receiver

- Production boil-out of P1-19 has been completed; it is therefore not proposed to complete any further flushing of the reactor.
- Once decommissioning is completed, isolate and drain jacket.

4.13.1 P1-19 Receiver

- Disconnect line from P1-19 condenser and connect water hose.
- Nitrogen to be isolated and vented.
- Flush clean, fresh water into P1-19 receiver from connected water hose.
- Disconnect glass-line at base of P1-19 receiver.
- Connect hose to enable draining of P1-19 receiver into waste IBC.
- Vacuum lines to be flushed as part of vacuum system.
- All glassware to be marked as contaminated.
- Once decommissioning is completed, isolate and drain jacket.

Process decommissioning of P1-19 completed	
Signature: ...M Bassett........... Name: ......M BASSETT.............	Date: ..17.7.12...................................

4.14 P1-30 Receiver & P1-21 Receiver

- Before starting the decommissioning of these vessels, ensure that the lines into these vessels have been flushed from the respective reactors.

4.14.1 P1-30 Receiver

- Nitrogen to be isolated and fully vented.
- Lines from P1-30, P1-27 and P1-44 to be flushed.
- Empty contents of P1-30 receiver into waste IBC.
- Remove manway/nozzle from top of vessel and flush with fresh water.
- Vacuum lines to be cleaned as part of vacuum system.

4.14.2 P1-21 Receiver

- Nitrogen to be isolated and fully vented.
- Disconnect vessel from vacuum system.
- Flush into P1-21 Receiver to clean lines.
- Vacuum lines to be cleaned as part of vacuum system.

Process decommissioning of P1-30 Receiver & P1-21 Receiver completed	
Signature: ..M Bassett............. Name: ...M BASSETT................	Date: ...17.7.12................................

4.15 P1-03

- Production boil-out of P1-03 drier has been completed; it is not therefore proposed to complete any further flushing of P1-03.
- Nitrogen to be isolated and fully vented.
- Disconnect charging line (Diaphragm pump) from P1-03.
- Using water line connected to P1-03, flush water into P1-03 receiver. (Avoid where possible, water into P1-03).
- Once decommissioning completed, isolate and drain jacket.

4.15.1 P1-03 Receiver

- Nitrogen to be isolated and fully vented.
- Drain contents of P1-03 receiver to waste IBC.
- Wash out receiver with clean water.
- Vacuum lines to be flushed as part of the vacuum system.

Process decommissioning of P1-03 completed	
Signature: MBASSETT Name: M Bassett	Date: 17.7.12

4.16 Vacuum System

The main BUSCH Vacuum pumps associated with P1B production building have been decommissioned and removed, however the pipework for these systems remain in place and require flushing.

- Disconnect vacuum system from all reactors and receivers to avoid potential water contamination.
- Where possible, these should be disconnected at a valve and all valves closed. If no valves available, then valves are to be installed.
- Connect water line to vacuum point at P1-11 and fill system with water.
- Connect hoses to low points in sequence and flush through vacuum system to all reactors/receivers and the low points at the vacuum pumps.
- All water from flushing is to be collected to IBC's and labeled for disposal.
- All vacuum lines are to be labeled as potentially decontaminated.

Process decommissioning of vacuum system completed All pipework should be assumed to be contaminated.	
Signature: M Bassett Name: M BASSETT	Date: 17.7.12

4.17 CK100 Mill & DCE Unit

4.17.1 CK100 Mill

- Isolate mill before cleaning
- Vacuum to remove powder traces before washing as CK100 becomes soapy/slippery when wet.
- Wash down mill when as much powder as possible has been removed.
- Mill to be labeled as potentially contaminated.

4.17.2 CK100 DCE Unit

- Any excess powder should be removed from the unit.
- Filters to be removed.
- All spiral wound ductwork to be considered contaminated.
- DCE housing unit to be cleaned as much as possible, however should still consider this unit to be contaminated.

Process decommissioning of CK100 Mill completed All pipework should be assumed to be contaminated.	
Signature: M Bassett Name: M BASSETT.	Date: 17.7.12
Process decommissioning of Mill DCE unit completed Where possible extraction pipework has been emptied, however some residues will remain and the DCE unit should be considered to be contaminated.	
Signature: M Bassett Name: M BASSETT	Date: 17.7.12

4.18 P1-01 & P1-03 DCE Units

All dust extraction systems have been left as it is not possible to clean these systems. They can therefore be assumed to be contaminated.

- DCE Housing unit to be vacuumed to remove as much powder residue as possible, hoppers should be emptied and filters removed. All filters to be disposed of as solid waste.

Decontamination of Dust Extraction system Where possible lines have been emptied, however residues will remain in all spiral wound pipework on the dust extraction system.	
Signature: M Bassett Name: M BASSETT	Date: 17.7.12

4.19 Scubber Unit

Scrubber to be cleaned by Promanex – this is just the body of the scrubber. All extraction ductwork should be considered contaminated as it is not possible to clean these systems.

Decontamination of P1A/B Scrubber I confirm that P1A/B scrubber has had a full Legionella clean and certificate issued.	
Signature: M Bassett Name: M BASSETT	Date: 17.7.12

4.20 Flaker Unit & Drier

This equipment has not been in use for a significant period of time (+5years). The plant would have been cleaned prior to shutdown, it is therefore proposed to give the equipment a water flush, but not a full production boil-out.

- Ensure that Flaker unit is isolated.
- Remove manway/lid from Flaker unit.
- Rinse through flaker unit/drier to tank
- Drain contents to IBC and label for disposal.

Decommissioning of Flaker Unit/Drier	
Signature: M Bassett Name: M BASSETT	Date: 17.7.12

4.21 Utilities

- Nitrogen supply to be isolated and vented.
- Steam and cooling water are part of the P6 system and therefore cannot be isolated fully in the building; local jacket draining only will be completed.

4.21.1 Chilled Water Supply

- Chillers to be decommissioned by Cooltherm separately.
- Glycol/Water tanks to be drained and flushed with fresh water. All Glycol/water to be collected to IBC's as the COD is too high for the effluent plant to cope with.
- Flush through pipework with fresh water to remove glycol/water.
- Drain all effluent to IBC's.

Decontamination of Utility Pipework I confirm that all utility pipework has been isolated and drained in accordance with the above schedule.	
Signature: MBassett Name: M BASSETT	Date: 17.7.12
Decommissioning of Chillers associated with P1B has been completed by COOLTHERM.	
Signature: J Mills Name: J. MILLS	Date: 17/7/12

CLARIANT PRODUCTION UK LIMITED – ICS

Procedure for Boil-outs of P1-10, P1-03 and associated transfer lines.

ISSUE NO: 1 DATE OF ISSUE: 22/11/11

AUTHOR: **MICHAEL MACINTOSH**

Location: P1	**Boil-out Authorised by:** MRMacIntosh

Check the plant logbook to ensure the Plant is empty before starting procedure

Equipment	Plant number	Current Status:	Signature	Date
2270 SS vac paddle drier	P1-03	See logbook	NS	1501.12
1360L SS reactor Reactor	P1-10	See logbook	NS	15.01.12
Receiver	P1-03	See logbook	NS	15.01.12

Below is a Brief summary of H & S information including PPE of raw materials included in the Original process stream (see Material Safety Data sheets and COSHH assessments for full details). In order to reduce exposure, check that all plant and associated filling flasks are empty.

Material	Hazard	PPE (as well as boiler suit, safety boots, safety glasses and helmet)
Hostaphat CC 100	Dusty solid. Irritant.	Full face respirator or air respirator. Helmet with combined organic and dust filter. Butyl rubber gauntlets. Goggles. Disposable dust suit.
50% aqueous KOH	Extremely corrosive. Causes serious burns.	Green chemical suit. Wellington Boots. Goggles. Face Visor. Nitrile or Butyl Rubber Gauntlets.
Cyclohexane	Highly Flammable!!. Irritant.	Full face respirator or air respirator. Helmet with combined organic and dust filter. Butyl rubber gauntlets. Apron. PVC or rubber gauntlets. Goggles. Wellington Boots.
Hostaphat CK 100	Probable irritant.	Full face respirator or air respirator. Helmet with combined organic and dust filter. Butyl rubber gauntlets. Goggles. Disposable dust suit.
Recovered/Fresh Propanol	Highly flammable, toxic May cause eye irritation	Face shield, Gauntlets, Green PVC suit, Rubber Wellingtons

Approved by: (Production Manager) MRMacIntosh **Date:** 29/11/11.

Approved by: (ESHA Manager) S. Linderby **Date:** 29.11.11

Approved by: (Engineering Manager) J. Mills **Date:** 29/11/11

INTRODUCTION

SCOPE OF SOP

This SOP describes the practices to be followed in order to safely remove Gross contamination from the listed vessels in preparation for hand-over to the de-commissioning team. Further water cleaning may be required.

RESTRICTIONS TO USE

- The cleaning of a vessel is to be performed by authorised, trained personnel only.
- Any operations during the washing of a vessel, which are not detailed within this SOP, must be communicated to supervision before commencing the operation. This is to allow complete assessment of all hazards and potential hazards.
- Any apparent problems or abnormalities arising in or with use of this SOP e.g. instructional errors or omissions must be alerted to supervision or line management.
- Any plant changes or plant modifications must be communicated to line management in order to allow SOP amendments and re-issue.

* An **Electrostatic Charge** can build up in the movement of low- conductivity flammables or combustible liquids. This risk is minimised by the use of conductive materials.

STEP 1

1.1] Check Cooling Tower – CT -01 is on and the cooling circulating around the condensers. Drain Glassware of residual Cyclohexane to an Earthed flammable IBC Boil out P1-10 Following **SOP**WASH** (Boiling out a Reactor) with the qty listed below.

	Batch quantity	Actual quantity used	Time finish charge	Signature
Recovered Propanol	**600 Litres**	600 Ltrs	08.00	NS

Date	15.01.12	Time	08.10	Signature	NS.

.2] Empty P1-03 Receiver of residual Cyclohexane to an Earthed flammable IBC, Nitrogen purge P1-03 as per **SOP** N2,** apply vacuum to the vessel, remove the in-line Filter cartridges in the transfer line between P1-10 and P1-03. Replace the filter housing and transfer the boil out wash to P1-03 through the transfer line. Follow the procedures described below to transfer the wash from P1-10 to P1-03.

Transfer Checklist P1-10 to P1-03	**Tick when complete**
Ensure agitators are off on P1-10 and P1-03	✓
Nitrogen purge the dryer **P1-03 SOP**N2.**	✓
Apply vacuum to P1-03	✓
Ensure vent on P1-10 is open.	✓
Open the valves in the transference line between P1-10 and P1-03	✓
Apply a nitrogen blanket to P1-10 to prevent air ingress during transfer.	✓
When the boil out transfer is complete, close the transfer valves, switch off vacuum and vent the vacuum in P1-03 with nitrogen.	✓
Remove Filter housings to empty residual n-Propanol into an earthed S/S Bucket	✓

Date	15.01.12	Time	09.15	Signature	NS

1.5] Turn on the agitator of the dryer P1-03

Date	15.01.12	Time	09.16	Signature	NS

1.6] Open the vent valve on the dryer. Apply low pressure steam to the dryer.

Date	15.01.12	Time	09.20	Signature	NS

1.7] Heat the dryer to reflux **62°C - 66°C**. Close the steam valve on the dryer.

Date	15.01.12	Time	10.15	Signature	NS

1.8] Apply Vacuum to the dryer; pull Propanol into the condenser - continue for 5 minutes, (to clean condenser and vac line to the receiver). Shut down the vacuum and vent with Nitrogen.

Date	15.01.12	Time	10.30	Signature	NS

1.9] Apply cooling water to the jacket of the dryer. Cool the contents of the dryer to **25°C -28°C SOP**PURE.** Close the cooling valves and drain the jacket of the dryer.

Date	15.01.12	Time	11.45	Signature	NS.

1.10] Turn off P1-03 Agitator, open the outlet valve of the dryer. Discharge the Propanol from the dryer into an earthed, anti-static IBC labelled "Propanol from P1-03 Drier Clean down" **SOP**TR.FLAMM**

Date	15.01.12	Time	12.30	Signature	NS

1.11] Apply a full vacuum to the dryer in order to remove residual Propanol.

Date	15.01.12	Time	13.00	Signature	NS

1.12] Open the Manway's on both vessels P1-10 and P1-03 to check that all residual powders have been removed. If not inform Line management and repeat steps1.1 to 1.13.

Date	15.01.12	Time	13.45	Signature	NS

1.13] Empty receiver P1-03 contents into an earthed anti-static IBC ref **SOP**TR.FLAMM**

Date	15.01.12	Time	14.00	Signature	NS

tep 2 Glassware and Receiver draining.

2.1] Once all previous steps are completed Drain the glassware and condensers or residual solvent, these should only be drained into an S/S earthed container and must be placed into an earthed, anti-static IBC labelled "Propanol from CK100 clean down for disposal"

Equipment	**Plant number**	**Status**	**Signature**	**Date**
Glassware	P1-10	**Drained of residual solvent**	NS	15.01.12
Glassware	P1-03	**Drained of residual solvent**	NS	15.01.12
Receiver	P1-03	**Drained of residual solvent**	NS	15.01.12

Step 3 Plant clean-down confirmations

Equipment	Plant number	Confirm all steps completed	Signature	Date
2270 SS vac paddle drier	P1-03			6/6/12
1360L SS reactor Reactor	P1-10			6/6/12
Receiver	P1-03			6/6/12

1] Handover accepted by De-commissioning team.

Date	6/6/12	Time	08-00	Signature	

CLARIANT PRODUCTION UK LIMITED – BU ICS

Procedure for Boil-out of P1-19.

ISSUE NO: 1 DATE OF ISSUE: 30/05/12

AUTHOR: **MICHAEL MACINTOSH**

Location: P1	**Boil-out Authorised by:**

Check the plant logbook to ensure the Plant is empty before starting procedure

Equipment	Plant number	Status	Operator Signature	Date
500 gallon Stainless Steel Vessel	P1-19	Clean		31.5.12
Stainless steel Receiver	P1-19	Clean		31.5.12

Below is a Brief summary of H & S information including PPE of raw materials included in the Original process stream (see Material Safety Data sheets and COSHH assessments for full details). In order to reduce exposure, check that all plant and associated filling flasks are empty.

Material	Hazard	PPE
Methanol	Toxic if swallowed, by inhalation or contact with skin. Highly flammable. Harmful to the environment.	PVC gloves Wellingtons Green PVC suit. Full face shield with neck-guard. Full face mask with suitable organic filter.
Toluene	Harmful, Flammable	Safety glasses, Rubber gloves or gauntlets, Full face respirator

Approved by: (Production Manager) MRMacIntosh **Date:** 31/5/12

pproved by: (ESHA Manager) S Underby **Date:** 01.06.12 .

Approved by: (Engineering Manager) Jane Mills **Date:** 31/5/12

INTRODUCTION

SCOPE OF SOP

This SOP describes the practices to be followed in order to safely remove Gross contamination from the listed vessels in preparation for hand-over to the de-commissioning team. Further water cleaning may be required.

RESTRICTIONS TO USE

- The cleaning of a vessel is to be performed by authorised, trained personnel only.
- Any operations during the washing of a vessel, which are not detailed within this SOP, must be communicated to supervision before commencing the operation. This is to allow for a complete assessment of all hazards and potential hazards.
- Any apparent problems or abnormalities arising in or with use of this SOP e.g. instructional errors or omissions must be alerted to supervision or line management.
- Any plant changes or plant modifications must be communicated to line management in order to allow SOP amendments and re-issue.

* An **Electrostatic Charge** can build up in the movement of low- conductivity flammables or combustible liquids. This risk is minimised by the use of conductive materials.

Step 1:

1.1] Ensure the plant is cooled to 20°C.

Date	31 · 5 · 12	Time	07 · 00	Signature	

1.2] Nitrogen purge **SOP**N2**

Date	31 · 5 · 12	Time	07 · 00	Signature	

1.3] At this stage the Plant must be cleaned out. Apply vacuum minimum 25" Hg and vacuum in the batch quantity of Methanol **SOP**Tr.SOL1**.

	Batch quantity	Actual quantity used
Fresh Methanol	**1000Lts**	1,000 Lt

Date	31 · 5 · 12	Time	08 · 00	Signature	

1.4] Start agitator and continue stirring for 15 minutes. **DO NOT APPLY STEAM AT ANY STAGE OF CLEAN OUT.**

Date	31 · 5 · 12	Time	08 · 20	Signature	

1.5] Discharge into contents into an earthed Antistatic IBC SOP****TR.FLAMM** and mark with the appropriate label "Methanol clean-out ex P1-19" for disposal.

Date	31 · 5 · 12	Time	11 · 00	Signature	

Step 2: Drain vessel receiver.

2.1] During the clean out, a small quantity of Methanol may collect in the receiver. To empty this; connect a hose from the receiver discharge into a flammable IBC, open the drain valve and allow the contents to empty. *N.B. Specific clean down for these receivers is not covered by this procedure and must be covered during the final de-commissioning wash down procedures.*

Step 3: Plant clean-down confirmations

Equipment	Plant number	Confirm all steps completed	Signature	Date
500gallon Stainless steel vessel	P1-19	YES		31.5.12
Stainless steel Receiver	P1-19 receiver	YES		31.5.12

3.1] Handover accepted by De-commissioning team.

Date	31.5.12.	Time	12.30	Signature	

CLARIANT PRODUCTION UK LIMITED – BU ICS

Procedure for Methanol Boil-outs of P1-32, P1-30, P1-44, P1-27, P1-31 and associated transfer lines.

ISSUE NO: 1 DATE OF ISSUE: 15/11/11

AUTHOR: **MICHAEL MACINTOSH**

Location: P1	**Boil-out Authorised by:**

Check the plant logbook to ensure the Plant is empty before starting procedure

Equipment	**Plant number**	**Status(Delete as applicable)**	**Signature**	**Date**
500 gallon stainless steel	P1-32	**See logbook**		
500 gallon stainless steel;	P1-30	**See logbook**		2/12/11
1000 gallon stainless steel	P1-44	**See logbook**		3/12/11
500 gallon glass lined	P1-27	**See logbook**		3/12/11
200 gallon glass lined	P1-31	**See logbook**		

Below is a Brief summary of H & S information including PPE of raw materials included in the Original process stream (see Material Safety Data sheets and COSHH assessments for full details). In order to reduce exposure, check that all plant and associated filling flasks are empty.

Material	**Hazard**	**PPE** (as well as Boiler suits, Safety Boots and helmet)
iso-Butanol	Highly flammable, Irritant	M510 Facesaver, Goggles, Gauntlets
Methyl Paraben	Slightly irritating to eyes and skin	Goggles, Folding Mask, Gauntlets
Tilcom TNBT	Flammable, Irritant	M510 Facesaver, Goggles, Respirator, Gauntlets, Green PVC suit
Recovered Methanol/ iso-Butanol	Highly flammable, Toxic Irritant	M510 Facesaver, Gauntlets, Goggles
Phosphoric Acid	Corrosive	Goggles, M510 Facesaver, Gauntlets, Green PVC suit
Toluene	Flammable, Harmful	Respirator, Goggles, Gauntlets
iso-Butyl Paraben	Slightly irritating to eyes and skin	Goggles, Folding Mask, Gauntlets
Methanol-	Highly flammable, Toxic Irritant	M510 Facesaver, Gauntlets, Goggles

Approved by: (Production Manager) MMacIntosh **Date:** 29/11/11

Approved by: (ESHA Manager) S. Cinderby **Date:** 29.11.11

Approved by: (Engineering Manager) G. Mills **Date:** 29/11/11

Copies of this master document are signed and controlled documents and should not be copied or altered in any way, without reference to the Production Manager.

INTRODUCTION

SCOPE OF SOP

This SOP describes the practices to be followed in order to safely remove Gross contamination from the listed vessels in preparation for hand-over to the de-commissioning team. Further water cleaning may be required.

RESTRICTIONS TO USE

- The cleaning of a vessel is to be performed by authorised, trained personnel only.
- Any operations during the washing of a vessel, which are not detailed within this SOP, must be communicated to supervision before commencing the operation. This is to allow complete assessment of all hazards and potential hazards.
- Any apparent problems or abnormalities arising in or with use of this SOP e.g. instructional errors or omissions must be alerted to supervision or line management.
- Any plant changes or plant modifications must be communicated to line management in order to allow SOP amendments and re-issue.

* An **Electrostatic Charge** can build up in the movement of low- conductivity flammables or combustible liquids. This risk is minimised by the use of conductive materials.

STEP 1: Boil out of P1-30, P1-44 and P1-27.

1.1] Check Cooling Tower – CT -01 is on and the cooling circulating around the condensers. Drain Glassware of residual Iso-Butanol to an Earthed flammable IBC then Boil out P1-30 Following **SOP**WASH** (Boiling a Reactor out with Fresh Methanol) with the qty listed below.

	Batch quantity	Actual quantity used	Time finish charge	Signature
FRESH METHANOL	**1,000 Litres**	1000 LTR'S	22·35	

ate	2/12/11	Time	22·35	Signature	

1.2] Nitrogen purge P1-44 as per **SOP** N2**, set up a flexible hose and an earthed S/S Diaphragm pump linked from the base valve of P1-30 to the inlet line of P1-44. Cool to **(25°C -28°C)** Follow the procedures described below to transfer the wash from P1-30 to P1-44.

Transfer Checklist P1-30 to P1-44	**Tick when complete**
Ensure the agitators on both P1-30 and P1-44 are off.	✓
Ensure the transfer line and Pump is earthed.	✓
Ensure the vents on P1-44 and P1-30 are open	✓
Open the valves in the transfer line between P1-30 and P1-44	✓
Apply nitrogen to P1-30 to prevent air ingress during transfer	✓
Check transfer lines; There should be no visible leaks.	✓
Open the air supply to the diaphragm pump to start the transfer.	✓
When the boil out transfer is complete, turn off the air supply to the pump, lose the transfer valves and vent the vacuum in P1-30 with nitrogen (if required)	✓
Drain residual Methanol from the pump and lines.	✓

Date	3/12/11	Time	01·35	Signature	

1.3] Check Cooling Tower – CT -01 is on and the cooling circulating around the condensers. Boil out P1-44 Following **SOP**WASH** (Boiling a Reactor out with Fresh Methanol) with the qty listed below – This is the Methanol already transferred from P1-30.

	Batch quantity	Actual quantity used	Time finish charge	Signature
METHANOL	**1,000 Litres**	1000 LTR'S	01·35	

Date	3/12/11	Time	01·35	Signature	

1.4] Nitrogen purge P1-27 as per **SOP** N2**, set up a flexible hose and an earthed S/S Diaphragm pump linked from the base valve of P1-44 to the inlet line of P1-27. Cool to **(25°C -28°C)** Follow the procedures described below to transfer the wash from P1-44 to P1-27.

Transfer Checklist P1-44 to P1-27	**Tick when complete**
Ensure the agitators on both P1-44 and P1-27 are off.	✓
Ensure the transfer lines and Pump are earthed.	✓
Ensure the vents on P1-27 and P1-44 are open	✓
Open the valves in the transfer line between P1-27 and P1-44	✓
Apply nitrogen to P1-44 to prevent air ingress during transfer	✓
Check transfer lines; There should be no visible leaks.	✓
Open air supply to the diaphragm pump.	✓
When the boil out transfer is complete, turn off the air supply to the pump, close the transfer valves and vent the vacuum in P1-44 with nitrogen (if required)	✓
Drain residual Methanol from the pump and lines.	✓

Date	3/12/11	Time	02·38	Signature	

1.5] Check Cooling Tower – CT -01 is on and the cooling circulating around the condensers. Drain Glassware of residual Iso-Butanol to an Earthed flammable IBC then Boil out P1-27 Following **SOP**WASH** (Boiling a Reactor out with Fresh Methanol) with the qty listed below – This is the Methanol already transferred from P1-44.

	Batch quantity	Actual quantity used	Time finish charge	Signature
METHANOL	**1,000 Litres**	1,000 Ltrs	02-38	

Date	3/12/11	Time	04·00	Signature	

1.6] Open the outlet valve of P1-27 Discharge the Methanol into an earthed, anti-static IBC labelled "Recovered Methanol from the Iso-Butyl clean down

Date	3/12/11	Time	04·30	Signature	

STEP 2: Boil out of P1-32, P1-44 and P1-27.

2.1] Check Cooling Tower – CT -01 is on and the cooling circulating around the condensers. Drain Glassware of residual Iso-Butanol to an Earthed flammable IBC then Boil out P1-32 Following **SOP**WASH** (Boiling a Reactor out with Fresh Methanol) with the qty listed below.

	Batch quantity	Actual quantity used	Time finish charge	Signature
FRESH METHANOL	**1,000 Litres**	1,000Ltrs	05.15	

Date	3/12/11	Time	05.15	Signature	

2.2] Nitrogen purge P1-44 as per **SOP** N2**, set up a flexible hose and an earthed S/S Diaphragm pump linked from the base valve of P1-32 to the inlet line of P1-44. Cool to **(25°C -28°C)** Follow the procedures described below to transfer the wash from P1-32 to P1-44.

Transfer Checklist P1-32 to P1-44	**Tick when complete**
Ensure the agitators on both P1-32 and P1-44 are off.	✓
Ensure the transfer lines and Pump are earthed.	✓
Ensure the vents on P1-44 and P1-32 are open	✓
Open the valves in the transfer line between P1-32 and P1-44	✓
Apply nitrogen to P1-32 to prevent air ingress during transfer	✓
Check transfer lines; There should be no visible leaks.	✓
Open the air supply to the diaphragm pump to start the transfer.	✓
When the boil out transfer is complete, turn off the air supply to the pump, close the transfer valves and vent the vacuum in P1-32 with nitrogen (if required)	✓
Drain residual Methanol from the pump and lines.	✓

Date	3.12.11	Time	10.30	Signature	MBarrett

2.3] Check Cooling Tower – CT -01 is on and the cooling circulating around the condensers. Boil out P1-44 Following **SOP**WASH** (Boiling a Reactor out with Fresh Methanol) with the qty listed below – This is the Methanol already transferred from P1-32

	Batch quantity	Actual quantity used	Time finish charge	Signature
METHANOL	**1,000 Litres**	1500 lt	11·00	MBassett

Date	3.12.11	Time	11·00	Signature	MBassett

2.4] Nitrogen purge P1-27 as per **SOP** N2**, set up a flexible hose and an earthed S/S Diaphragm pump linked from the base valve of P1-44 to the inlet line of P1-27. Cool to **(25°C -28°C)** Follow the procedures described below to transfer the wash from P1-44 to P1-27.

Transfer Checklist P1-44 to P1-27	**Tick when complete**
Ensure the agitators on both P1-44 and P1-27 are off.	✓
Ensure the transfer lines and Pump are earthed.	✓
Ensure vent on P1-27 is open	✓
Open the valves in the transfer line between P1-44 and P1-27	✓
Apply nitrogen to P1-44 to prevent air ingress during transfer	✓
Check transfer lines; There should be no visible leaks.	✓
Open the air supply to the diaphragm pump to start the transfer.	✓
When the boil out transfer is complete, turn off the air supply to the pump, close the transfer valves and vent the vacuum in P1-44 with nitrogen (if required)	✓
Drain residual Methanol from pump and transfer lines.	✓

Date	3.12.11	Time	12·00	Signature	MBassett

2.5] Check Cooling Tower – CT -01 is on and the cooling circulating around the condensers. Drain Glassware of residual Iso-Butanol to an Earthed flammable IBC then.Boil out P1-27 Following **SOP**WASH** (Boiling a Reactor out with Fresh Methanol) with the qty listed below – This is the Methanol already transferred from P1-44.

	Batch quantity	Actual quantity used	Time finish charge	Signature
METHANOL	**1,000 Litres**	1000	12:00	M.Bassett

Date	3.12.11	Time	12:00	Signature	M.Bassett

.6] Open the outlet valve of P1-27 Discharge the Methanol into an earthed, anti-static IBC labelled "Recovered Methanol from Iso-Butyl clean down

Date	3.12.11	Time	17.30	Signature	M.Bassett

STEP 3: Boil out of P1-31.

3.1] Check Cooling Tower – CT -01 is on and the cooling circulating around the condensers. Drain Glassware of residual Toluene to an Earthed flammable IBC then Boil out P1-31 Following **SOP**WASH** (Boiling a Reactor out with Fresh Methanol) with the qty listed below.

	Batch quantity	Actual quantity used	Time finish charge	Signature
FRESH METHANOL	**300 Litres**	300Ltrs	04.10	

Date	3/12/11	Time	04.10	Signature	

3.2] Open the outlet valve of P1-31 Discharge the Methanol into an earthed, anti-static IBC labelled "Methanol from Iso-Butyl clean down"

Date	3/12/11	Time	05.20	Signature	

STEP 4:Glassware and receiver draining.

4.1] Once all previous steps are completed Drain the glassware and condensers or residual solvent, these should only be drained into a S/S earthed container and must be placed into an earthed, anti-static IBC labelled "Methanol from Iso-Butyl clean down for disposal"

Equipment	Plant number	Status	Signature	Date
Glassware	P1-32	Drained of residual solvent	MBarrett	3.12.11
Glassware	P1-30	Drained of residual solvent		3/12/11.
Glassware	P1-44	Drained of residual solvent		3/12/11
Glassware	P1-27	Drained of residual solvent		3/12/11
Glassware	P1-31	Drained of residual solvent		3/12/11

4.2] Empty each receiver with nitrogen using **SOP**TR.FLAMM** into the same anti-static IBC as used in Step 4.1. (If sufficient capacity).

Equipment	Plant number	Status	Signature	Date
Receiver	P1-19	Drained of residual solvent		3/12/11
Receiver	P1-44	Drained of residual solvent		3/12/11
Receiver	P1-31	Drained of residual solvent		3/12/11

STEP 5: Plant clean-down confirmations

Equipment	**Plant number**	**Confirm all steps completed**	**Signature**	**Date**
500 gallon stainless steel	P1-32	Yes		3/12/11
500 gallon stainless steel;	P1-30	Yes		3/12/11
1000 gallon stainless steel	P1-44	Yes.		3/12/11
500 gallon glass lined	P1-27	YES		3/12/11
00 gallon glass lined	P1-31	YES		3/12/11

5.1] Plant handover accepted by De-commissioning team.

Date		Time		Signature	

CLARIANT PRODUCTION UK LIMITED – ICS

Procedure for Methanol Boil-outs of P1-15, P3-27, P2-20, P1-37 and associated transfer lines.

ISSUE NO: 1 DATE: 25/11/11

AUTHOR: **MICHAEL MACINTOSH**

Location: P1	**Boil-out Authorised by:**

Check the plant logbook to ensure the Plant is empty before starting procedure

Equipment	Plant number	Current Status:	Signature	Date
8000lts S/S Rotary vacuum dryer	P1-37/P2-20	See logbook		
Receiver	P1-36	See logbook		
Receiver	P2-20	See logbook		
500 gallon glass-lined vessel	P1-15	See logbook		
500 gallon stainless steel vessel	P3-27	See logbook		

Below is a Brief summary of H & S information including PPE of raw materials included in the Original process stream (see Material Safety Data sheets and COSHH assessments for full details). In order to reduce exposure, check that all plant and associated filling flasks are empty.

Material	Hazard	PPE (as well as Boiler suits, Safety Boots and helmet)
Nipagin M (Methyl Paraben)	Slightly irritating to eyes and skin	Gloves and Dust mask
Methanol	Highly flammable, toxic May cause eye irritation	Face shield, Gauntlets, Green PVC suit, Rubber Wellingtons
Nipagin M Sodium (Sodium Methyl Paraben)	Harmful, Irritant	Face shield, Folding Mask, Gauntlets
Hot water/Steam	Burns	Face shield, Gauntlets, Green PVC suit, Rubber Wellingtons

Approved by: (Production Manager) MRMacIntosh **Date:** 29/11/11.

Approved by: (ESHA Manager) S. Linderby **Date:** 29.11.11

Approved by: (Engineering Manager) J. Mills **Date:** 29/11/11

Copies of this master document are signed and controlled documents and should not be copied or altered in any way, without reference to the Production Manager.

INTRODUCTION

SCOPE OF SOP

This SOP describes the practices to be followed in order to safely remove Gross contamination from the listed vessels in preparation for hand-over to the de-commissioning team. Further water cleaning may be required.

RESTRICTIONS TO USE

- The cleaning of a vessel is to be performed by authorised, trained personnel only.
- Any operations during the washing of a vessel, which are not detailed within this SOP, must be communicated to supervision before commencing the operation. This is to allow complete assessment of all hazards and potential hazards.
- Any apparent problems or abnormalities arising in or with use of this SOP e.g. instructional errors or omissions must be alerted to supervision or line management.
- Any plant changes or plant modifications must be communicated to line management in order to allow SOP amendments and re-issue.

* An **Electrostatic Charge** can build up in the movement of low- conductivity flammables or combustible liquids. This risk is minimised by the use of conductive materials.

STEP 1: Water Flushing the Aqueous caustic tank and transfer to P3-27.

1.1] First visually check the caustic tank is empty; If empty continue to step 1.2]

Date	2-12-11	Time	0600	Signature	

1.2] Close the tank drain valve and open the manual valves on the caustic transfer line to P3-27

Date	2-12-11	Time	0605	Signature	

1.3] Using a water hose, in order to rinse Caustic residues to the bottom of the Tank. wash the inside tank sidewalls as per batch quantity below, fit a flexi-hose from the discharge valve, open the discharge valve and drain to the plant effluent.

	Batch quantity	Actual quantity used	Signature
Filtered Process water hose	**200 Litres**	200	

Date	2-12-11	Time	0625	Signature	

1.4] Close discharge valve then fill the Caustic tank with further process quantity such that the tank is filled *almost to the top – Allow for mixing vortex,* then start the Mixer Agitator. Record the quantity required to fill the tank in the table below. Allow to stir for 15 minutes the switch off agitator.

	Actual quantity used	Signature
Filtered Process water through flowmeter	750	

Date	2-12-11	Time	0700	Signature	

.5] Nitrogen purge P3-27 as per **SOP** N2** apply vacuum to the vessel, remove the in-line Filter cartridges from the transfer line between the tank and P3-27. Replace the filter housing, and transfer the water to P3-27 via the transfer line. Follow the procedures described below in order to transfer the wash from the caustic tank to P3-27.

Transfer Checklist Caustic tank to P3-27	**Tick when complete**
Ensure agitators is off on both the Caustic tank and P3-27	✓
Vacuum applied on P3-27	✓
Open the valves in the transfer line between the Caustic tank and P3-27	✓
Open the valves in the transfer line between the Caustic tank and P3-27	✓
When the wash transfer is complete, close the transfer valves	✓
Carefully remove the Filter housings in order to empty residual water.	✓
Open P3-27 base valve and discharge the water wash directly to the effluent drain.	✓

Date	2-12-11	Time	0750	Signature	

STEP2: Cleandown of P1-15, P3-27 and P2-20

2.1] Check Cooling Tower – CT -01 is on and the cooling circulating around the condensers. Boil out P1-15 Following **SOP**WASH** (Boiling a Reactor out with Fresh Methanol) with the qty listed below.

	Batch quantity	Actual quantity used	Time finish charge	Signature
FRESH METHANOL	**1,000 Litres**	1000	0830	

Date	2-12-11	Time	0830	Signature	

2.2] Nitrogen purge P3-27 as per **SOP** N2** apply vacuum to the vessel, remove the in-line Filter cartridges from the transfer line between P1-15 and P3-27. Replace the filter housing, and transfer the boil out wash to P3-27 via the transfer line. Follow the procedures described below to transfer the wash from P1-15 to P3-27.

Transfer Checklist P1-15 to P3-27	**Tick when complete**
Ensure agitators is off on P1-15 and it's off on P3-27	✓
Apply vacuum to P3-27	✓
Ensure vent on P1-15 is open	✓
Open the valves in the transfer line between P1-15 and P3-27	✓
Apply nitrogen to P1-15 to prevent air ingress into P1-15 during transfer	✓
Switch the P3-27 agitator on	✓
Vent any vacuum in P1-15 with nitrogen	✓
Open the valves in the transference line between P1-15 and P3-27	✓
When the boil out transfer is complete, close the transfer valves and vent the vacuum in P3-27 with nitrogen	✓
Carefully remove the Filter housings in order to empty residual Methanol	✓

Date	2-12-11	Time	0910	Signature	

2.3] Nitrogen purge the dryer **SOP**N2.**

Date	2-12-11	Time	0915	Signature	

2.4] Apply full vacuum to the dryer P2-20

Date	2-12-11	Time	0940	Signature	

2.5] Turn on the agitator of the dryer P2-20

Date	2.12.11	Time	0945	Signature	

2.6] Apply Vacuum to P2-20

Follow the procedures described below to transfer the batch from P3-27 to the P2-20 Dryer. Safety risks are minimized by following the check list below.

Transfer Checklist (Selected Dryer :P2-20)	**Tick when complete**
Close P2-20 Base valve.	✓
Ensure both agitators are running on P3-27 and the selected dryer.	✓
Apply vacuum to the dryer.	✓
Set the transfer valves up to the selected dryer (keep P3-27 bottom valve shut)	✓
Open the nitrogen valve to P3-27 to avoid air ingress	✓
Open the transfer valve at the base of P3-27 to start the transfer	✓
When the level in P3-27 is around the agitator, switch it off	✓
When the transfer is complete close the valves in the transfer lines. Keep the vacuum in the selected dryer	✓
Flush the pipe with 10-15 litres of filtered water	✓

Date	2.12.11	Time	1005	Signature	

2.7] Turn off the Vacuum pump, Nitrogen purge the dryer **as per SOP**N2** - Open the vent valve on the dryer. Apply low pressure steam ¼ of a turn to the dryer.

Date	2.12.11	Time	1010	Signature	

2.8] Heat the dryer to reflux **62°C - 66°C**. Close the steam valve on the dryer.

Date	2.12.11	Time	1050	Signature	

2.9] Apply cooling water to the jacket of the dryer. Cool the contents of the dryer to **25°C -28°C SOP**PURE.** Close the cooling valves and drain the jacket of the dryer.

Date	2-12-11	Time	1120	Signature	

2.10] Open the outlet valve of the dryer. Discharge the Methanol from the dryer into an earthed, anti-static IBC labelled "Methanol from Drier Clean down **SOP**TR.FLAMM**

Date	2-12-11	Time	1125	Signature	

2.11] Apply full vacuum to the dryer

Date	2-12-11	Time	1140	Signature	

2.12] Inform Line Management to instruct Maintenance Department to remove the discharge flange from the outlet valve of the dryer

Date	2.12.11	Time	1145	Signature	

2.13] Empty receiver P2-20 into an earthed anti-static IBC ref **SOP**TR.FLAMM**

Date	12.12.11	Time	1155	Signature	

STEP 3: CONDENSER CLEAN DOWN P2-20

3.1] Shut the cooling water and the valve between the receiver and the condenser; add water to the condenser by the flush pipe on the top of the glassware. Open the vent of the condenser to relief any air and flood the condenser completely with water. When it's totally flooded allow the water to stand for 1 hour.

Start Time	2-12-11	Finish Time	1200	Signature	

3.2] Ensure the receiver is totally empty.

Date	2-12-11	Time	1310	Signature	

3.3] Apply full vacuum to the receiver and then open the valve between the receiver and the condenser to pull down the water from the condenser. Flush the condenser (from the top of the glassware to the receiver) for 5 – 10 minutes.

Date	2-12-11	Time	1320	Signature	

3.4] Empty the volume of the receiver to the effluent and record the procedure in the Plant Log Book.

Date Time	2.12.11	Time	1335	Signature	

Step 4: Clean down for P1-37

4.1] Repeat steps: 2.1 and 2.2 for P1-15 and P3-27.

Date 2.12.11 Time 1340 Signature

4.2] Nitrogen purge the dryer **SOP**N2.**

Date 2-12.11 Time 1345 Signature

4.3] Apply full vacuum to the dryer P1-37

Date 2.12.11 Time 1400 Signature

4.4] Turn on the agitator of the dryer P1-37

Date 2-12.11 Time 1405 Signature

4.5] Transfer to Dryer P1-37
Follow the procedures described below to transfer the batch from P3-27 to the P1-37 Dryer. Safety risks are minimized by following the check list below.

Transfer Checklist (Selected Dryer :P1-37)	**Tick when complete**
Close P1-37 Base valve.	✓
Ensure both agitators are running on P3-27 and on the selected dryer	✓
Apply vacuum to the dryer	✓
Set the transfer valves up to the selected dryer (keep P3-27 bottom valve shut)	✓
Open the nitrogen valve to P3-27 to avoid air ingress	✓
Open the transfer valve at the base of P3-27 to start the transfer	✓
When the level in P3-27 is around the agitator, switch it off	✓
When the transfer is complete close the valves in the transfer lines. Keep the vacuum in the selected dryer	✓
Flush the pipe with 10-15 litres of filtered water	✓

Date 2.12.11 Time 1415 Signature

4.6] Turn off the Vacuum pump, Nitrogen purge the dryer **as per SOP**N2** - Open the vent valve on the dryer. Apply low pressure steam ¼ of a turn to the dryer.

Date 2.12.11 Time 1420 Signature

4.7] Heat the dryer to reflux **62°C - 66°C**. Close the steam valve on the dryer.

Date	2-12-11	Time	1435	Signature	

4.8] Apply cooling water to the jacket of the dryer. Cool the contents of the dryer to **25°C -28°C SOP**PURE.** Close the cooling valves and drain the jacket of the dryer.

Date	2-12-11	Time	1440	Signature	

4.9] Open the outlet valve of the dryer. Discharge the Methanol from the dryer into an earthed, anti-static IBC labelled "Methanol from Drier Clean down **SOP**TR.FLAMM**

Date	2-12-11	Time	1510	Signature	

4.10] Apply full vacuum to the dryer

Date	2-12-11	Time	1530	Signature	

4.11] Inform Line Management to instruct Maintenance Department to remove the discharge flange from the outlet valve of the dryer

Date	2-12-11	Time	1535	Signature	

4.12] Empty receiver P1-36 into an earthed anti-static IBC ref **SOP**TR.FLAMM**

Date	2-12-11	Time	1540	Signature	

Step 5: CONDENSER CLEAN DOWN P1-37

5.1] Shut the cooling water and the valve between the receiver and the condenser; add half of the condenser volume of water to the condenser itself and apply gently steam from the bottom of the condenser for 1 hour (the steam flow must be set just to warm up the water inside of the condenser). Monitor the whole operation. In case of excessive vibration immediately shut off the steam and inform line manager.

Steam Start Time	1545	Steam Finish Time	1645	Signature	

5.2] Empty the volume of the condenser to the effluent drain.

Date	2-12-11	Time	1630	Signature	

Step 6: Glassware and receiver draining.

6.1] Once all previous steps are completed Drain the glassware and condensers or residual solvent, these should only be drained into a S/S earthed container and must be placed into an earthed, anti-static IBC labelled "Methanol from Propyl clean down for disposal"

Equipment	Plant number	Status	Signature	Date
Glassware	P1-37/P2-20	Drained of residual solvent		2-12-11
Receiver	P1-36	Drained of residual solvent		
Receiver	P2-20	Drained of residual solvent		
Glassware	P1-15	Drained of residual solvent		
Receivers	P3-27	Drained of residual solvent		

Step 7: Plant clean-down confirmations

Equipment	Plant number	Confirm all steps completed	Signature	Date
8000lts S/S Rotary vacuum dryer	P1-37/P2-20			2-12-11
Receiver	P1-36			
Receiver	P2-20			
500 gallon glass-lined vessel	P1-15			
500 gallon stainless steel vessel	P3-27			

7.1] Handover accepted by De-commissioning team.

Date		Time		Signature	

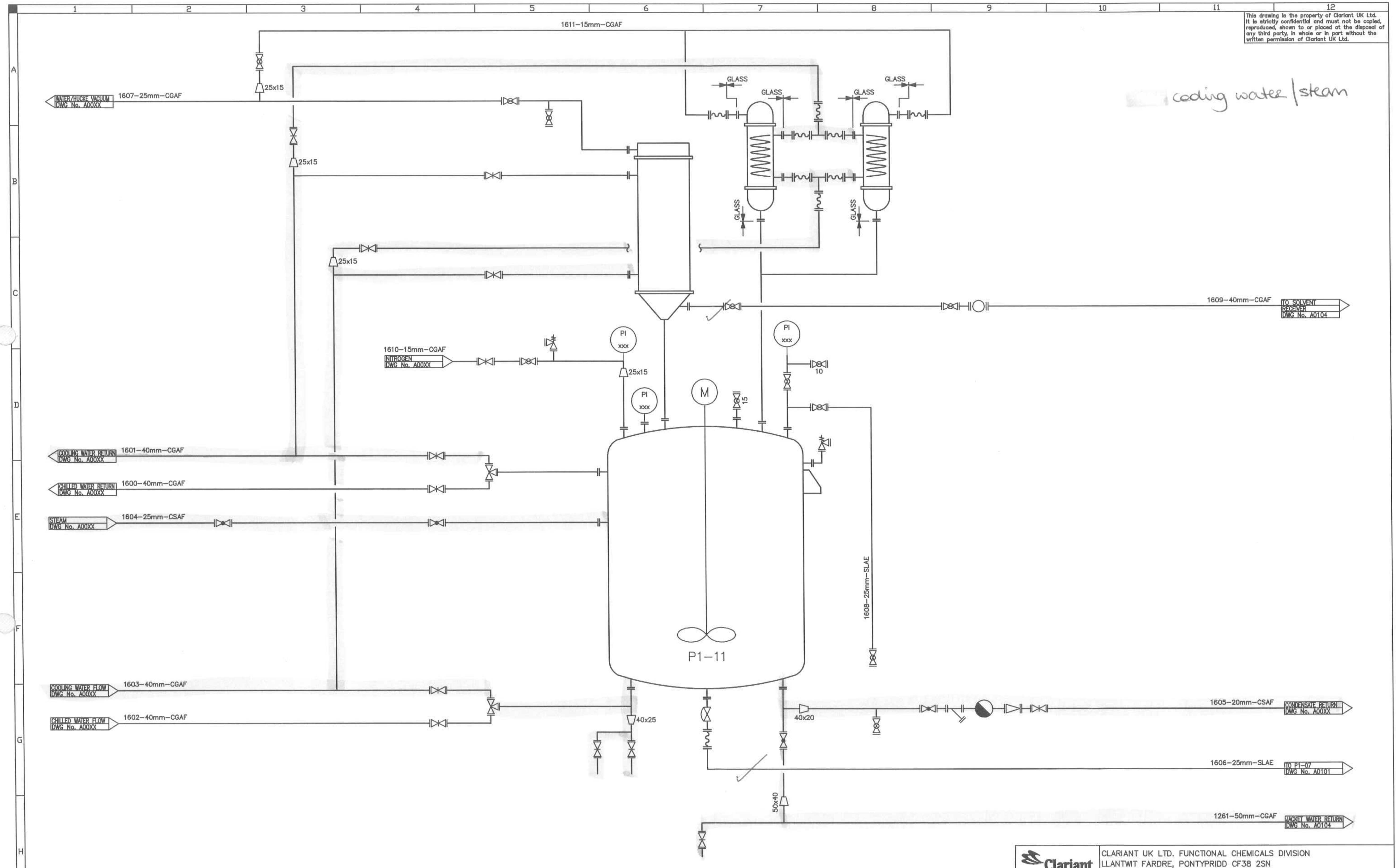
5

D009/PROCESS/002 - P&ID Register

Project:	Decommissioning 009
Title:	P1B Building Decommissioning
Buildings	P1B
Main Equipment	Various Production Equipment

P&ID Number	**Title**
A0092 Rev C1	P1-19 Iso-Butyl Paraben – Toluene Recovery
A0093 Rev C1	P1-44 Iso-Butyl Paraben Recovery Vessel
A0094 Rev C1	P1-27 Iso-Butyl Paraben Crystalliser
A0095 Rev C1	P1-30 Iso-Butyl Paraben Reaction Vessel
A0096 Rev C1	P1-30 & P1-21 Iso-Butyl Paraben Receivers
A0097 Rev C1	P1-31 Iso-Butyl Paraben Toluene Distillation
A0098 Rev C1	P1-32 Iso Butyl Paraben Reaction Vessel
A0099 Rev C1	P1-37 Rotary Vacuum drier
A0100 Rev C1	P1-17 AF-366N Toluene Recovery
A0101 Rev C1	P1-07 AF-366N Reactor
A0102 Rev C1	P1-08 AF-366N Reactor
A0103 Rev C1	P1-09 AF-366N Toluene Distillation & Crystalliser
A0104 Rev C1	P1-10 AF-366 TEA Regeneration
A0105 Rev C1	P1-11 AF-366N TEA Regeneration
A0106 Rev C1	P1-03 Rotary Vacuum Drier

cooling water | steam



Clariant

CLARIANT UK LTD. FUNCTIONAL CHEMICALS DIVISION
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-11 AF-366N TEA REGENERATION

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	07/12/06	ENGINEER		
AUTOCAD DRAWING DO NOT HAND MODIFY		SCALE N.T.S.		SHEET 1	DRAWING NUMBER A 0105	REV. C1

REFERENCE DRAWINGS

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No,s	1600	1649	1611
INSTRUMENTS			

ORIGINAL SIZE : A1

GRID REF

REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE
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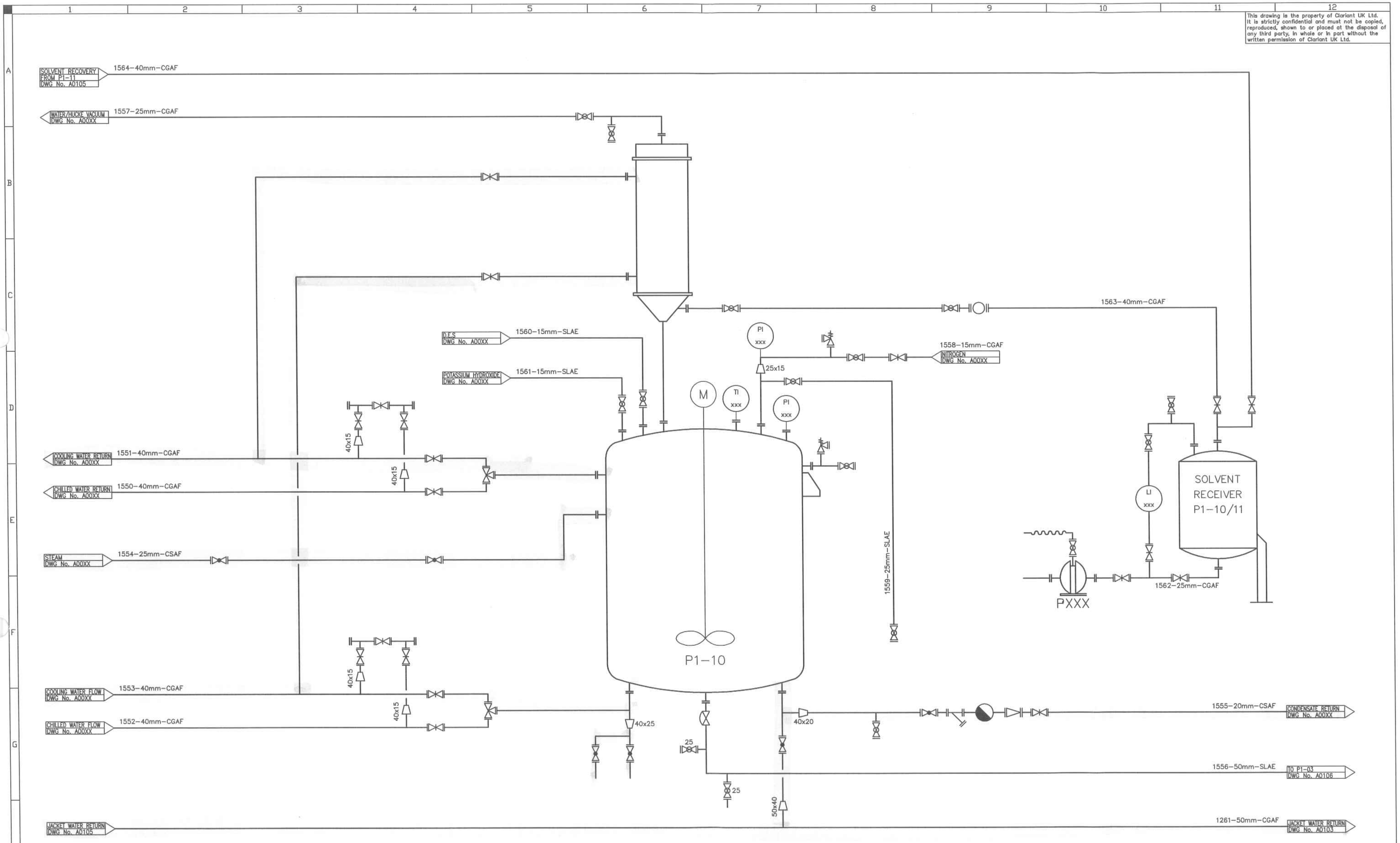

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REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE

REFERENCE DRAWINGS

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No.s	1550	1599	1564
INSTRUMENTS			

cooling water/steam

ORIGINAL SIZE : A1

Clariant

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LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :- (01443) 205311, FAX :- (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-10 AF-366N TEA REGENERATION

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	06/12/06	ENGINEER		
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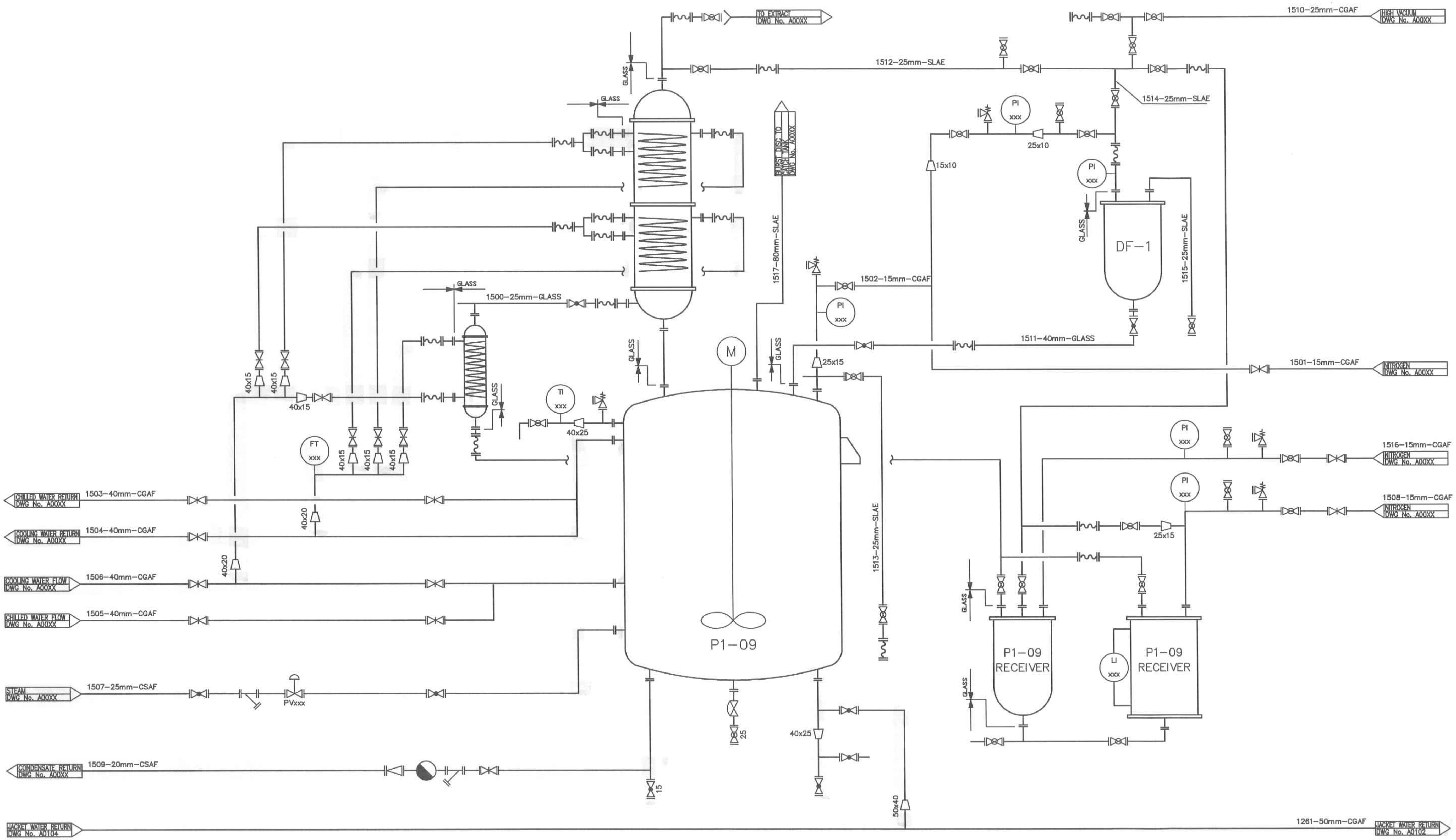


Clariant
CLARIANT UK LTD. FUNCTIONAL CHEMICALS DIVISION
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-09 AF-366N TOLUENE DISTILLATION & CHRYSTALLISER

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	05/12/06	ENGINEER		

ORIGINAL SIZE : A1

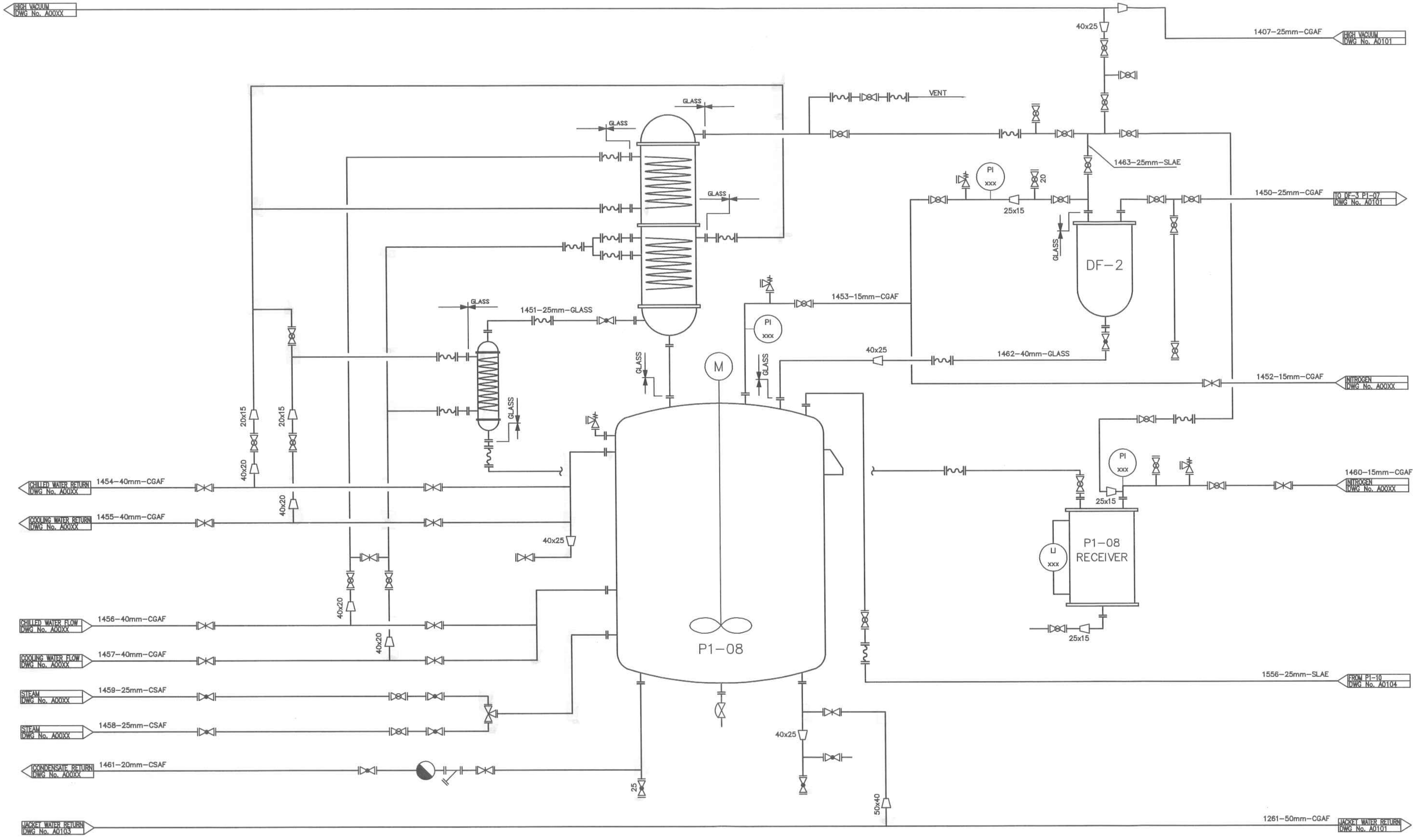
AUTOCAD DRAWING DO NOT HAND MODIFY	SCALE N.T.S.	SHEET 1	DRAWING NUMBER	A	0103	REV. C1

GRID REF

REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE
C1	RG	UPDATED FOR SITE SURVEY 2006–7	05/12/06				

REFERENCE DRAWINGS

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No.s	1500	1549	1517
INSTRUMENTS			



REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE
C1	RG	UPDATED FOR SITE SURVEY 2006-7	05/12/06				

GRID REF

REFERENCE DRAWINGS

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No.s	1450	1499	1463
INSTRUMENTS			

ORIGINAL SIZE : A1

Clariant
CLARIANT UK LTD. FUNCTIONAL CHEMICALS DIVISION
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-08 AF-366N REACTOR

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	05/12/06	ENGINEER		
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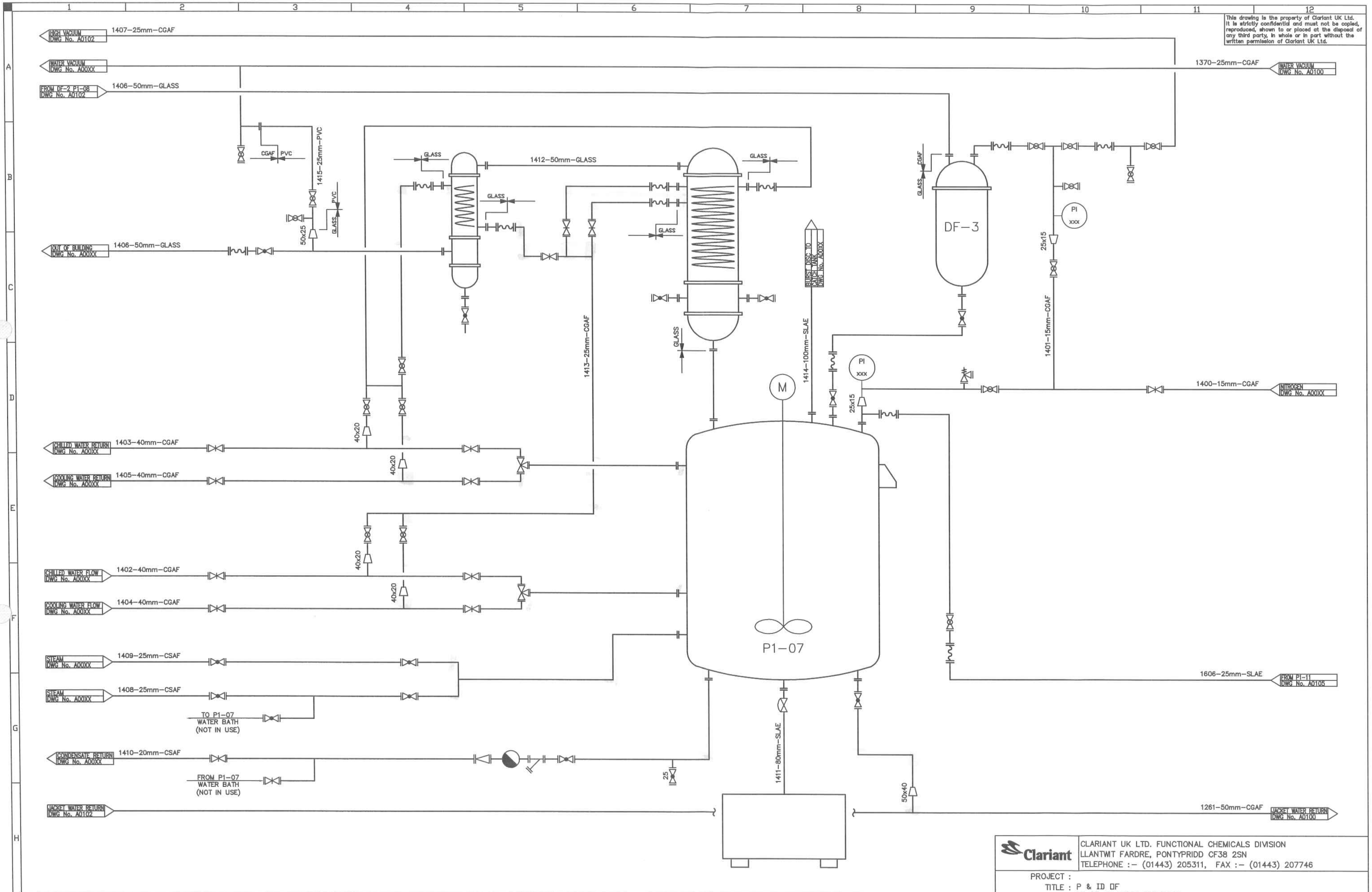

Clariant

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TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-07 AF-366N REACTOR

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	04/12/06	ENGINEER		
AUTOCAD DRAWING DO NOT HAND MODIFY		SCALE N.T.S.		SHEET 1	DRAWING NUMBER A 0101	REV. C1

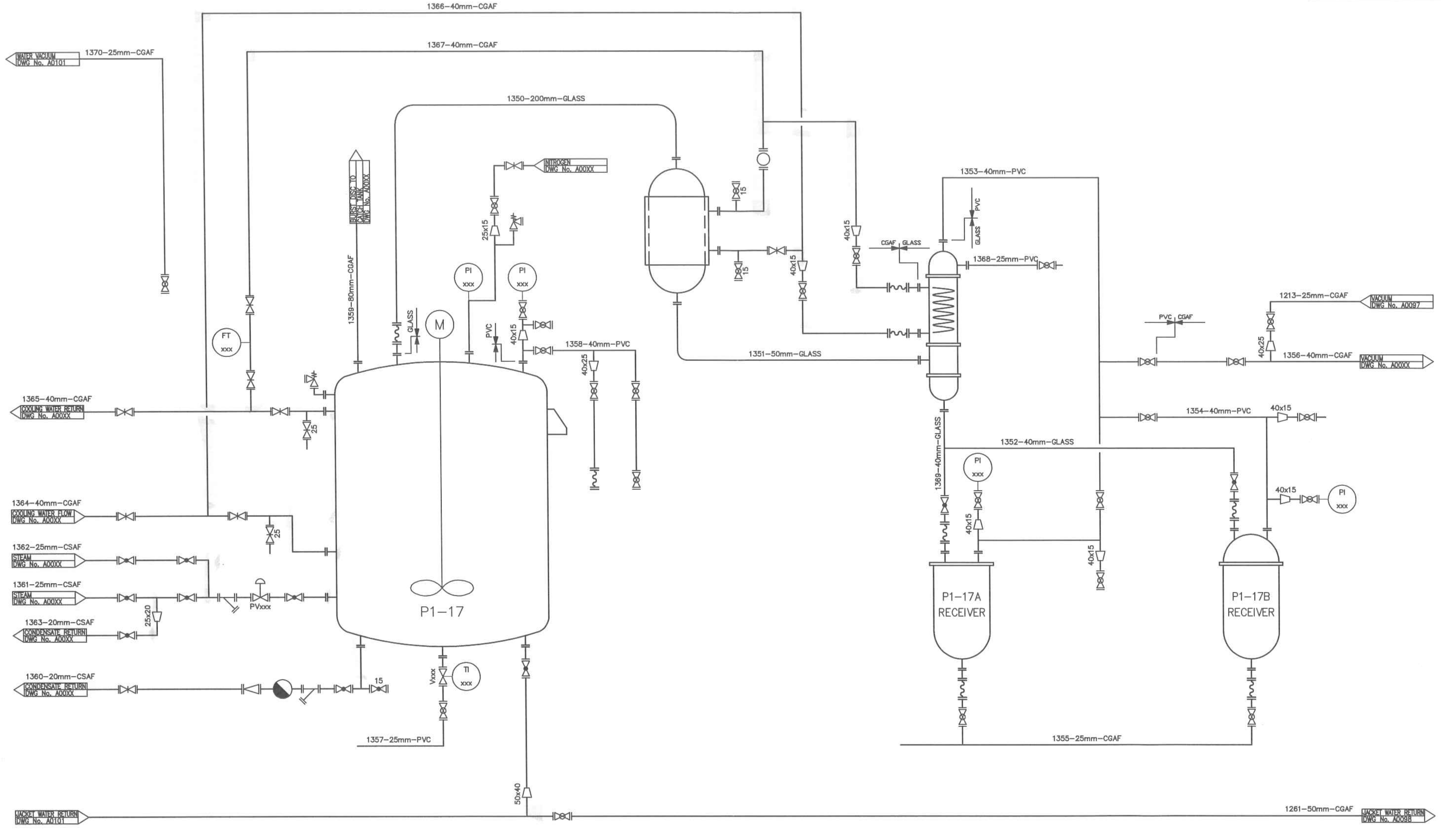
GRID REF	REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE
	C1	RG	UPDATED FOR SITE SURVEY 2006-7	04/12/06				

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No.s	1400	1449	1415
INSTRUMENTS			

REFERENCE DRAWINGS

cooling water/steam

ORIGINAL SIZE : A1



								FROM	TO	LAST USED
							VALVES			
							PRESSURE VALVES			
							LINE ITEMS			
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REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	INSTRUMENTS			

GRID REF

REFERENCE DRAWINGS

ORIGINAL SIZE : A1

CLARIANT UK LTD. FUNCTIONAL CHEMICALS DIVISION
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-17 AF-366N TOLUENE RECOVERY

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	04/12/06	ENGINEER		
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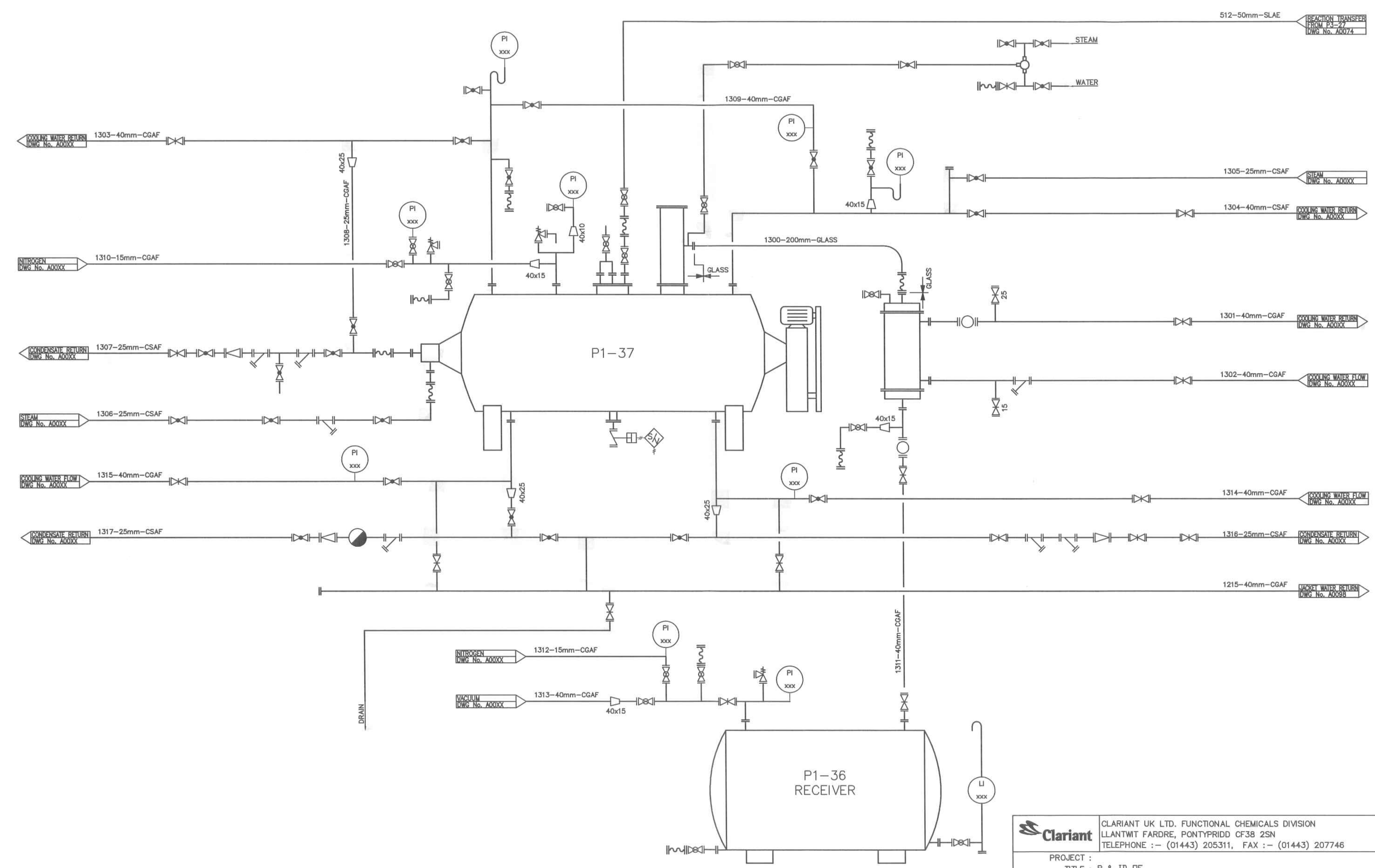

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C1	RG	UPDATED FOR SITE SURVEY 2006–7	29/11/06				

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No,s	1300	1349	1317
INSTRUMENTS			

REFERENCE DRAWINGS

ORIGINAL SIZE : A1

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CLARIANT UK LTD. FUNCTIONAL CHEMICALS DIVISION
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1–37 ROTARY VACUUM DRYER

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	29/11/06	ENGINEER		
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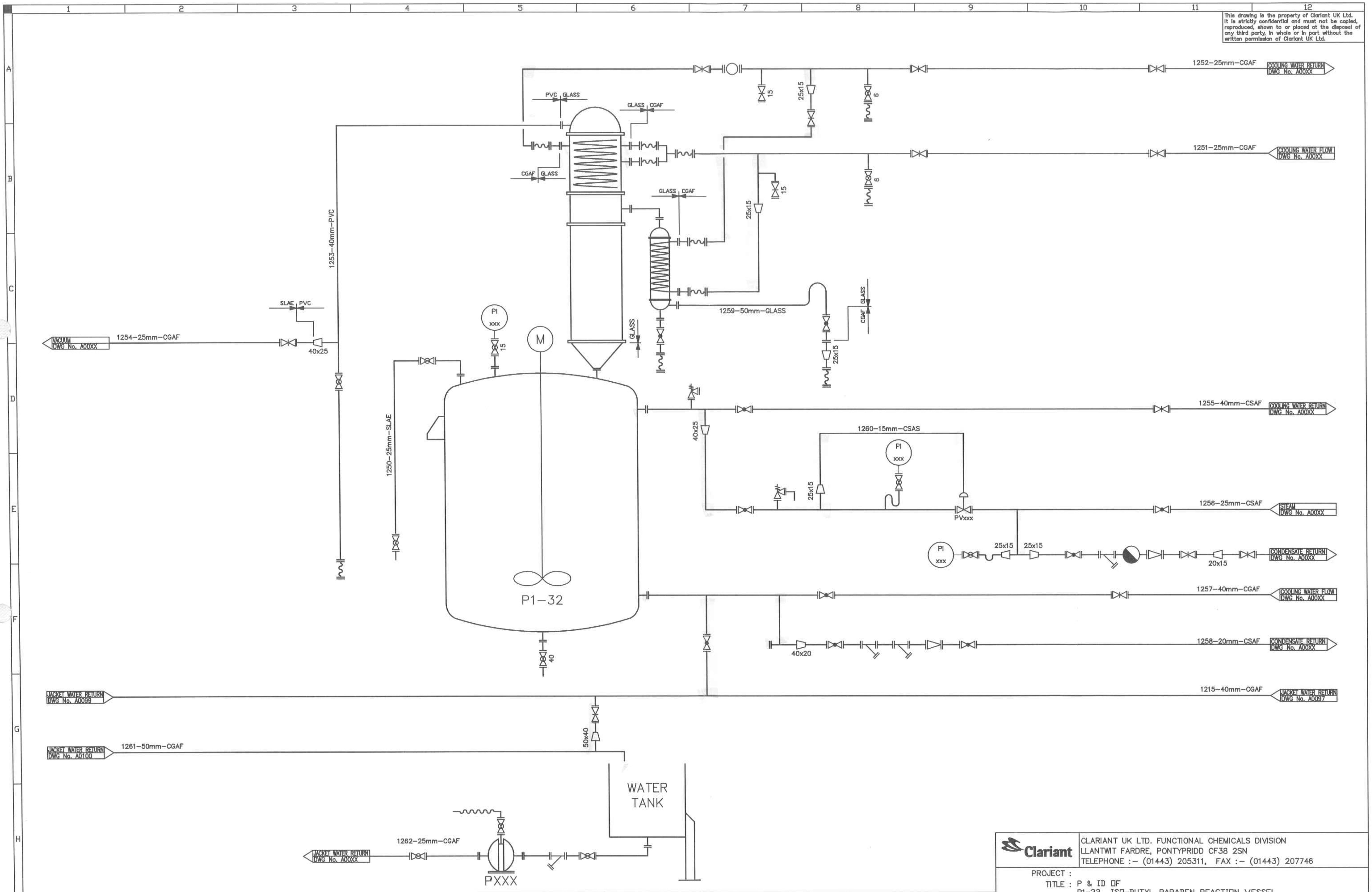

CLARIANT UK LTD. FUNCTIONAL CHEMICALS DIVISION
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-32 ISO-BUTYL PARABEN REACTION VESSEL

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.			APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG		
DRG. CAT.		DATE	29/11/06	ENGINEER			
AUTOCAD DRAWING DO NOT HAND MODIFY		SCALE N.T.S.		SHEET 1	DRAWING NUMBER	A 0098	REV. C1

ORIGINAL SIZE : A1

REFERENCE DRAWINGS

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No.s	1250	1299	1262
INSTRUMENTS			

GRID REF	REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE
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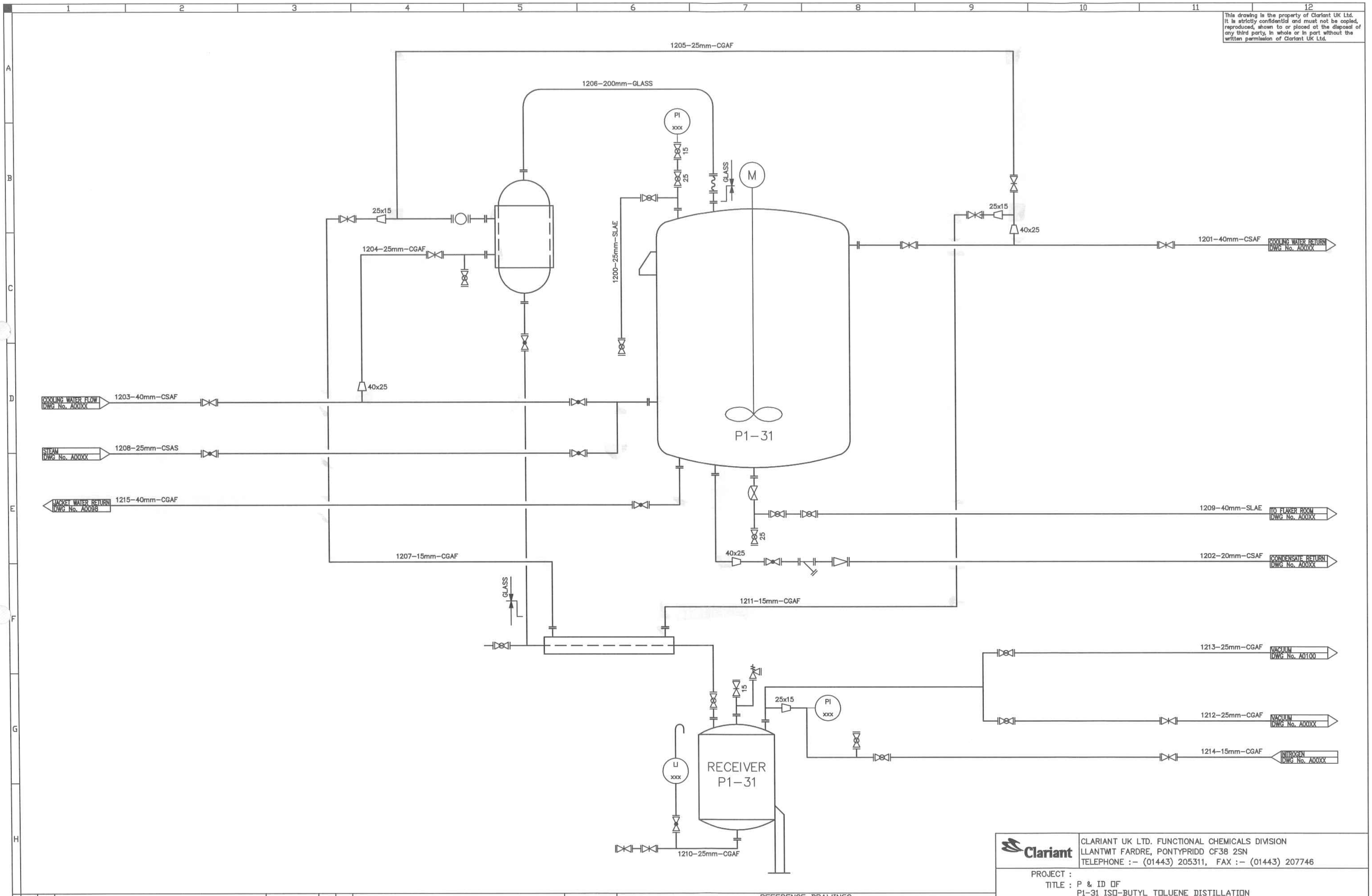

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	REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE

REFERENCE DRAWINGS

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No,s	1200	1249	1215
INSTRUMENTS			

ORIGINAL SIZE : A1

Clariant

CLARIANT UK LTD. FUNCTIONAL CHEMICALS DIVISION
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-31 ISO-BUTYL TOLUENE DISTILLATION

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	29/11/06	ENGINEER		
AUTOCAD DRAWING DO NOT HAND MODIFY		SCALE N.T.S.		SHEET 1	DRAWING NUMBER A 0097	REV. C1

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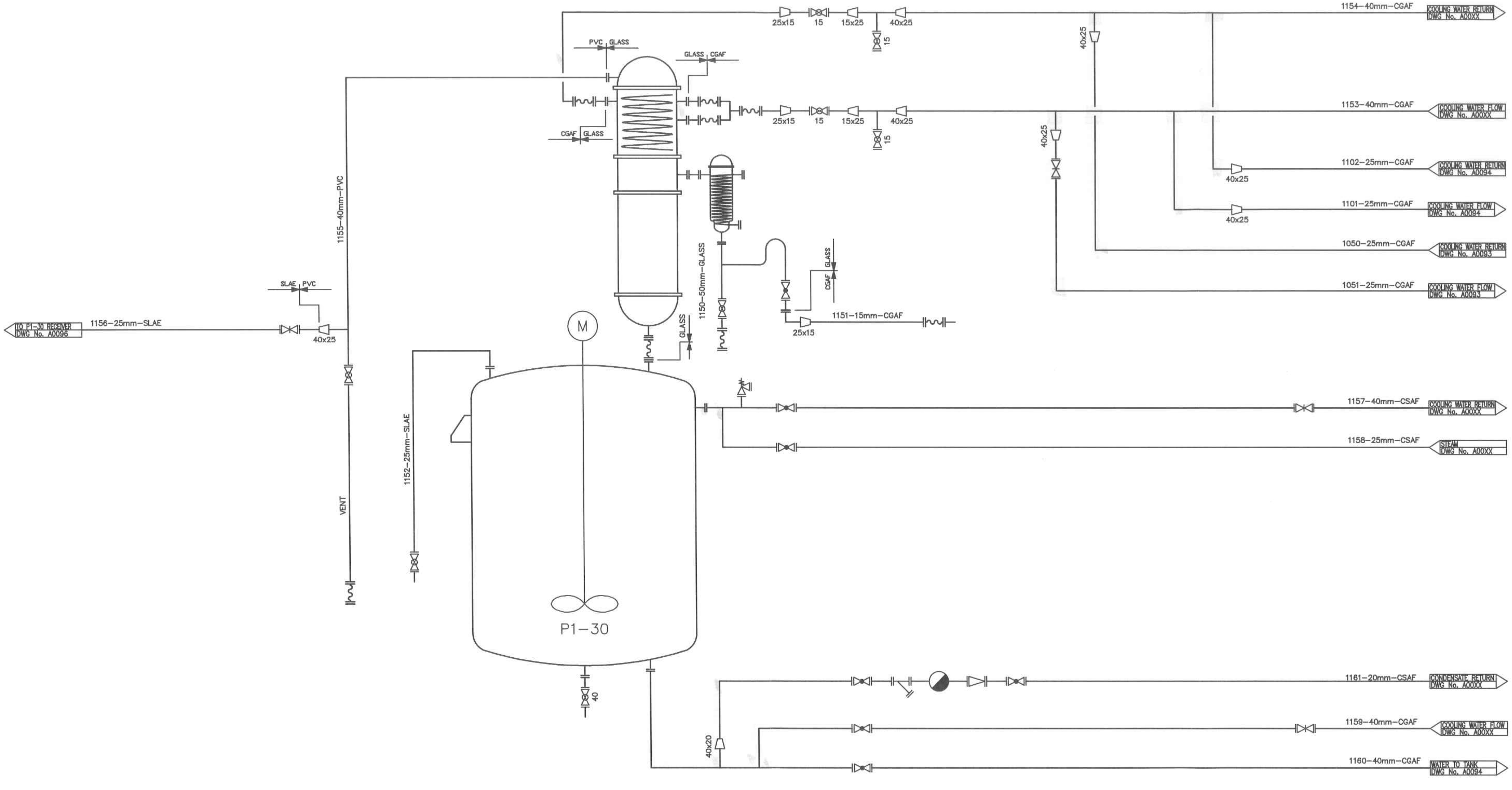

REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE
C1	RG	UPDATED FOR SITE SURVEY 2006–7	28/11/06				

GRID REF

REFERENCE DRAWINGS

	FROM	TO	LAST USED	
VALVES				
PRESSURE VALVES				
LINE ITEMS				
LINE No.s	1150	1199	1161	ALSO A0096
INSTRUMENTS				

ORIGINAL SIZE : A1

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CLARIANT UK LTD. FUNCTIONAL CHEMICALS DIVISION
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-30 ISO-BUTYL PARABEN REACTION VESSEL

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	28/11/06	ENGINEER		
AUTOCAD DRAWING DO NOT HAND MODIFY		SCALE N.T.S.		SHEET 1	DRAWING NUMBER A 0095	REV. C1

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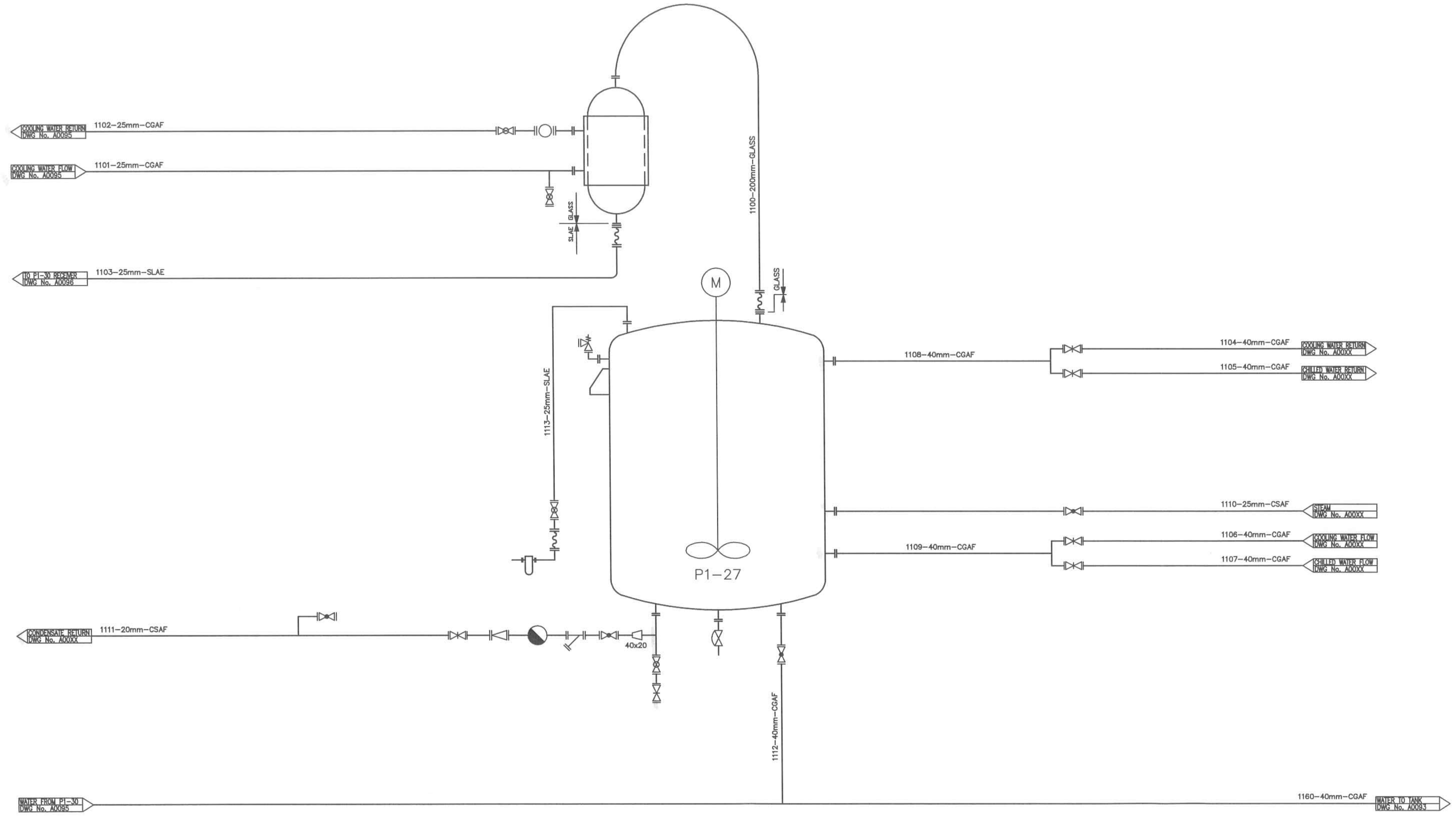

GRID REF	REV	BY	REVISIONS	DATE
	C1	RG	UPDATED FOR SITE SURVEY 2006-7	28/11/06

REFERENCE DRAWINGS

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No.s	1100	1149	1113
INSTRUMENTS			

ORIGINAL SIZE : A1

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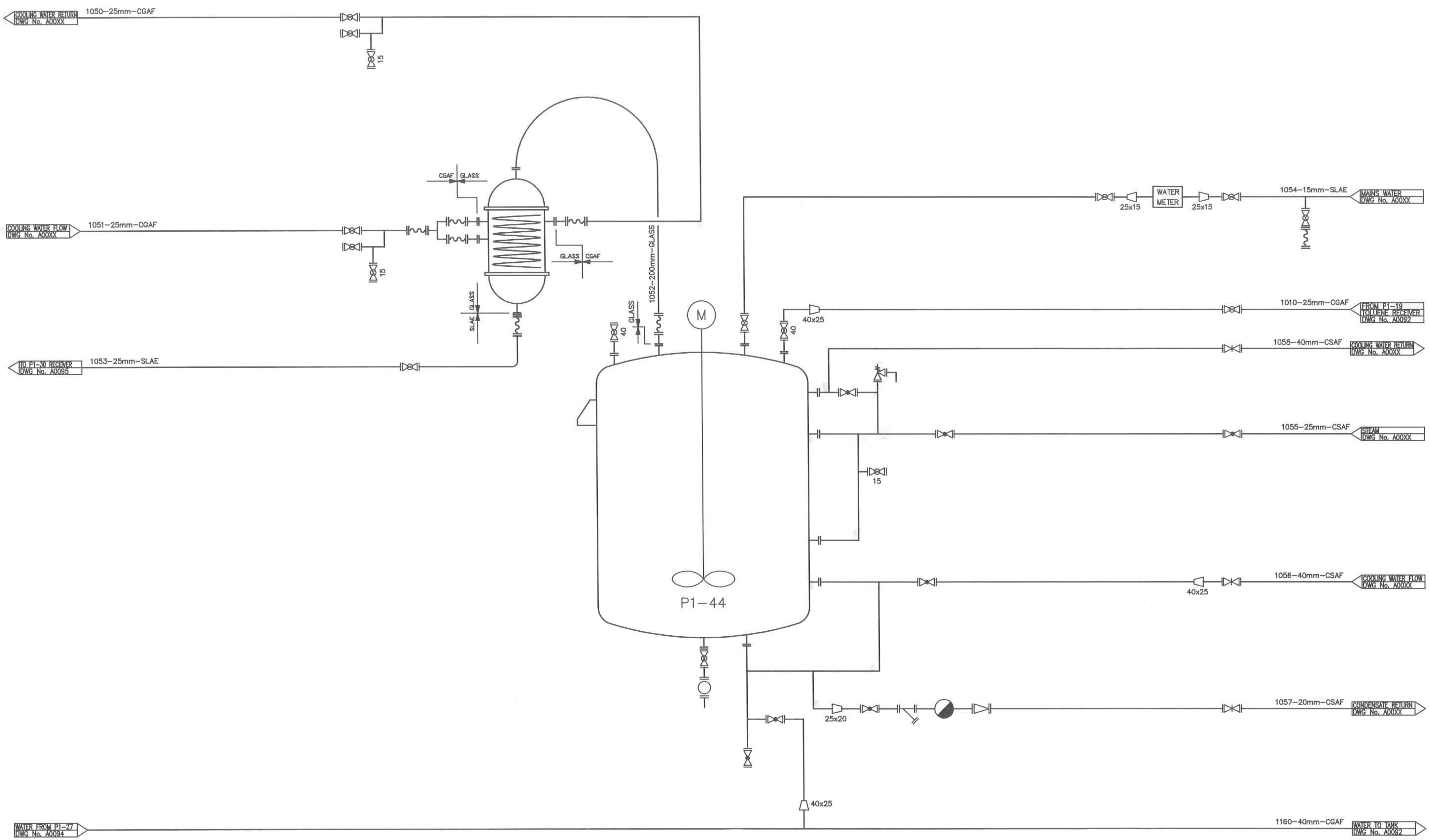
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-27 ISO-BUTYL PARABEN CRYSTALLISER

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	28/11/06	ENGINEER		
AUTOCAD DRAWING DO NOT HAND MODIFY		SCALE N.T.S.		SHEET 1	DRAWING NUMBER A 0094	REV. C1



GRID REF	REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE
	C1	RG	UPDATED FOR SITE SURVEY 2006–7	27/11/06				

REFERENCE DRAWINGS

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No.s	1050	1099	1058
INSTRUMENTS			

ORIGINAL SIZE : A1

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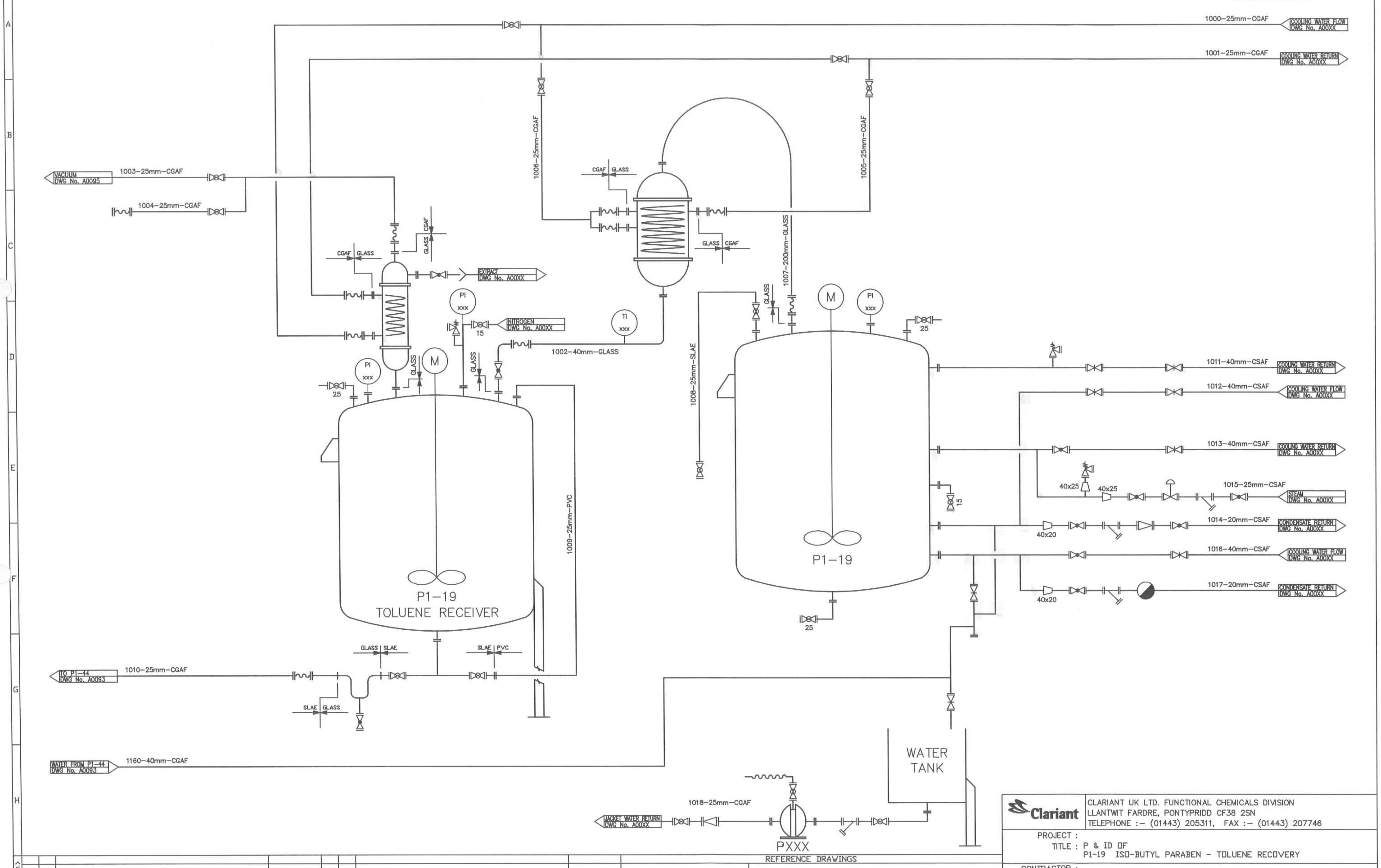
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1–44 ISO–BUTYL PARABEN RECOVERY VESSEL

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	27/11/06	ENGINEER		
AUTOCAD DRAWING DO NOT HAND MODIFY		SCALE N.T.S.		SHEET 1	DRAWING NUMBER A 0093	REV. C1



									FROM	TO	LAST USED
								VALVES			
								PRESSURE VALVES			
								LINE ITEMS			
C1	RG	UPDATED FOR SITE SURVEY 2006–7	27/11/06					LINE No.s	1000	1049	1018
REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE	INSTRUMENTS			

GRID REF

ORIGINAL SIZE : A1

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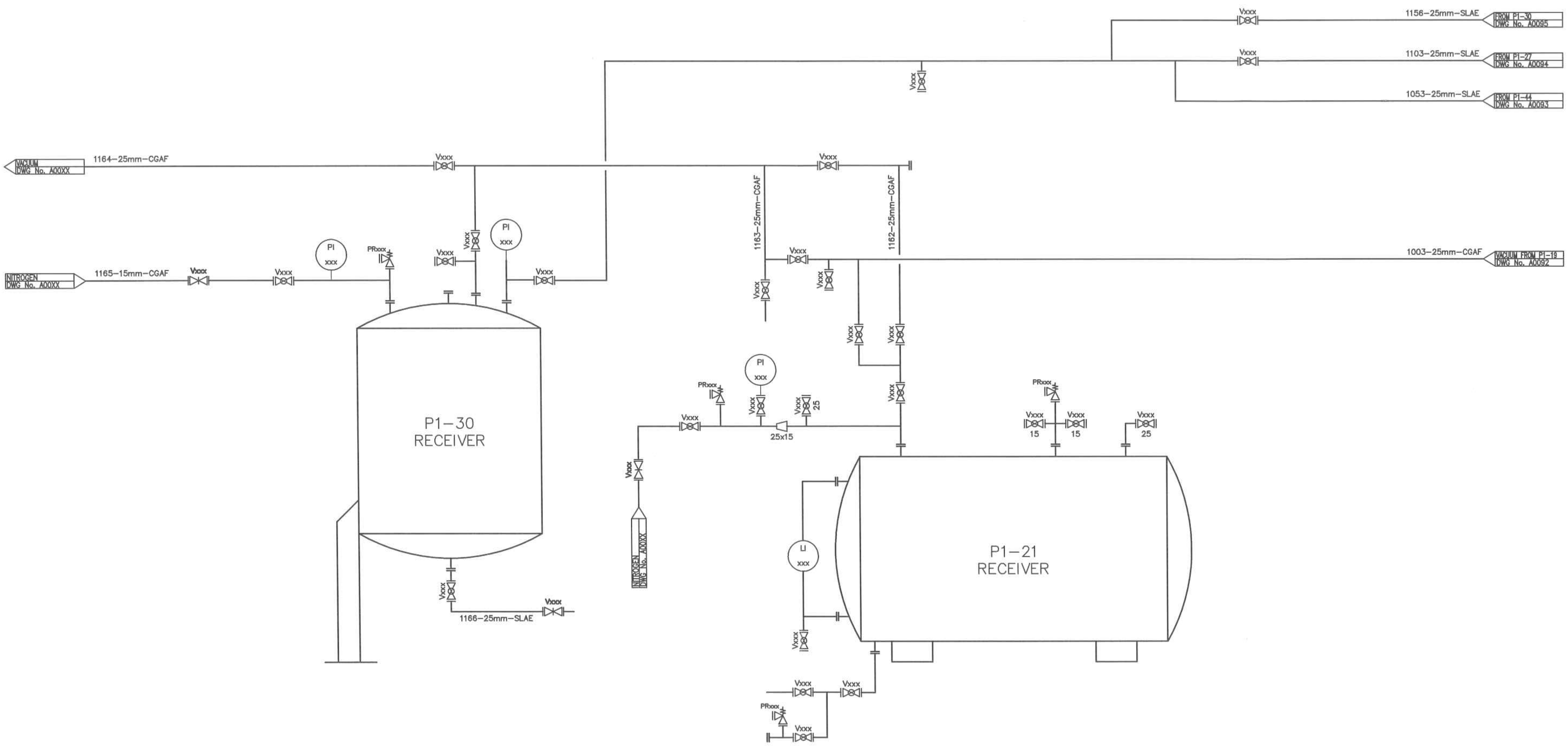
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1–19 ISO–BUTYL PARABEN – TOLUENE RECOVERY

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.			APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG		
DRG. CAT.		DATE	27/11/06	ENGINEER			
AUTOCAD DRAWING DO NOT HAND MODIFY		SCALE N.T.S.		SHEET 1	DRAWING NUMBER	A 0092	REV. C1



C1	RG	UPDATED FOR SITE SURVEY 2006–7	28/11/06				
REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE

GRID REF

REFERENCE DRAWINGS

	FROM	TO	LAST USED	
VALVES				
PRESSURE VALVES				
LINE ITEMS				
LINE No,s	1150	1199	1166	ALSO A0095
INSTRUMENTS				

ORIGINAL SIZE : A1

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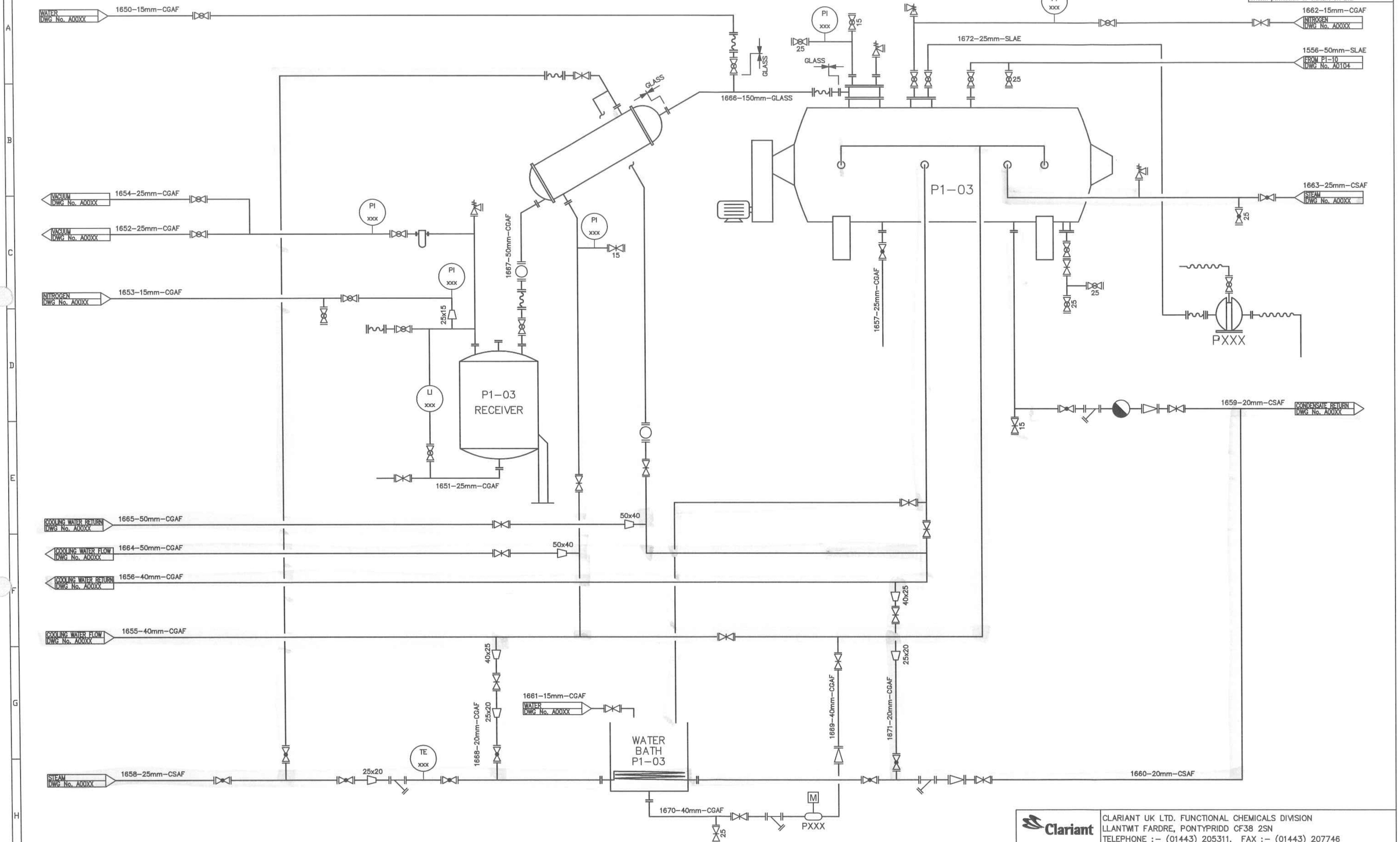
LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :– (01443) 205311, FAX :– (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-30 & P1-21 ISO-BUTYL PARABEN RECEIVERS

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	28/11/06	ENGINEER		
AUTOCAD DRAWING DO NOT HAND MODIFY		SCALE N.T.S.		SHEET 1	DRAWING NUMBER A 0096	REV. C1



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LLANTWIT FARDRE, PONTYPRIDD CF38 2SN
TELEPHONE :- (01443) 205311, FAX :- (01443) 207746

PROJECT :
TITLE : P & ID OF
P1-03 ROTARY VACUUM DRYER

CONTRACTOR :

BUILDING	P1	CAR/W.O.		CON.DRG. NO.		APPVD BY
SORT CODE		PLANT NO.		DRAWN BY	RG	
DRG. CAT.		DATE	07/12/06	ENGINEER		
AUTOCAD DRAWING DO NOT HAND MODIFY		SCALE N.T.S.		SHEET 1	DRAWING NUMBER A 0106	REV. C1

ORIGINAL SIZE : A1

REFERENCE DRAWINGS

	FROM	TO	LAST USED
VALVES			
PRESSURE VALVES			
LINE ITEMS			
LINE No.s	1650	1699	1672
INSTRUMENTS			

REV	BY	REVISIONS	DATE	REV	BY	REVISIONS	DATE
C1	RG	UPDATED FOR SITE SURVEY 2006-7	07/12/06				

GRID REF

6

Project Number: D009
Project Description: P1B Production Building
Document Reference: D009/Process/009 – Waste Record Onsite

Waste Record – for onsite disposal (i.e. Effluent System of mixed with other solvent waste for Tanker)

Date Waste Generated	Type of Waste (Liquid/Solid)	Description	Disposal Route	Quantity	Hazardous/Non Hazardous.
4.7.12	LIQUID	FLUSHED WATER FROM P1 DECOMISSIONING	SAMPLED.	2 x IBC	
5.7.12	LIQUID.	FLUSHED WATER FROM P1 - CHILLER LINES.		2 x IBC	
6.7.12	LIQUID	WATER - GLYCOL FROM P1 - CHILLER (EXTRACTOR)	STORES	2 x IBC	
7.7.12	POWDER.	2.4 kg CK100	LAND FILL	2.4. kg	HAZARDOUS (IRRITANT).
11.7.12	POWDER	1kg CK100 FROM MILL	LANDFILL	1 kg	HAZARDOUS.

Date: 6/12/11
Issue: 1
Replaces Issue: N/A
Dated: N/A

Project Number: D009
Project Description: P1B Production Building
Document Reference: D009/Process/009 – Waste Record Onsite

Date Waste Generated	Type of Waste (Liquid/Solid)	Description	Disposal Route	Quantity	Hazardous/Non Hazardous.

Date: 6/12/11
Issue: 1
Replaces Issue: N/A
Dated: N/A

7

8

9

10