FACILITY PERMIT TO OPERATE

CONOCOPHILLIPS COMPANY
1660 W ANAHEIM ST
WILMINGTON, CA 90744

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR A COPY THEREOF MUST BE KEPT AT THE LOCATION FOR WHICH IT IS ISSUED.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT SHALL NOT BE CONSTRUED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF ANY OTHER FEDERAL, STATE OR LOCAL GOVERNMENTAL AGENCIES.

Barry R. Wallerstein, D. Env.
EXECUTIVE OFFICER

By
for Mohsen Nazemi, P.E.
Deputy Executive Officer
Engineering & Compliance

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

FACILITY PERMIT TO OPERATE
CONOCOPHILLIPS COMPANY

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

FACILITY PERMIT TO OPERATE
CONOCOPHILLIPS COMPANY

SECTION A: FACILITY INFORMATION

LEGAL OWNER &/OR OPERATOR:	CONOCOPHILLIPS COMPANY
LEGAL OPERATOR (if different than owner):	
EQUIPMENT LOCATION:	1660 W ANAHEIM ST WILMINGTON, CA 90744
MAILING ADDRESS:	P.O. BOX 758 WILMINGTON, CA 90748
RESPONSIBLE OFFICIAL:	CHRIS R. CHANDLER
TITLE:	MANAGER, LOS ANGELES REFINERY
TELEPHONE NUMBER:	(310) 952-6001
CONTACT PERSON:	KRISTIN WISDOM
TITLE:	DIRECTOR OF ENVIRONMENTAL SERVICES
TELEPHONE NUMBER:	(310) 952-6120
INITIAL TITLE V PERMIT ISSUED:	July 01, 2009
TITLE V PERMIT EXPIRATION DATE:	June 30, 2014

TITLE V	RECLAIM	
YES	NOx:	YES
	SOx:	YES
	CYCLE:	2
	ZONE:	COASTAL

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

FACILITY PERMIT TO OPERATE
CONOCOPHILLIPS COMPANY

SECTION I: PLANS AND SCHEDULES

This section lists all plans approved by AQMD for the purposes of meeting the requirements of applicable AQMD rules specified below. The operator shall comply with all conditions specified in the approval of these plans, with the following exceptions:

a. The operator does not have to comply with NOx or SOx emission limits from rules identified in Table 1 or Table 2 of Rule 2001(j) which become effective after December 31, 1993.

b. The operator does not have to comply with NOx or SOx emission limits from rules identified in Table 1 or Table 2 of Rule 2001(j) after the facility has received final certification of all monitoring and reporting requirements specified in Section F and Section G.

Documents pertaining to the plan applications listed below are available for public review at AQMD Headquarters. Any changes to plan applications will require permit modification in accordance with Title V permit revision procedures.

List of approved plans:

Application	Rule
327268	2002
332225	1176
377893	463
400212	1118
424268	1173
429616	1105.1
445782	1470
452305	1178
457557	1178
460019	1105.1
489764	461
505156	1123

NOTE: This section does not list compliance schedules pursuant to the requirements of Regulation XXX - Title V Permits; Rule 3004(a)(10)(C). For equipment subject to a variance, order for abatement, or alternative operating condition granted pursuant to Rule 518.2, equipment specific conditions are added to the equipment in Section D or H of the permit.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

April 22, 2010
Facility ID No. 800363
A/N 505156

Ms. Kristin Wisdom
ConocoPhillips Company
P.O. Box 758
Wilmington, CA 90748

Subject: Rule 1123 Refinery Process Turnaround Compliance Plan Approval

Dear Ms. Wisdom,

This letter is in regard to ConocoPhillips-Wilmington's process turnaround plan submitted under Application No. 505156 to comply with SCAQMD Rule 1123—Refinery Process Turnarounds. This plan was received January 5, 2010. The South Coast Air Quality Management District (SCAQMD) has evaluated your January 2010 plan for compliance with the applicable requirements of Rule 1123. The plan (copy attached) is approved subject to the following conditions:

1. Refinery process turnarounds shall be conducted in accordance with the attached Los Angeles Refinery Policies & Procedures Manual – Preparing Process Equipment for Opening dated 11/08, unless otherwise specified below.

2. During refinery process turnaround, the vapors released from the vessel shall not vent to the atmosphere at any time unless the vessel has been depressurized to below 5 psig, or is within 10 percent above the minimum gauge pressure at which the vapors can be collected, whichever is lower, and has met all the requirements in Condition No. 3 and 4 below.

3. To depressurize vessels pursuant to Condition No. 2, the vapors released from the vessel shall be recovered by the flare gas recovery system (FGR system). The vapors released from the vessels may be directed to a flare provided that all flares have been operated in accordance with flaring minimization procedures pursuant to Rule 1118(c)(3) and (c)(4).

4. If inert gases are used for refinery process turnaround, the operator shall comply with all of the following requirements:
   (A) Prior to introducing inert gases into the vessel, the operator shall initially depressurize the vessel in accordance to Condition No. 2 and 3.

(B) After introducing inert gases into the vessel, the vapors released from the vessel shall be recovered by the FGR system.

(C) Condition No. 4B above shall not apply if the facility operator can demonstrate that recovering the vapors would result in: (i) equipment damage due to incompatibility with recovery system equipment or with refinery fuel gas systems, (ii) malfunction of pollution control equipment or safety devices, or (iii) violations of safety regulations. The vapors are permitted to be routed directly to the flare if condition (i), (ii), or (iii) is met and provided that all flares have been operated in accordance with flaring minimization procedures pursuant to Rule 1118(c)(3) and (c)(4).

5. The operator shall keep records of each refinery process unit turnaround, in a manner approved by the AQMD, for the following items:

- The date the unit was shut down.
- The date, time, and hydrocarbon concentration measured when the vapors from the vessel were first discharged into the atmosphere.
- The approximate amount of hydrocarbons emitted into the atmosphere.
- Records to demonstrate that condition No. 4C is applicable

The records shall be kept for at least five years and made available for District inspection upon request.

If you have any further questions, please contact Meredith Hankins by phone at (909) 396-2493 or by email at mhankins@aqmd.gov.

Sincerely,

Jay Chen
Senior Manager
Refinery and Waste Management
Engineering and Compliance

Attachment: Los Angeles Refinery Policies & Procedures Manual – Preparing Process Equipment for Opening (11/08)

PREPARING PROCESS EQUIPMENT FOR OPENING

1.0 PURPOSE

The purpose of this policy is to establish guidelines for preparing process systems and equipment for opening to allow for safe isolation, cleaning, inspection, repair, maintenance and return to service.

2.0 SCOPE

This Policy and Procedure applies to all refinery equipment and systems.
For each refinery process unit turnaround, each unit must have a procedure for compliance with AQMD Rule 1123. Strict adherence to these requirements should be maintained. Changes should not be made without consultation with the Health, Safety and Environmental Department.

3.0 DEFINITIONS

3.1 **CLOSED SYSTEM** – series of interconnected piping, valves, ducts or other similar components that meet the following criteria::

a) have no direct uncontrolled openings to the environment
b) intended to prevent materials in the system from coming into contact with the outside environment through the use of solid physical barriers such as pipe walls, etc..

3.2 **CONTROLLED SYSTEM** – series of interconnected piping, valves, ducts or other similar components that meet the following criteria::

a) have 2 or more points where there is a direct opening to the environment
b) openings are controlled through the use of dynamic controls (e.g. J bend with a water seal that can be blown out due to overpressure)
c) minimizing the potential for materials in a system being released into the outside environment requires that dynamic controls be maintained at all times.

3.3 **PROCESS SEWER** – controlled systems of underground piping designed to carry primarily water or other process fluids that carry trace residual amounts of hydrocarbon.

Note: At the Carson Plant, all sewers should be marked:
P = Process, S = Storm, or C = Common

For unmarked sewers:
- when discharging material to the sewer, treat the sewer as if it is a Storm sewer until confirmed.
- when opening a sewer, treat the sewer as if it is a Process sewer until otherwise confirmed.

3.4 **DYNAMIC CONTROL** – a type of control that is subject to being easily changed or eliminated through a change in conditions.

3.5 **PROCESS LIQUIDS** – primarily non-hydrocarbon liquid streams that are part of a refinery process and may have come in contact with hydrocarbon streams leaving traces of residual hydrocarbons (i.e. Sour Water). Included are soap solutions that are commonly used during turnarounds.

3.6 **SAFE CLEARANCE CRITERIA** – a set of pre-defined conditions that are measured and evaluated in order to determine:

3.6.1 when equipment / systems are in a state in which they can safely be opened to the environment
3.6.2 what precautions are to be used when the actual physical opening of the equipment / system takes place

3.7 **EQUIPMENT OPENING SAFE WORK PLAN** – a written document (Attachment 2) that is used to record which requirements of this P&P cannot be met, why they cannot be met, and what alternate safeguards will be used to achieve an equivalent level of safety when opening equipment or systems.

3.8 **MAINTENANCE DEPARTMENT** – an organization that is authorized to perform maintenance, service or repair work within the refinery. For the purposes of this P&P, the following groups may be considered as falling under this definition:

- Maintenance / Reliability Department personnel
- Engineering and New Construction Department personnel
- Maintenance Contractor services acquired by the Company
- Any maintenance service authorized by the Company
- Third Party Contractors
- Metallurgical Engineering and Inspection Department personnel and any contractors under their control
- Operations Department Vendors

3.9 MAINTENANCE REPRESENTATIVE is the craft-person authorized by the Company to complete the work in an operating unit. The Maintenance Representative may be either a company employee or a contractor.

4.0 GENERAL REQUIREMENTS

4.1 The requirements of this Policy and Procedure work in conjunction with P&P 2-2-38 Hazardous Energy Isolation and Control.

4.2 No system or piece of equipment is to be turned over for opening until it has been prepared (i.e. drained, de-pressured, purged, etc.) and tested in accordance with the requirements of this P&P

4.3 Equipment / systems are to be cleared of hazardous materials following the requirements outlined in Section 5 of this P&P.

4.4 In situations where safe clearance levels cannot be achieved, a Equipment Opening Safe Work Plan (Attachment 2) shall be prepared and followed.

4.5 Equipment / systems conditions are to be measured and evaluated against the following **Safe Clearance Criteria** to determine the appropriate safety precautions to be put in place before equipment / systems are opened. **Safe Clearance Criteria** are:

4.5.1 **Hydrocarbon levels measured below 10% LEL**
4.5.2 **Hydrogen Sulfide levels measured below 10 ppm.**
4.5.3 **Benzene levels measured below 1 ppm.**
4.5.4 **Equipment / system internal pressure is measured and verified to meet the requirements of Section 5.3 of this P&P or other specific written operating procedures.**

4.6 Additional criteria that need to be checked and included in evaluating equipment / system conditions are:

4.6.1 pH level associated with equipment / system contents after flushing if applicable.

4.6.2 remaining liquid level within equipment (e.g. completely cleared or possible pockets, low spots)

4.7 Equipment / systems that **cannot be tested** to determine the presence and level of hazardous materials following cleaning, purging, etc., are to be treated as if unacceptable levels are present.

4.8 A written Equipment Opening Safe Work Plan is required **prior** to opening equipment / systems if the level of hazardous materials cannot be lowered to acceptable levels and/or the level cannot be determined.

4.9 Use of appropriate PPE including supplied air respiratory protective equipment is to be required when conditions at the time of opening indicate a respiratory hazard may be present.

5.0 EQUIPMENT / SYSTEM PREPARATION REQUIREMENTS

Preparing equipment and systems for opening is a phased process that involves a number of decisions and actions. The Equipment Preparation Decision Tree (Attachment 1) is a guide that is to be used in developing appropriate equipment opening plans.

This section describes the restrictions and requirements associated with preparing equipment / systems for opening which may include flushing to a closed system, draining of hydrocarbons, draining of residual process liquids, de-pressuring to a flare, or purging.

5.1 HYDROCARBON STREAMS

5.1.1 Hydrocarbons are not to be drained onto bare soil or into a storm drain.

5.1.2 Hydrocarbon streams are to be removed from equipment / systems via Closed or Controlled systems whenever possible.

5.1.3 Hydrocarbon streams at temperatures **ABOVE** their flash point are to be removed only via closed systems.

5.1.4 Naphtha, gasoline and lighter hydrocarbons (Pentane, Butane, Propane, etc.) are typically above their flash temperature when they are at AMBIENT temperatures and **are not allowed to be directed to a process drain system.**

5.1.5 Residual amounts of Hydrocarbon streams that remain after applying the methods described above may be drained into a process drain system provided:

5.1.5.1 the material is verified as meeting established temperature requirements

5.1.5.2 the material is verified as not presenting or capable of creating an odor problem

5.1.6 Hydrocarbon streams must be verified as being below their flash points **AND** must be cooled to temperatures at or below 200 deg. F before being introduced into any of the LAR process drain systems as specified below.

5.1.7 Allowable temperatures for hydrocarbons streams directed to a process drain system are :

STREAM	MAX TEMP.(Deg F)
Stripped Jet Fuel (ATF, LCGO, UTS)	115
Stripped Diesel (HGO, UDS, HCAT)	145
Stripped Gas Oil & Heavier	200

5.2 PROCESS LIQUIDS (NON-HYDROCARBON)

5.2.1 Process liquids are not to be drained onto bare soil or into a storm drain.

5.2.2 Process liquids are to be removed from equipment / systems via Closed or Controlled systems whenever possible.

5.2.3 Process liquids having a measured pH level of <2 or >12.5 cannot be discharged into a process drain system and must be removed or neutralized in the process vessel.

NOTE: If these materials are removed prior to neutralization, they are required to be handled as "hazardous waste" and cannot be discharged and treated without the proper permit.

5.2.4 Process liquids containing 500 ppm or greater dissolved sulfides cannot be discharged into a process drain system and must be handled as "hazardous waste" or returned to the Sour Water system or other appropriate system in the refinery for processing.

5.2.5 Residual amounts of process liquids that remain after applying the methods described above may be drained into a process drain system provided all of the following condition are met:

5.2.5.1 the residual material has been tested and the sulfide level found to be below 10 ppm

5.2.5.2 the residual material has been tested and its pH level established as being >2 but <12.5

5.2.5.3 the material has been verified as not presenting or capable of creating an odor problem

5.2.5.4 notification regarding pH, amount of oil, sulfides and other chemicals that could upset the Oil Recovery Unit has been given the to Oil Recovery Unit Operator and the Bulk Operations Shift Supervisor.

5.2.5.5 approval of the Bulk Shift Supervisor has been obtained to ensure that the introduction of this material into the drain system will not create problems at the Oil Recovery Unit.

5.2.5.6 non-essential personnel have been cleared from and kept out of areas that could reasonably be expected to be the impacted during the draining operation due to wind direction, etc.

5.2.5.7 personnel involved in the draining operation are to wear the personal protective equipment appropriate for the hazard associated with the process liquid being drained (refer to P&P 3-1-20 Personal Protective Equipment - Material/Task Specific).

5.2.5.8 draining is to be controlled and monitored to ensure drains do not overflow.

5.2.5.9 drains are to be flushed with water after use to remove residual materials.

5.2.6 Residual process liquids that cannot be pressured into a closed system may be removed by a vacuum truck in accordance with P&P 3-2-28 Vacuum Truck Operation.

5.3 DEPRESSURING TO RELIEF SYSTEMS

5.3.1 Environmental Services is to be notified as far as possible in advance of any planned flaring.

5.3.2 The appropriate Operations Shift Supervisor is to be notified before any venting takes place.

5.3.3 Venting to the relief system is to be monitored as the equipment is vented and the necessary steps taken to prevent excessive flaring and to minimize outside impacts.

5.3.4 De-pressure equipment to the relief system slowly to stay within the capacity of vapor recovery systems. Again this requires communication with the appropriate Operations Shift Supervisor and may require slower venting.

5.3.5 The appropriate Operations Shift Supervisor is to be notified before any liquids are vented to the relief system including the Maintenance Drop Out (MDO) system at the Carson Plant.

5.3.6 Liquids vented to the relief system are to be regulated closely to ensure flare knockout vessel levels remain under control.

5.3.7 When de-pressuring to the relief system, de-pressuring is to stop at about 1 to 2 psig or at the point when de-pressuring can no longer take place.

5.3.8 If the equipment cannot be fully de-pressured to relief system pressure, all isolation valves should be checked to assure they are in the fully closed position. Additional upstream and downstream valves may have to be closed to fully isolate and de-pressure the equipment.

5.4 PURGING REQUIREMENTS

5.4.1 Equipment removed from service must be purged as described below to a closed system until gases exiting the equipment meet the following criteria:

5.4.1.1 When **purging with steam, equipment is to be purged until all equipment is hot.** This should be detailed in the shutdown procedure using a combination of purge time and/or temperature. Equipment temperature should be monitored during the purge using available thermocouples.

5.4.1.2 **When purging with nitrogen, the procedure must specify a purge time to a closed or relief system that will adequately displace any hydrocarbon vapors with nitrogen**.

5.4.1.3 Lines in Acid, Caustic or Amine service are to be purged using Nitrogen unless prior approval to use steam is obtained from the Mechanical Integrity Department.

5.4.1.4 **Water flooding of equipment to a closed system can be done to remove hydrocarbon and wet iron sulfides.** The flushing time should be detailed in the shutdown procedure.

5.5 TESTING REQUIREMENTS

5.5.1 Equipment / system purging is to continue until the Safe Clearance Criteria for opening equipment / systems have been obtained.

5.5.2 To ensure current conditions are represented, testing done to assess Safe Clearance Criteria is to be done no more than 1 hour before the opening begins.

5.5.3 Gas testing is to be done at different vent points to ensure a representative sample of the equipment / system has been obtained.

5.5.4 If any Safe Clearance Criterion cannot be evaluated or achieved, an approved Equipment Opening Safe Work Plan is to be prepared.

5.5.5 When in doubt about how to measure or evaluate any of the Safe Clearance Criteria, contact the Health, Safety and Environmental Department for further guidance.

5.6 EQUIPMENT OPENING REQUIREMENTS

5.6.1 Each planned opening of a piece of equipment or a system is to be evaluated using the decision tree shown as Attachment 1, and the criteria shown in Attachment 3, and classified as either a High Hazard or Low Hazard Opening.

5.6.2 The requirements associated with the opening classification selected are to be followed until the equipment / system has been opened to the environment.

5.6.3 The classification determined to be applicable to the installation of a blind also applies to opening of equipment / systems to remove a blind.

5.6.4 The specific criteria and requirements associate with opening classification are as follows:

HIGH HAZARD OPENING

5.6.4.1 Opening operations are to be designated as **High Hazard** whenever any of the following **conditions** exist:

5.6.4.1.1 Safe Clearance Criteria **can not** be measured or verified (e.g. adequate sampling for verification not possible)

OR

5.6.4.1.2 Safe Clearance Criteria can not be met

5.6.4.2 The following **requirements** apply to **High Hazard** Openings:

5.6.4.2.1 A **High Hazard Work Authorization Permit** must be obtained before opening equipment.

5.6.4.2.2 **Additional Personal Protective Equipment based upon the hazards of the job** must be used by personnel directly involved in opening operation.

(NOTE: Supplied Air respiratory protective equipment will be used in most cases)

5.6.4.2.3 A **written Equipment Opening Safe Work Plan** must be completed as part of the Work Authorization process.

LOW HAZARD OPENINGS

5.6.4.3 Opening operations may be designated as **Low Hazard** if the following **conditions** exist:

5.6.4.3.1 Equipment / System to be opened has not previously contained H2S in levels in excess of 100 PPM.

5.6.4.3.2 Safe Clearance Criteria have been met and positively maintained

5.6.4.3.3 No Active Nitrogen purge during opening (0 psig)

5.6.4.4 The following **requirements** apply to **Low Hazard** Openings:

5.6.4.4.1 A **Low Hazard Work Authorization Permit** must be obtained before opening equipment.

6.0 ROLES AND RESPONSIBILITIES

6.1 PROCESS OPERATORS

6.1.1 Properly prepare equipment / systems to be opened following established operating procedures and the requirements of this P&P.

6.1.2 Participate in evaluation and classification of the opening to be performed.

6.1.3 Participate in preparing Equipment Opening Safe Work Plans when conditions require them to be completed.

6.1.4 Notify Operations Supervision whenever a High Hazard Opening is required based on equipment / system conditions

6.1.5 Ensure requirements associated with the appropriate Opening Classification are included in Work Authorization form.

6.2 MAINTENANCE CRAFTS PERSONNEL

6.2.1 Participate in preparing Equipment Opening Safe Work Plans when conditions require them to be completed.

6.2.2 Review and follow requirements of Equipment Opening Safe Work Plan and Work Authorization Permit.

6.2.3 Obtain and use appropriate personal protective equipment including supplied air respiratory protective equipment when required.

6.3 OPERATIONS SUPERVISION

6.3.1 Notify Maintenance Supervision (COP Only) whenever a High Hazard Opening is required.

6.3.2 Assist Process Operators and Maintenance Crafts Personnel in finalizing Equipment Opening Safe Work Plans upon request.

6.3.3 Obtain review and sign-off on Equipment Opening Safe Work Plan and provide to Operators as a supporting document to be used in issuing a Work Authorization form for the opening operation.

6.4 MAINTENANCE SUPERVISION (COP, NON-CONTRACTOR ONLY)

6.4.1 Discuss High Hazard Opening situations with Operations Supervision and provide input into Equipment Opening Safe Work Plans.

6.4.2 Review and endorse Equipment Opening Safe Work Plan and High Hazard Work Authorization to indicate agreement with the plan. *Note: With Operations Supervision concurrence this review can be performed over the telephone during off hours.*

6.4.3 Ensure that the Equipment Opening Safe Work Plan has been reviewed with on-site crafts personnel assigned to perform the opening and is understood by all craftspeople involved.

6.5 HEALTH & SAFETY

6.5.1 Participate in development of Equipment Opening Safe Work Plans.

6.5.2 Review and sign off on Equipment Opening Safe Work Plans and High Hazard Work Authorization Permits to indicate agreement with the plan.

7.0 TRAINING

Policy Name/#: Preparing Process Equipment for Opening **Effective Date:**

Work Group	Level of Training Required			
	1	2	3	4
Administrative Assistants			X	
Business Analysis			X	
Capital Projects		X		
Environmental Services Staff		X		
Finance			X	
GIS			X	
Health & Safety	X			
Human Resources			X	
Laboratory		X		
LARC Staff	X			
LARC Bulk Operations	X			
LARC East Operations	X			
LARC Maintenance	X			
LARC West Operations	X			
LARW - Maintenance/Reliability - Elec. &	X			
LARW - Maintenance/Reliability - Instrument &	X			
LARW - Maintenance/Reliability - Mechanical	X			
LARW - Maintenance/Reliability - Turnaround	X			
LARW - Maintenance/Reliability - General	X			
LARW - Bulk Operations - Bulk Transfer	X			
LARW - Bulk Operations - Utilities	X			
LARW - Dist & Cracking - Acid/Sulfur Plants	X			
LARW - Dist & Cracking - FCC/Alky	X			
LARW - Hydrotreating -	X			
LARW - Hydrotreating - Reforming/Isomerization	X			
LARW Operations Staff	X			
Material Management		X		
Mechanical Integrity		X		
Process Engineering & Optimization		X		
Project Engineering & Construction		X		
Public Affairs			X	
Refinery Leadership Team		X		
Security Staff				
Technical Service Staff		X		
Warehouse		X		

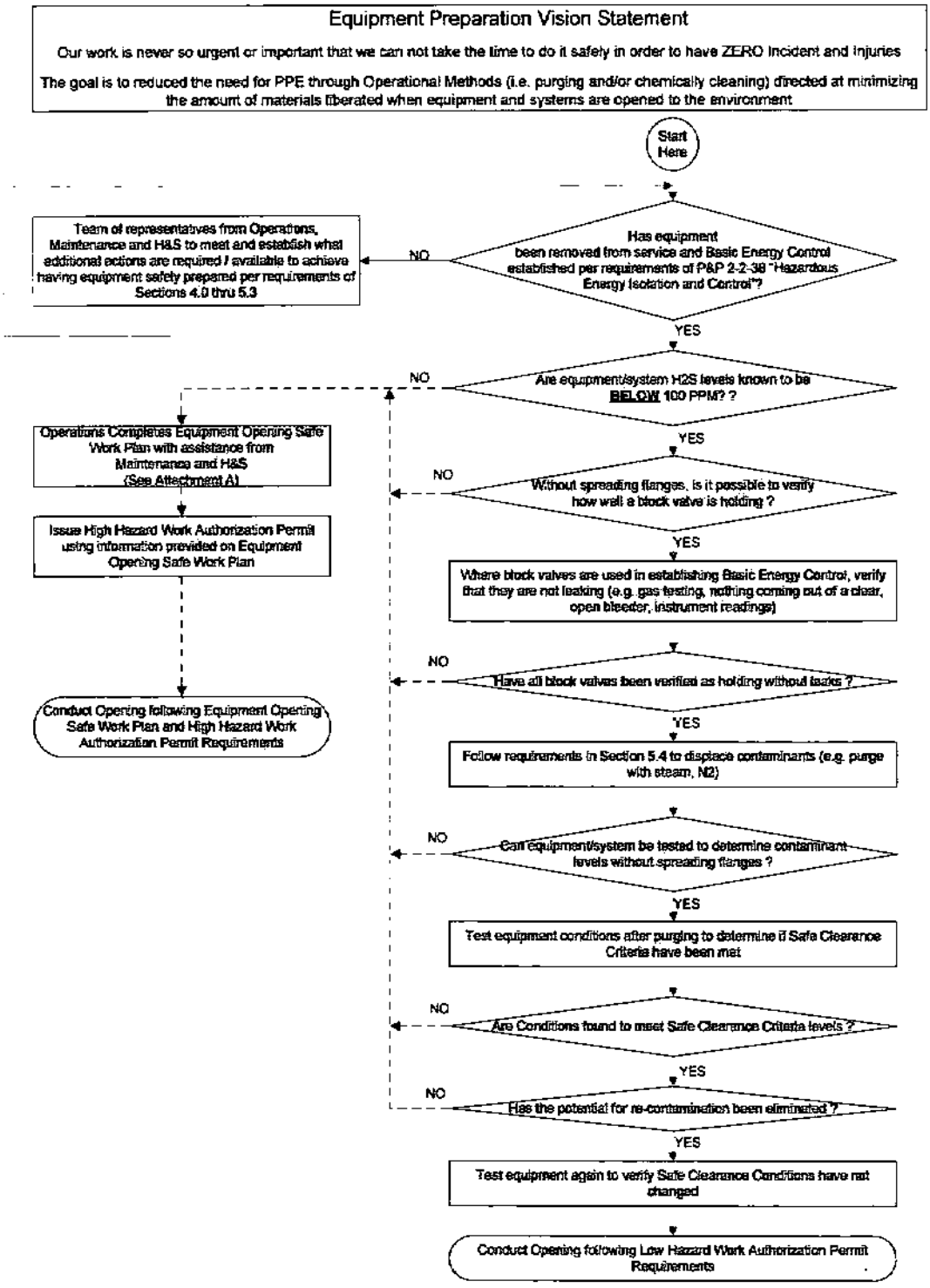
Training Levels:

Level 1: Formal Classroom Training Required
Level 2: Complete LMS Self –Familiarization Training Module
Level 3: Safety/Team Meeting Review Required
Level 4: Review Not Required:

8.0 REVISION HISTORY

Revision Number	Revised By	Approved By	Approval Date	Description
5	H&S Dept / JHSC	Refinery Management Team		Original Issue for this format.

ATTACHMENT 1
EQUIPMENT PREPARATION DECISION TREE



ATTACHMENT 2
EQUIPMENT OPENING SAFE WORK PLAN

This Safe Work Plan has been prepared because one or more of base equipment opening requirements cannot be met or one or more of the following conditions exist: (CHECK all that apply)

- [ ] Equipment has regularly contained H2S at 100 PPM levels or higher
- [ ] Unable to reduce and maintain measured LEL level of < 10% LEL
- [ ] Unable to reduce and maintain measured H2S level of < 10 PPM
- [ ] Unable to reduce and maintain measured Benzene level of < 1 PPM
- [ ] Unable to test equipment and verify hazardous materials levels prior to opening
- [ ] Unable to verify that equipment / system contains no free standing liquid
- [ ] Unable to verify pH levels associated with equipment / system
- [ ] No Closed System available for draining / purging

Other Requirement(s) not met: _____

Alternate Safety Measures to be used to allow the equipment to be safely opened including the use of Supplied Air or other appropriate Respiratory Protection Equipment(attach additional instructions, procedures, drawings as needed): _____

Recommended changes to prevent this situation from reoccurring in the future: _____

Operations Supervision: _____

H&S Representative: _____

Maintenance Supervision: _____

Attachment 3
Criteria for Equipment and Systems Containing Hydrocarbon, H2S, Benzene and Other Hazardous Materials
Draining / Purging Guiding Principles

1. Gasoline and lighter materials are to always be flushed to closed systems.
2. Other types of hydrocarbons are to be drained/purged to closed systems whenever possible.
3. Hydrocarbons to be cooled to below their flashpoints before draining: Jet <115 deg F, Diesel to <145 deg F, Gas Oil/Resids < 200 deg F
4. Sample and obtain approval from Bulk Shift Supervisor before draining / purging directly to Process Drains
5. Process Drain Limits : Below Flash Pt, 200 deg F Max, < 150 deg F desired, Sulfides <10 ppm, 2<pH<12.5
6. Notify Environmental and Appropriate Shift Supervisor prior to planned flaring
7. De-pressure slowly to stay within vapor recovery limits and minimize flaring.
8. Follow Operating Procedures for purging with steam, nitrogen, and/or water to desired time/temperature
9. Test immediately prior to initial equipment/system opening

Safe Clearance Criteria

< 10% LEL
< 10 ppm H2S
< 1 ppm Benzene
pH level measured and verified as appropriate
Liquid-state verified as appropriate

High Hazard Opening

Cannot Meet Safe Clearance Levels
Or
Levels Cannot be Verified

Safe Guards

Approved Equipment Opening Safe Work Plan
Approved High Hazard Work Authorization
Appropriate Additional Personal Protective Equipment/Respiratory Protection (e.g. supplied air)

Low Hazard Opening

Safe Clearance Levels Met AND verified with low possibility of toxics recontamination

Safe Guards

Approved Low Hazard Work Authorization