

PXP

PXP 2009 Third Party Audit of Fire Protection Capabilities at Inglewood Oil Field

Baldwin Hills CSD Conditions
L.1.a

March 2009

Prepared for:

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APPROVED

1 Introduction

The Baldwin Hills Community Standards District (CSD) was adopted by the Los Angeles Planning Department on October 28, 2008 and became effective on November 28, 2008. Plains Exploration & Production Company (PXP), operator of the Baldwin Hills Oil Field (a.k.a. Inglewood Oil Field) located in the Baldwin Hills District, will comply with the requirements of the CSD. The goal of the CSD is to ensure that oil field operations are conducted in a safe manner and are compatible with the surrounding uses.

1.1 Operations Overview

At the Baldwin Hills location, PXP is drilling for sweet crude oil. Sweet crude oil is a type of petroleum. Petroleum is considered "sweet" if it contains less than 0.5% sulfur, compared to a higher level of sulfur in sour crude oil. Sweet crude oil contains small amounts of hydrogen sulfide and carbon dioxide. High quality, low sulfur crude oil is commonly used for processing into gasoline and is in high demand, particularly in the industrialized nations. "Light sweet crude oil" is the most sought-after version of crude oil as it contains a disproportionately large amount of these fractions that are used to process gasoline, kerosene, and high-quality diesel. The term "sweet" originated because the low level of sulfur provides the oil with a mildly sweet taste and pleasant smell.

Two types of wells are drilled in the oil field; injection and production wells. Injection wells are used to pump fluids into the oil bearing geologic formation at depth, forcing the oily water in the formation to migrate to nearby production wells for recovery.

Wells are drilled by erecting temporary well derricks, or drilling rigs and related components, and drilling to total depth. API Guideline 14B (Offshore Drilling Operations) requires that H₂S and methane gas detectors be located near the well hold during drilling operations. Currently each drilling rig used at the Baldwin Hills Oil Field is outfitted with these devices, which provide an early warning to any gas leak that could result in a fire.

1.2 CSD Requirement

CSD Section L.1.a requires that a "Fire Protection Audit be conducted as follows:

Within 120 days following the effective date, or at such later date as may be approved by the fire chief for good cause shown, the operator shall complete a third-party audit of the oil field's fire protection capabilities to evaluate compliance with NFPA requirements, the county fire code, the county fire department regulations, California Code of Regulations, and API requirements. The third-party auditor shall be selected and funded by the operator, subject to the approval of the fire chief and the audit shall be conducted in cooperation with the county fire department. The county fire department may request that the Culver City fire department participate in the audit. Issues addressed in the audit shall include, but not be limited to, fire monitor placement, fire water capabilities, fire detection capabilities, and fire foam requirements. The audit results and any corrective action plan shall be submitted to the fire chief for approval. The corrective action plan shall identify any noncompliance item, describe the corrective action to be taken, and provide a deadline for the completion of each such corrective action, which may be extended by the director after consultation with the fire chief for good cause shown. The operator shall submit to the fire chief monthly updates on the corrective action plan until such time as all corrective actions have been completed.

This audit focuses on the oil field operations and excludes issues associated with the Gas Plant. Note that CSD Section L.3.b details requirements for a "Gas Plant Audit." As such, the Gas Plant is not covered by this report.

2 Code Requirements

The section of the report identifies the codes, standard and guidelines for the project and the compliance status relating to the operations at the Baldwin Hills Oil Field.

2.1 Applicable Codes

The following codes, standards and guidelines provide requirements applicable to the project and have been reviewed with regard to fire protection-related requirements:

- i. 2007 California Fire Code (CFC) – Section 3406.3 – Well Drilling and Operating
- ii. National Fire Protection Association (NFPA) 30:2003 Edition – Flammable and Combustible Liquids Code
- iii. National Fire Protection Association (NFPA) 30 ERTA 2003 – Flammable and Combustible Liquids Code
- iv. American Petroleum Institute (API) Recommended Practice 54 – 2007 Occupational Safety for Oil and Gas Well Drilling and Servicing Operations
- v. County Of Los Angeles Fire Department - Pre-Fire Management Plan
- vi. County Of Los Angeles Fire Department - Fuel Modification Plan Guidelines
- vii. PXP – Gas Plant Audit Report (Conducted as per Baldwin Hills CSD Condition L.3.b by Risk Management Professionals of Mission Viejo, CA in March 2009 and presented to Fire Chief under separate cover)

2.2 Code Review

The following tables identify the code requirements applicable to the oil field operations and the compliance status or recommendations to corrective action.

2.2.1 2007 California Fire Code Requirements

The California Fire Code provides establishes regulations affecting or relating to structures, processes, premises and safeguards regarding:

- i. The hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices;
- ii. Conditions hazardous to life, property or public welfare in the occupancy of structures or premises;
- iii. Fire hazards in the structure or on the premises from occupancy or operation;
- iv. Matters related to the construction, extension, repair, alteration or removal of fire suppression or alarm systems.

Table 1 provides details of the applicable requirements.

Table 1 Code Requirements: 2007 CFC

California Fire Code 2007		
Code Reference and Number	Item	PXP Compliance or Recommendations
California Fire Code 2007 Section 3406.3	Well drilling and operating. Wells for oil and natural gas shall be drilled and operated in accordance with Sections 3406.3.1 through 3406.3.8.	See Below
California Fire Code 2007 Section 3406.3.1	Location. The location of wells shall comply with Sections 3406.3.1.1 through 3406.3.1.3.2	See Below
California Fire Code 2007 Section 3406.3.1.1	Storage tanks and sources of ignition. Storage tanks or boilers, fired heaters, open-flame devices or other sources of ignition shall not be located within 25 feet (7620 mm) of well heads. Smoking is prohibited at wells or tank locations except as designated and in approved posted areas.	In Compliance
	Exception: Engines used in the drilling, production and serving of wells.	
California Fire Code 2007 Section 3406.3.1.2.	Streets and railways. Wells shall not be drilled within 75 feet (22860 mm) of any dedicated public street, highway or nearest rail of an operating railway.	In Compliance
California Fire Code 2007 Section 3406.3.1.3	Buildings. Wells shall not be drilled within 100 feet (30 480 mm) of buildings not necessary to the operation of the well.	In Compliance
California Fire Code 2007 Section 3406.3.1.3.1	Group A, E or I buildings. Wells shall not be drilled within 300 feet (91 440 mm) of buildings with an occupancy in Group A, E or I.	In Compliance
California Fire Code 2007 Section 3406.3.1.3.2	Existing wells. Where wells are existing, buildings shall not be constructed within the distances set forth in Section 3406.3.1 for separation of wells or buildings.	In Compliance
California Fire Code 2007 Section 3406.3.2	Waste control. Control of waste materials associated with wells shall comply with Sections 3406.3.2.1 and 3406.3.2.2.	In Compliance
California Fire Code 2007 Section 3406.3.2.1	Discharge on a street or water channel. Liquids containing crude petroleum or its products shall not be discharged into or on streets, highways, drainage canals or ditches, storm drains or flood control channels.	In Compliance
California Fire Code 2007 Section 3406.3.2.2	Discharge and combustible materials on ground. The surface of the ground under, around or near wells, pumps, boilers, oil storage tanks or buildings shall be kept free from oil, waste oil, refuse or waste material.	In Compliance

California Fire Code 2007		
Code Reference and Number	Item	PXP Compliance or Recommendations
California Fire Code 2007 Section 3406.3.3	Sumps. Sumps associated with wells shall comply with Sections 3406.3.3.1 through 3406.3.3.3.	In Compliance
California Fire Code 2007 Section 3406.3.3.1	Maximum width. Sumps or other basins for the retention of oil or petroleum products shall not exceed 12 feet (3658 mm) in width.	In Compliance
California Fire Code 2007 Section 3406.3.3.2	Backfilling. Sumps or other basins for the retention of oil or petroleum products larger than 6 feet by 6 feet by 6 feet (1829 mm by 1829 mm by 1829 mm) shall not be maintained longer than 60 days after the cessation of drilling operations.	In Compliance
California Fire Code 2007 Section 3406.3.3.3	Security. Sumps, diversion ditches and depressions used as sumps shall be securely fenced or covered.	In Compliance
California Fire Code 2007 Section 3406.3.4	Prevention of blowouts. Protection shall be provided to control and prevent the blowout of a well. Protection equipment shall meet federal, state and other applicable jurisdiction requirements.	In Compliance
California Fire Code 2007 Section 3406.3.5	Storage tanks. Storage of flammable or combustible liquids in tanks shall be in accordance with Section 3404. Oil storage tanks or groups of tanks shall have posted in a conspicuous place, on or near such tank or tanks, an approved sign with the name of the owner or operator, or the lease number and the telephone number where a responsible person can be reached at any time.	In Compliance
California Fire Code 2007 Section 3404.2.9.5.1	(geographic limits in which the storage of Class I and Class II liquids in above-ground tanks outside of buildings is prohibited): [JURISDICTION TO SPECIFY]	In Compliance, unless the AHJ has further requirements.
California Fire Code 2007 Section 3406.2.4.4	(geographic limits in which the storage of Class I and Class II liquids in above-ground tanks is prohibited): [JURISDICTION TO SPECIFY]	In Compliance, unless the AHJ has further requirements.
California Fire Code 2007 Section 3406.3.6	Soundproofing. Where soundproofing material is required during oil field operations, such material shall be noncombustible.	In Compliance

California Fire Code 2007		
Code Reference and Number	Item	PXP Compliance or Recommendations
California Fire Code 2007 Section 3406.3.7	Signs. Well locations shall have posted in a conspicuous place on or near such tank or tanks an approved sign with the name of the owner or operator, name of the lessee or the lease number, the well number and the telephone number where a responsible person can be reached at any time. Such signs shall be maintained on the premises from the time materials are delivered for drilling purposes until the well is abandoned.	In Compliance, PXP to maintain that this condition is met and laid out in the CSD Report.
California Fire Code 2007 Section 3406.3.8	Field-loading racks. Field-loading racks shall be in accordance with Section 3406.5.	In Compliance

2.2.2 NFPA 30 Requirements

NFPA 30 provides requirements pertaining to the storage, handling, and use of flammable and combustible liquids, including waste liquids. These requirements address mitigation of fire and explosion hazards associated with flammable and combustible liquids and tank storage as identified in Table 2.

Table 2 Code Requirements: NFPA 30
NFPA 30: Flammable and Combustible Liquids Code

Code Reference and Number	Item	PXP Compliance or Recommendations
NFPA 30 Flammable and Combustible Liquids Code - 2008 Section 6.4.1	General. Operations involving flammable and combustible liquids shall be reviewed to ensure that fire and explosion hazards resulting from loss of containment of liquids are provided with corresponding fire prevention, fire control, and emergency action plans.	In Compliance, under Exception Number 3
	Exception No. 1: Operations where liquids are used solely for on-site consumption as fuels.	
	Exception No. 2: Operations where Class II or Class III liquids are stored in atmospheric tanks or transferred at temperatures below their flash points.	

NFPA 30: Flammable and Combustible Liquids Code		
Code Reference and Number	Item	PXP Compliance or Recommendations
	Exception No. 3: Mercantile occupancies, crude petroleum exploration, drillings, and well servicing operations, and normally unoccupied facilities in remote locations.	.
NFPA 30 Flammable and Combustible Liquids Code - 2008 Section 17.15.2	Operations involving flammable and combustible liquids shall be reviewed to ensure that fire and explosion hazards resulting from loss of containment of liquids are provided with corresponding fire prevention and emergency action plans.	In Compliance, under Exception Number 3
	Exception No. 1: Operations where liquids are used solely for on-site consumption as fuels.	.
	Exception No. 2: Operations where Class II or Class III liquids are stored in atmospheric tanks or transferred at temperatures below their flash points.	
.	Exception No. 3: Mercantile occupancies, crude petroleum exploration, drillings, and well servicing operations, and normally unoccupied facilities in remote locations.	
NFPA 30 Flammable and Combustible Liquids Code - 2008 Section 21.7.4.3.2	Temporary Closure. Underground tanks shall be rendered temporarily out of service only when it is planned that they will be returned to active service, closed in place permanently, or removed within an approved period not exceeding 1 year. The following requirements shall be met:	In Compliance
.	(1) Corrosion protection and release detection systems shall be maintained in operation.	.
	(2) The vent line shall be left open and functioning.	
	(3) The tank shall be secured against tampering.	
.	(4) All other lines shall be capped or plugged.	
NFPA 30 Flammable and Combustible Liquids Code - 2008 Section 21.7.4.3.2.1	Tanks remaining temporarily out of service for more than 1 year shall be permanently closed in place or removed in accordance with 21.6.5.4 or 21.6.5.5, as applicable.	In Compliance, PXP to maintain that this condition is met and laid out in the CSD Report.

2.2.3 API Recommended Practice 54 Guidance

API RP 54 provides guidance to recommended practices and procedures for promotion and maintenance of safe working conditions for personnel engaged in drilling operations and well servicing operations, including special services. These recommendations apply to rotary drilling rigs, well servicing rigs, and special services as they relate to operations on location. The recommendations are not intended to cover seismic drilling or water well drilling operations. These recommendations do not apply to site preparation and site abandonment operations.

Table 3 API RP 54 Guidance

API RECOMMENDED PRACTICE 54: Occupational Safety for Oil and Gas Well Drilling and Servicing Operations -		
Code Reference and Number	Item	PXP Compliance or Recommendations
API RP 54 – Section 6.6.1	<p>Safety guidelines and recommendations for use in drilling operations where hydrogen sulfide or sulfur dioxide gas may be encountered are contained in API RP 49. Also see API RP 55 (API Recommended Practice 55, Second Edition, February 15, 1995; Recommended Practices For Oil And Gas Producing And Gas Processing Plant Operations Involving Hydrogen Sulfide) ; and API RP 68(API Recommended Practice 68; Date: 1998-01-01 Recommended Practice For Oil And Gas Well Servicing And Workover Operations Involving Hydrogen Sulfide – Inactive document by API.). These recommended procedures should be utilized, as appropriate, in applicable operations to enhance safety of personnel and the general public.</p> <p><i>Purpose of API RP 55 and 68 are for safe handling and work requirements for working in and around H2S in Gas Plants, Drilling rigs, (on and offshore) etc. This is a Safety Training and Workers “Right to Know” document regarding the hazards. These item are part of a EHS – Safety requirements for the site.</i></p>	<p>Note the amount of H2S gas in the Sweet Crude is small and H2S gas detection is not warranted. The drilling rigs have H2S Monitoring during the drilling stage.</p>

API RECOMMENDED PRACTICE 54: Occupational Safety for Oil and Gas Well Drilling and Servicing Operations -		
Code Reference and Number	Item	PXP Compliance or Recommendations
API RP 54 – Section 7.1.1	Safe storage and location of combustibile and flammable materials and the prevention of accumulation of rubbish are important to fire prevention.	In Compliance
API RP 54 – Section 7.1.2	Smoking shall be prohibited at or in the vicinity of operations that constitute a fire hazard. Such locations should be conspicuously posted with a sign, "NO SMOKING OR OPEN FLAME," or equivalent.	In Compliance
API RP 54 – Section 7.1.3	Smoking shall be permitted only in areas designated for smoking.	In Compliance
API RP 54 – Section 7.1.4	Change rooms and other buildings where smoking is permitted should be located in areas designated safe for smoking.	In Compliance
API RP 54 – Section 7.1.5	Matches and all smoking equipment should be left in areas designated safe for smoking.	In Compliance
API RP 54 – Section 7.1.6	No source of ignition should be permitted in an area where smoking has been prohibited, unless it is first determined safe to do so by the supervisor in charge or his designated representative.	In Compliance
API RP 54 – Section 7.1.7	Potential sources of ignition should be permitted only in designated areas located at a safe distance from the wellhead or flammable liquid storage areas.	In Compliance
API RP 54 – Section 7.1.8	Only safety-designed (nonopened flame) heaters shall be permitted on or near the rig floor, substructure, or cellar. The safety features of these heaters shall not be altered.	In Compliance
API RP 54 – Section 7.1.9.	Equipment, cellars, rig floor, and ground areas adjacent to the well should be kept free from oil and gas accumulations that might create or aggravate fire hazards.	In Compliance
API RP 54 – Section 7.1.10	Combustible materials such as oily rags and waste should be stored in covered metal containers and the covers kept in place.	In Compliance
API RP 54 – Section 7.1.11	Natural gas or liquefied petroleum gas shall not be used to operate spray guns or pneumatic tools.	In Compliance
API RP 54 – Section 7.1.12	Material used for cleaning should have a flash point of not less than 100°F (38°C).	In Compliance

API RECOMMENDED PRACTICE 54: Occupational Safety for Oil and Gas Well Drilling and Servicing Operations -		
Code Reference and Number	Item	PXP Compliance or Recommendations
API RP 54 – Section 7.1.13	Metal or other conductive material containers should be used in handling, storing, or transporting flammable liquids. The handling of flammable liquids in plastic containers is potentially dangerous due to static charge buildup. Metal parts on any plastic containers used in such service should be bonded to the fill connection. If plastic containers are used, the conductive fill connection or a grounded rod should be inserted prior to filling the container with any flammable liquid.	In Compliance
API RP 54 – Section 7.2 FIRE PROTECTION		
API RP 54 – Section 7.2.1	Fire fighting equipment shall not be tampered with and shall not be removed for other than fire protection, fire fighting purposes, and services. A fire fighting water system may be used for wash down and other utility purposes so long as its fire fighting capability is not compromised.	In Compliance
API RP 54 – Section 7.2.2	Fire extinguishers and other fire fighting equipment shall be suitably located, readily accessible, and plainly labeled as to their type and method of operation.	In Compliance
API RP 54 – Section 7.2.3.	Fire protection equipment shall be periodically inspected and maintained in operating condition at all times. A record of the most recent equipment inspection shall be maintained.	In Compliance
API RP 54 – Section 7.2.4	Drilling rigs shall have readily accessible, in good operating condition, not less than four (4) 20-pound capacity fire extinguishers with a Class BC rating (see NFPA 10: Portable Fire Extinguishers). This is a minimum requirement and operations may dictate use of more equipment or larger sized equipment.	In Compliance
API RP 54 – Section 7.2.5	Well servicing rigs shall have readily accessible, in good operating condition, a minimum of two (2) 20 pound capacity fire extinguishers with a Class BC rating (see NFPA 10). This is a minimum requirement and operations may dictate use of more equipment or larger size equipment.	In Compliance

API RECOMMENDED PRACTICE 54: Occupational Safety for Oil and Gas Well Drilling and Servicing Operations -		
Code Reference and Number	Item	PXP Compliance or Recommendations
API RP 54 – Section 7.2.6	Fire fighting equipment shall be readily available near all welding operations. When welding or cutting operations are performed in locations other than the designated welding area, a person shall be designated as a fire watch. Welding or cutting operations should be coordinated with other activities at the location.	In Compliance
API RP 54 – Section 7.2.7	Portable fire extinguishers shall be tagged with a durable tag showing the date of the last inspection, maintenance, or recharge. Inspection and maintenance procedures shall comply with NFPA 10.	In Compliance
API RP 54 – Section 7.2.8	Crew members shall be familiarized with the location of fire control equipment (such as drilling fluid guns, water hoses, and fire extinguishers) and selected personnel trained in the use of such equipment.	In Compliance

2.2.4 LA County Fire Department Guidelines

PXP follows the LA County Fire Department guidelines related to Pre-Fire Management and Fuel Modifications as noted in Section 2.1. These guidelines are part of the overall Environmental, Health and Safety housekeeping process for the field. The need for these mitigation plans, which include brush clearance and environmental, health and safety issues, are further referenced in the following documents:

- i. API RP 54 Section 7.1.1 addresses the importance of preventing the accumulation of rubbish and other combustibles in the vicinity drilling operations.
- ii. 2007 CFC addresses the importance of maintaining the surface of the ground under, around or near wells, pumps, boilers, oil storage tanks or buildings free and clear of refuse or waste material.

3 Conclusion

Arup has audited the fire protection capabilities of the Baldwin Hills Oil Field that is currently operated by PXP. The review focuses on the applicable codes and standards as identified in the Baldwin Hills Community Standards District requirement L.1.a. In accordance with the conducted audit, the PXP operations at the oil field comply with the requirements discussed herein. The oil field operations are also in compliance with industry best practices for similar facilities.

APPROVED

Salway, Candace

From: Ledesma, Frank
Sent: Thursday, February 18, 2010 4:00 PM
To: Salway, Candace
Cc: Flath, Troy; Pitts, Glen
Subject: Confirming email

February 18, 2010

I received a request for my signature in relation to omissions from the minutes of the MACC on September 17, 2009.

Rather than sign and forward the note, I am sending you this email with a near replication of your note. I hope this will suffice.

In the sending of this email, I am providing my concurrence of the following:

- o Fire Protection Capabilities Audit -- Approved
- o Community Alert Notification System Plan -- Approved -- to be installed by 09/17/2010
- o Gas Plant Audit and Seismic Assessment -- Approved, Completed and on file. Monthly corrective action updates have been submitted for October (30 day) and November (60day) and January (120 day) and March (180day) updates will be submitted accordingly.
- o Detection of Tank Bottom Leak Program -- Approved

Captain Frank J. Ledesma
Petroleum-Chemical Unit
Fire Prevention Division, Prevention Services Bureau
Los Angeles County Fire Department