# PXP

**Plains Exploration & Production Company**

# Revisions to the Point Pedernales Field Development and Production Plan to Include Development of the Tranquillon Ridge Field

**Submitted to:**
**The Minerals Management Service**
**Pacific OCS Region**

**Submitted by:**
**Plains Exploration & Production Company**

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## SECTION 1
## INTRODUCTION

This document presents proposed revisions to the Point Pedernales Field Development and Production Plan (DPP). The proposed revisions to the DPP address the development and production of oil and gas from the Tranquillon Ridge Field using Point Pedernales facilities. The Tranquillon Ridge Field is located in both Federal and State Waters.

These DPP revisions have been developed to address all of the requirements specified in 30 CFR 250.204(a). The DPP supporting information, as required by 30 CFR 250.204 (b), can be found in the supporting information document, which has been submitted with this DPP revision document.

The proposal is to develop the Tranquillon Ridge Field oil and gas reserves from Platform Irene, which is part of the existing Point Pedernales Field facilities. The locations of the Tranquillon Ridge Field and the Point Pedernales facilities are shown in Figure 1.

Plains Exploration & Production Company (PXP), operator of the Point Pedernales Field, is proposing to drill development wells from Platform Irene. The proposal is to drill a maximum of 17 (14 producing and 3 injection) wells for development of the Tranquillon Ridge Field. However, it should be noted that the number of wells needed to develop the field will not be known until the first few development wells have been completed, placed on production, and evaluated. In addition, ongoing geologic studies and information gained from the drilling of wells may result in changes to the location of the wells specified in this document.

As part of these DPP revisions, PXP has identified the approximate bottom hole location of 14 wells, which will be used to develop the Tranquillon Ridge Field.

All of the wells will be directionally drilled using existing well slots on the platform. The drill rig that will be used will be similar in size to drill rigs that have been used on the Platform Irene in the past. Drilling of the Tranquillon Ridge wells is expected to last up to five (5) years with production lasting up to 15 years.

All the production from the Tranquillon Ridge Field will be combined with the Point Pedernales Field oil and gas and transported to the Lompoc Oil and Gas Plant (LOGP) in the existing pipelines. From LOGP, the combined oil production from the Tranquillon Ridge Field and the Point Pedernales Field will be transported to the Santa Maria Refinery via pipeline. The combined gas production will either be sold and transported via pipeline or used as fuel at the LOGP.

In order to accommodate the oil and gas production from the Tranquillon Ridge Field, three existing 600-horsepower (hp) electrical shipping pumps on Platform Irene will be replaced with three 1,250-hp electrical shipping pumps. In addition, the new Tranquillon Ridge wells will

utilize electrical submersible pumps and/or utilize gas-lift technology as need to optimize production. The only additional equipment for drilling will be two new 1,600-horsepower electric pumps for muds/cuttings handling, as well as some refurbishing of the mud/cutting handling system.

In brief, the development and production of the oil and gas reserves from the Tranquillon Ridge Field will be accomplished by drilling extended reach wells from the existing Platform Irene using existing well slots, pipelines, equipment and facilities. Only minor modifications to equipment and facilities will be necessary to handle the production.

This DPP revision document has been divided into six (6) major sections that include the following.

- ***Introduction –*** Provides a brief overview of the proposed DPP revisions, background information on the Tranquillon Ridge Field and a guide to the DPP revision document structure and content.

- ***Proposed Development Schedule for the Tranquillon Ridge Field –*** Presents the proposed development and production schedule for the Tranquillon Ridge Field.

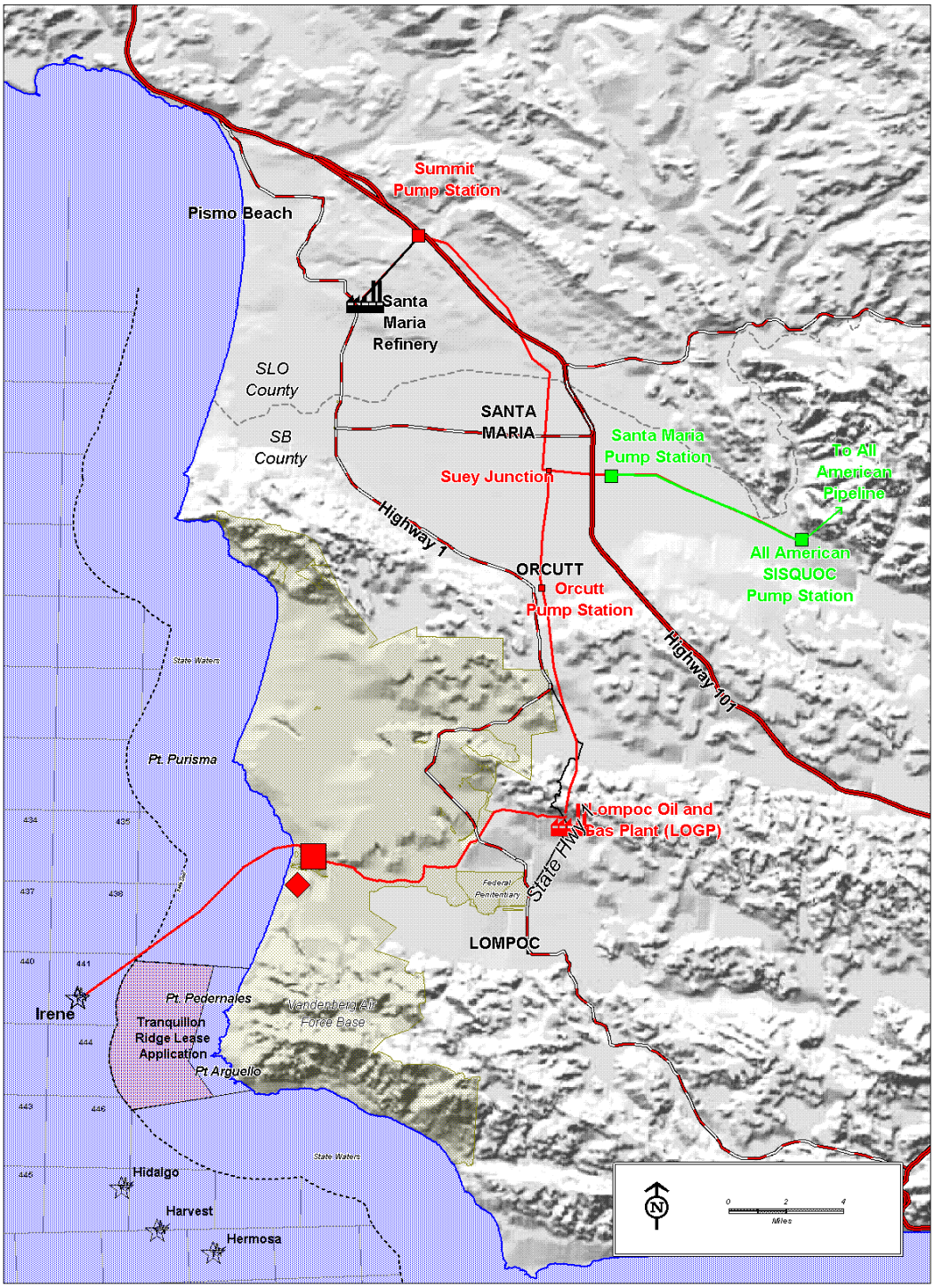
- ***Platform Site and Construction –*** Discusses the fact that there are no new platform sites or construction, other then development wells, associated with development of the oil and gas reserves from the Tranquillon Ridge Field.

- ***Drilling Facilities –*** Provides an overview of the drilling facilities that will be required to develop the reserves from the Tranquillon Ridge Field.

- ***Platform Facilities –*** Contains a description of the oil and gas facilities on the existing Point Pedernales platform and the changes that would be needed to accommodate oil and gas production from the Tranquillon Ridge Field. Oil and gas production from the Tranquillon Ridge Field will use the existing oil and gas production facilities on Platform Irene. The only modifications that would be required would be the replacement of three 600-hp electrical shipping pumps with three 1,250-hp electrical shipping pumps; installation of submersible pumps on some of the new wells; and installation of two 1,600-hp electric pumps for muds handling. Electrical transformer and switchgear upgrades will be ongoing.

- ***Pipeline System –*** Discusses the fact that the existing oil and gas pipeline system for Point Pedernales can handle the production from the Tranquillon Ridge Field.

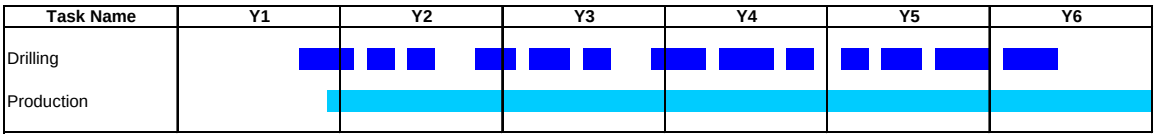
**Figure 1 Location of the Tranquillon Ridge Field and Associated Point Pedernales Facilities**



## SECTION 2
## PROPOSED DEVELOPMENT SCHEDULE FOR THE TRANQUILLON RIDGE FIELD

Figure 2 shows the projected schedule for development of the Tranquillon Ridge Field.

**Figure 2 Estimated Development Schedule for the Tranquillon Ridge Field**




Note: Production from the Tranquillon Ridge Field would continue for approximately 15 years.

Drilling of the first well should occur within four months of obtaining all regulatory approvals for the project. Production would begin two to three months after the start of the first well. The drilling of the 17 wells is projected to take five (5) years.

Depending on geologic interpretation and economic conditions at the time, unsuccessful wells may be redrilled to offset locations. In view of the extended reach of the initial wells, drilling times will likely limit the number of wells drilled and completed per year to between three (3) and four (4), which in turn sets the drilling and production schedule. The delay between the drilling of some of the wells is required to accommodate well work for the Point Pedernales and the Tranquillon Ridge Fields.

The Tranquillon Ridge Project is expected to have a total life of 15 years from the time the first well is drilled; assuming that development of the Tranquillon Ridge Field is successful. It is possible that the initial wells drilled into the Tranquillon Ridge Field may not be commercially viable. Under this scenario, the full development of the Tranquillon Ridge Field would not occur. However, for the purposes of this application, it has been assumed that full development of the Tranquillon Ridge Field will occur.

Based on a 15-year life for the Tranquillon Ridge Project, the Point Pedernales facilities (Platform Irene, the associated pipelines, and the LOGP) would have a total projected life of approximately 35 years (based on startup of Point Pedernales Field operations in 1987). This assumes that the first well for Tranquillon Ridge is drilled in the third quarter of 2008.

The 1985 Point Pedernales EIR/EIS assumed a 20-year life expectancy for Platform Irene and a 30- to 35-year life expectancy for the pipelines and the Lompoc Oil and Gas Plant (formerly the HS&P). However, the 35 year timeframe referenced in the EIR was predicated on the use of the Point Pedernales facilities to process reserves from five additional offshore platforms located in the Central Santa Maria Basin, which were part of the document's Area Study. Two of these platforms were in the Point Pedernales Unit, one was in the Santa Maria Unit, one was in the

Purisima Point Unit, and one was in the Bonito Unit. Based on improvements in drilling technology, the two additional platforms in the Point Pedernales Unit will not be needed. Full development of this unit is occurring from Platform Irene. To date, no development has occurred at the other three units. However, exploration plans for these three units have been submitted to the MMS.

The 1993 Point Pedernales Supplemental EIR (SEIR), which evaluated the relocation of gas processing facilities from the Battles Gas Plant in Santa Maria to the Lompoc HS&P, assumed a life expectancy of 10 to 25 years for the new gas plant. Original estimates of Point Pedernales project life as well as the estimated life of the Point Pedernales facilities with Tranquillon Ridge field development are summarized in Table 1.

**Table 1 Summary of Extension of Life Estimates from Environmental Documents**

| **Existing Point Pedernales Facilities** | | | |
|---|---|---|---|
| Project Component | **Original Estimated Life (Years)** | **Estimated Time Frame[a]** | **Source of Estimate** |
| Platform Irene | 20 | 1987-2007 | 1985 Pt. Pedernales EIR/EIS |
| LOGP (HS&P)<br>Gas Plant | 30-35[b]<br>10-25 | 1987-2022<br>1997-2022 | 1985 Pt. Pedernales EIR/EIS<br>1993 Supplemental EIR |
| Tranquillon Ridge | 15 | 2008-2022 | Project Application |
| **Estimated Increase in Life with Tranquillon Ridge** | | | |
| **Project Component** | **Estimated Total Life (Years)** | **Estimated Total Time Frame** | **Net Increase in Life (Years)** |
| Platform Irene | 35 | 1987-2022 | 15[c] |
| LOGP (HS&P) | 35 | 1987-2022 | 0[d] |

*[a] Current production forecasts (MMS 2004 and CSLC 2001) show a current estimated Point Pedernales project life extending to between 2010 to 2022. Thus, the original project life for Platform Irene may have been underestimated by approximately 3 to 15 years.*

*[b] This estimate goes beyond permitted development levels, and was predicated on the development of up to six offshore platforms located in the Central Santa Maria Basin.*

*[c]. Assuming the estimated life of Platform Irene was through 2007, the Tranquillon Ridge Project would extend the life of the platform by 15 years.*

*[d.] Assuming the estimated life of the LOGP was through 2022, the Tranquillon Ridge Project would not extend the life of the LOGP.*

The 20-year life expectancy of Platform Irene, assumed in the 1985 Point Pedernales EIR/EIS was based on an estimated production curve submitted by the Applicant as part of its DPP submitted to the MMS in 1984. With startup in 1987 and an estimated life of 20 years the estimate was that production would continue until 2007. Current production forecasts for the Point Pedernales Field now project that the production will continue until 2012 to 2022, which will represent a 25 to 35-year life. MMS has estimated that operations for Point Pedernales Field will end sometime between 2010 and 2015 (MMS, 2004). These estimates are based on a number of assumptions that could change over time. CSLC (2001) has estimated that operations for the Point Pedernales Field will end around 2018-2022. This represents a life expectancy that is 9 to 15 years greater than what was assumed in the 1985 Point Pedernales EIR/EIS.

The Santa Barbara County permit governing the Point Pedernales facilities contains conditions that address the scope of the project. Condition A-12 stipulates that oil production shall be limited to the Point Pedernales Field, leases OCS-P 0441, 0437, 0438, and 0440. Thus, the permit limits production to only a portion of the offshore development that was analyzed in the 1985 Point Pedernales EIR/EIS. On the other hand, the Santa Barbara County permit (Conditions Q-8 and Q-9) does provide a basis for future discretionary decisions to bring additional production into the Point Pedernales facilities. Based on the permit conditions, the life expectancy of the LOGP would have been based on the Point Pedernales Project only (20 years).

Due to the dynamics associated with developing a coastal California Monterey oil-bearing structure, estimates of project life as well as ultimate recoveries are extremely difficult without extensive production data from a number of wells. This type of data is typically not available during the permitting phase of the project. As such, the production and project life estimates made during the permitting phase are rough estimates and typically change over the course of the project's development. Other factors that affect total recoverable reserves and project life are changes in technology (e.g., enhanced oil recovery techniques), new well development technologies, and the price of crude oil.

If development of the Tranquillon Ridge Project is successful, the expected life of the Point Pedernales Facilities will be extended beyond what was projected for the current Point Pedernales Field operations. However, it is uncertain how long the proposed Tranquillon Ridge Project will extend the life of these facilities. Based on the current projections for the Tranquillon Ridge Project (15-year life), the life expectancy of the Point Pedernales Facilities could be extended up to 13 years beyond what the MMS and CSLC have projected for the Point Pedernales Field.

If the life expectancy assumed in the Point Pedernales 1985 EIR/EIS and 1993 SEIR and the estimated project life expectancy of the Tranquillon Ridge Project are used as the basis for estimating extension of life, then the Tranquillon Ridge project will be expected to extend the life of Platform Irene by approximately 15 years, and the LOGP by zero years.

## SECTION 3
## PLATFORM SITE AND CONSTRUCTION

There are no revisions needed to this section of the existing DPP for the Point Pedernales Field to address the proposed development of the Tranquillon Ridge Field. No new platforms will need to be built to develop the field. All of the development will occur from the existing Platform Irene using existing well slots and the oil and gas handling equipment on the platform. As discussed in Section 5, replacement and installation of new pumps will be required.

## SECTION 4
## DRILLING FACILITIES

### 4.1 Introduction

This section discusses the drilling facilities that are proposed for the development of the reserves from the Tranquillon Ridge Field. It is anticipated that 14 development and three utility wells will be drilled for development of the Tranquillon Ridge Field,

A new well into Tranquillon Ridge will require approximately 60 to 120 days to drill and complete. Drilling duration will depend on the directional program undertaken and the mechanical condition of the hole. Actual drilling will occur within 80 to 90 percent of this total timeframe. The total drilling program is expected to last five years using one rig.

The remainder of this section provides information on the drilling rig, well construction, and drilling safety.

### 4.2 Drilling Rig

The current plan is to use the existing drill rig on Platform Irene to drill the Tranquillon Ridge Field. A summary of the rig specifications are shown in Table 2.

**Table 2 Drill Rig Specifications**

| Item | Specification |
|---|---|
| Clear Working Height of Mast (feet) | 170 |
| Base Width of Mast (feet) | 30 |
| Hook Load-Gross Nominal Capacity (pounds) | 1,000,000 |
| Maximum wind load (mile per hour) | 125 |
| Motors (hp) | |
| • Drawworks | 2 at 1,000 |
| • Mud Pumps | 2 at 1,600 |
| • Rotary Table | 1 at 1,000 |
| • Top Drive | 1 at 1,000 |

Given that the drilling program for Tranquillon Ridge is five years long, it is possible, due to new technology or improved rig efficiencies, that a new rig could be used to drill some of the later Tranquillon Ridge wells. If a different drilling rig is needed later in the project life, it will be transported to the platform and placed on the upper main deck (i.e., drill deck). Any future drilling rig will be electrically powered and equipped with a SCR system that will distribute power to individual rig components (e.g., drawworks, mud pumps, and rotary table). A new drill rig might require some minor modifications to the transformer capacity and electrical distribution

system on the platform, but no major modifications would be anticipated for installation of a new drilling rig.

The PG&E grid will provide the electrical power that is required for the drilling operations. Additional electrical loads include operation of the drilling rig, cranes, production equipment, oil/water separators, and water injection pumps. Standby diesel generators will be used to power the rig and mud pumps during emergencies, should electrical power fail on the platform.

### 4.3 Well Construction

A new development well for the Tranquillon Ridge Field will be completed in the Monterey zone and will range in measured depth (MD) of approximately 15,000 to approximately 25,000 feet, depending on bottom hole displacement from the platform. The well construction discussion presented below is what is anticipated for a typical well. The exact casing/cementing design will be approved by the MMS and CSLC through the Application for Permit to Drill (APD) process required for each proposed well.

The 20-inch conductor casing will be set at approximately 800 feet below the ocean floor. Once set, the conductor casing will be cemented with a sufficient amount to cause a return of cement to the mud line or ocean floor. Measured depths of conductor casing may vary because of directional drilling programs and mechanical and borehole conditions, as well as formation pressures and fracture gradients. Installation of casings will follow MMS requirements.

The 13-3/8-inch surface casing will be set at approximately 5,000 and up to 7,500 feet measured depth. The surface casing will be cemented with a sufficient amount to cause a return of cement to the mud line. Measured depths of surface casing will vary slightly because of directional drilling programs and mechanical and borehole conditions, as well as formation pressures and fracture gradients.

The 9-5/8-inch intermediate casing will be set above the reservoir zone to be produced (i.e., Monterey) and cemented with a sufficient quantity of light cement to allow for a maximum of 3,000 feet of cement above the 9-5/8-inch casing shoe. The plan is not to bring the cement cap of the intermediate casing string above the shoe of the surface casing. Using this approach, the intermediate casing string can be cut and pulled to accommodate future redrills. The intermediate casing setting depths will range from approximately 11,000 ft to 20,500 ft measured depth, depending on the geological top of the Monterey zone. All zones which contain oil or gas will be fully protected by casing and cement.

An 8-1/2-inch hole will be drilled from below the 9-5/8” intermediate casing to total depth ranging from 15,000 ft to 25,000 feet. Electric line logs may be run from the shoe of the intermediate casing to total depth. If the zones are productive, then a 7-inch casing will be run to total depth and hung from the intermediate casing, with a minimum of 150 feet of over lap inside the intermediate casing. The 7 inch casing will be cemented in place. The hydrocarbon bearing zones across the cemented 7-inch casing will be jet perforated using tubing or wireline conveyed perforating tools.

Production tubing will be lowered near 200 feet above the 7-inch liner bottom. The 4-1/2-inch tubing string may consist of a 7-inch casing packer, gas lift mandrels, chemical injection mandrel, and surface controlled subsurface safety valve to allow delivery of hydrocarbons to the wellhead. It is possible electric submersible pumps may also be used to lift the production.

### 4.4 Drilling Safety

Drilling operations will be performed with "good engineering practices" using conventional drilling equipment and procedures, and will be in compliance with the current MMS and CSLC regulations. MMS and CSLC-approved drilling operations and procedures will not be altered without the prior approval of MMS and CSLC.

A blowout prevention (BOP) system will be used to shut-in the well in the event of an emergency and is designed to prevent any well fluids from entering the environment. The system is composed of an annular preventer, blind ram, two sets of pipe rams, choke and kill lines, and a diverter system. Attachment A, which is part of the supporting information document, contains a detailed description of a typical well control program.

Lifesaving and fire suppression systems are maintained on the platform at all times. Evacuation and fire drills will be held on a regular basis to ensure familiarity with the equipment and with the responsibilities of individual crew members. Drills will be coordinated with production personnel to maximize effectiveness.

The platform is equipped with Class 1 U.S. Coast Guard-approved navigational aids. All navigational components are connected to an emergency standby generator. Sufficient numbers of escape boats, PPE, and life jackets are readily accessible in the event evacuation of the platform becomes necessary.

For all phases of the drilling operation, lighting will be in place around the rig and its components (including the derrick), the cementing unit and its components, and the drill deck itself. All electrical work for the lighting will be Class 1, Division 1 or Division 2, as outlined by API Recommended Practices 500 or API Recommended Practices 505.

Crane lifts will be conducted from attendant supply and crew boats only when meteorological, oceanic, and logistical conditions allow for safe operations. All crane operators will be trained according to the API Recommended Practice 2D. The cranes will have regularly scheduled maintenance with pre-use daily, monthly, quarterly, and annual review of specific components according to manufacturer's recommendations and as provided for in APR RP 2D. The cranes are inspected and certified annually.

The drilling or production supervisor on a regular basis—to promote safety awareness—will conduct safety meetings. These meetings will cover a wide variety of subjects relating to the current activity (e.g., cementing, well control familiarity, wireline work, etc.).

The Point Pedernales Field has an approved $H_2S$ Contingency Plan, which will be used during the drilling program. At the request of the California State Lands Commission (CSLC), revisions

to this plan were submitted to MMS and CSLC on February 7, 2005. The reader is referred to this plan for further information.

## SECTION 5
## PLATFORM FACILITIES

This section provides some general information on the Point Pedernales Field drilling and production platform, and a brief discussion of the oil and gas handling operations. The discussion presented below represents what may occur with the development of the Tranquillon Ridge Field.

### 5.1 Introduction

PXP proposed to develop the Tranquillon Ridge Field from the Point Pedernales Field platform—Platform Irene. No new offshore structures will be needed to develop the field. It is anticipated that wells will be drilled from Platform Irene using extended reach drilling (ERD) technology. Table 2 provides general information on Platform Irene. Please refer to Figure 1 for the location of the platform.

**Table 3 General Data for Platform Irene**

| Platform Irene | |
|---|---|
| Water Depth at Platform, ft | 242 |
| Platform location | Lambert Cal 5 (ft)<br>X=1,178,827<br>Y=415,274 |
| Well Slots | 72 |
| Number of Well Slots Used for the Point Pedernales Project | 28 |
| Projected Number of Well Slots Needed for the Development of the Tranquillon Ridge Field[1] | 17 |
| Projected Future Well Slots for the Point Pedernales Project | 5 |
| Well Slots Available for Future Development | 22 |
| OCS Lease | OCS-P 0441 |

*1. Actual number of new wells will depend on results for initial production wells.*

Platform Irene is located approximately six miles west of Point Pedernales, California. The platform sits in 242 feet of water on Lease OCS-P 0441. Irene was set in April 1986. A total of 72 well slots are contained on the platform. Oil and gas production is derived from the Point Pedernales Field.

Development drilling started in April 1987. Twenty-eight wells were drilled, with a maximum of 15 wells producing in a given month. There are presently 13 production wells in service. The

year-to-date average production from Irene (through October 2007) is 7,634 barrels of oil per day, 54,930 barrels of water per day, and 6.8 million standard cubic feet of gas per day.

Production is transported via pipeline to the LOGP located north of Lompoc, California. Three pipelines in a single corridor are used: a 20-inch wet oil line, an 8-inch gas line, and an 8-inch produced water return line for disposal at the platform. The three lines reach landfall just north of the Santa Ynez River and cross Vandenberg Air Force Base and PXP fee property. Oil and gas are sold and distributed via pipelines from the plant. The majority of the produced water is injected onshore at the Lompoc Oil Field with the remaining returned to Irene for offshore injection. Power is supplied to Irene via a subsea power cable from an electrical substation located on Southern Pacific Railroad property at Surf. The substation is connected to the Pacific Gas and Electric power line north of Lompoc.

Employees are housed on the platform and transported by helicopter. An average of 3 helicopter trips (round trips) per day is allowed; however, during normal operations, there are approximately 5 flights per week. The platform has a work force of 12 employees working on shift. Equipment and supplies are supplied by work boat. During normal operations, supply boat trips average 1 to 2 trips per month. During drilling, supply boat trips can increase to a maximum of 1 trip every 3 days. Manpower requirements and boat schedule can vary depending on the workload.

The following discussion details the upgrades and minor modifications that are required on Platform Irene to integrate the development of the Tranquillon Ridge Field with the current development of the Point Pedernales Field.

Development of the Tranquillon Ridge Field will require installing new pumps on Platform Irene. The three existing 600-hp electrical shipping pumps will be replaced with three 1,250-hp electrical shipping pumps. In addition, approximately 8 of the new Tranquillon Ridge wells will utilize new 300-900 hp electrical submersible pumps. The other production wells will utilize gas-lift technology. Ongoing maintenance and upgrades of the electrical transformers and switchgear on the platform for these additional pump loads will continue.

Drilling activities and equipment will be similar to those of ongoing drilling programs, but with different frequency and duration. The existing drilling rig on Platform Irene will be used to drill the Tranquillon Ridge wells. The only additional equipment for drilling will be a new 1,600-horsepower electric pump for muds handling, as well as some refurbishing of the existing mud system. As discussed previously, it is possible, due to new technology or improved rig efficiencies, that in the future, a new drill rig could be used to drill some of the later wells in the Tranquillon Ridge Field.

During the Tranquillon Ridge drilling operations on the platform, the muds and cuttings will be batch discharged into the ocean in accordance with the current National Pollutant Discharge Elimination System (NPDES) Permit. This permit allows for discharge of muds and cuttings from the Point Pedernales drilling operations. As proposed, this effluent will be discharged at a point approximately 150 feet below mean lower low water (MLLW). Any cuttings or muds which do not meet the current NPDES permit requirements will be stored in bins and hauled to a

permitted disposal site onshore, or injected if feasible. For example, if oil-based mud is used, the cuttings and excess muds will be stored in bins and transported to a permitted disposal site onshore, or injected offshore at the platform.

The existing 8-inch produced water return pipeline is currently used to return part of the Point Pedernales produced water from the LOGP to Platform Irene for offshore water injection (a part is injected onshore into the Lompoc Oil Field). For the proposed development of the Tranquillon Ridge Field, a part of the produced water will continue to be transported offshore. This water will either be discharged to the ocean under the NPDES permit or injected offshore in accordance with the MMS authorization. Approximately 40,000 bpd of water produced from Point Pedernales and Tranquillon Ridge combined will be shipped from the LOGP to Platform Irene for discharge. The operator is authorized to discharge to the ocean from the platform up to 153,000 barrels of water per day in accordance with the current NPDES Permit. A part of the produced water that will be shipped to Platform Irene may still be injected into Point Pedernales reservoir wells, as is currently the operation. Offshore water injection will be conducted as authorized by the MMS.

## 5.2 Platform Safety Systems

Safety systems can be broadly classified as those devices and practices that safeguard life and limb, the environment, and equipment. They relate specifically to good design practices, personnel training and operational and emergency modes. The safety features on Platform Irene include:

- Fire detection and suppression systems;
- Navigational aids;
- Corrosion control program;
- Hydrogen sulfide ($H_2S$) contingency plan;
- Emergency power and lighting;
- Communication facilities;
- Escape and lifesaving equipment; and
- Oil Spill Response Plan.

Each of these safety systems is briefly described below.

***Fire Detection and Suppression Systems***
Platform Irene is equipped with fire protection systems. This equipment includes fire and smoke/heat detectors, fire monitors, combustible gas detectors, fire alarms and alarm pulls, fire extinguishers, hose reels, and breathing apparatus systems. Foam concentrate is stored in a 300-gallon tank. Foam can be delivered to hose reels, spraying systems, and to sprinklers, which are strategically located throughout the platform. Water to the foam system can be supplied by two electrical firewater pumps or by a vertical turbine pump with a diesel engine. All three pumps use seawater. In addition, the two electrical firewater pumps can also utilize water from the 8-inch produced water return pipeline.

Because of the specifics of the offshore location, personnel are instructed to evacuate in case of any major emergency including a large fire. Survival capsules are provided for these types of emergencies.

***Navigational Aids***

Platform Irene has been painted in accordance with United States Coast Guard (USCG) recommendations to increase the visibility of the platform to ocean vessels. In addition, the platform is equipped with navigational lights and fog horns in accordance with Federal requirements. The USCG has also established a 500 meter exclusion zone around the platform.

***Corrosion Control Program***

Corrosion on the platform is controlled using corrosion-resistant coatings on the top-side structures and equipment. For the underwater portions of the jackets, a sacrificial anode system is used to control corrosion. A number of the vessels and piping on the platform have an internal coating to control corrosion. In addition, a corrosion inhibitor program is used to provide additional corrosion control.

***$H_2S$ Contingency Plans***

$H_2S$ contingency plans have been developed that detail emergency plans to be followed when encountering formations that contain $H_2S$ while drilling. The platform is equipped with self-contained breathing apparatus for all working crews and supervisors. Spare air bottles with refill capability are also available. Releases of $H_2S$ can also occur during production operations from accidents involving the gas wells or gas processing equipment. $H_2S$ sensors and alarms are located at the intake for the air ventilation system, and in other process areas where concentrations of $H_2S$ are likely to occur. In these areas, $H_2S$ sensors have both visible and audible alarms set to activate if a concentration of 10 ppm is reached.

***Emergency Power and Lighting***

Emergency AC power for lighting, communications equipment, hazard detection systems, quarters, controls, and minor utility systems is provided by a battery-backup uninterruptable power supply. Battery-powered emergency lighting units are installed in several areas of the platform to illuminate critical escape or facility work areas. Battery chargers and battery systems are provided for aids to navigation, communications, general alarm systems, generator starting, electrical switchgear control, and control and monitoring systems.

***Communication Facilities***

Platform communication utilizes hardwired speakers and handsets. Additionally, there are hand-held portable radios for operational communication. For external communication with crew boats, supply boats, helicopters, shore bases, etc., there is a wide-area radio system for the platform, as well as a microwave system to provide telephone service and circuits for the pipeline leak detection system and onshore emergency shutdown system. In addition to the above, the platform has intrinsically safe cell phones for emergency use.

***Escape and Life-Saving Equipment***
The platform is equipped with USCG-approved escape capsules or life boats, plus an adequate number of life preservers, life floats, ring life buoys, first aid kits, litters, and other lifesaving appliances as required by 33 CFR144.

***Oil Spill Response Plan***
An Oil Spill Response Plan for Platform Irene, which describes the measures that will be taken in the event of an oil spill and the personnel and equipment available to implement spill containment and cleanup procedures, has been developed and submitted to and approved by the MMS. The basic procedure for a spill is to immediately ensure personnel safety, stop the pollutant flow, begin the containment and cleanup procedure, and contact designated company personnel and Government agencies. The platform personnel would conduct the initial response activity. For a spill beyond the capability of the platform personnel and equipment, the primary sources of assistance would be the industry-sponsored spill containment cooperative—Clean Seas.

Additional information on oil spill equipment and response can be found in the Oil Spill Response Plan that has been submitted to and approved by the MMS.

## 5.3 Oil and Gas Handling and Metering for the Tranquillon Ridge Field Oil and Gas

The produced oil, gas, and water will typically be separated on the platform. The oil, gas, and water volumes will be prorated back to the individual wells based on periodic well test information for each well.

The wells for the Tranquillon Ridge Field and Point Pedernales will be allocated their fair share of production based on the well test information applied to the allocation meter readings. At the LOGP the oil will pass through another meter (leak detection only), be treated and heated, and finally pass through a lease automatic custody transfer (LACT) meter. This LACT is the meter that determines the volumes of oil that are subject to royalty.

When and if development of the Tranquillon Ridge Field is approved, changes to the Measurement and Allocation Plan in effect for Point Pedernales will be needed, which would include a full description of the measurement points, allocation procedures, and products subject to royalty for the Tranquillon Ridge production streams.

## SECTION 6
## PIPELINE SYSTEM

There are no revisions needed to this section of the existing DPP for the Point Pedernales Field to address the proposed development of the Tranquillon Ridge Field. No new pipelines will need to be built to develop the field. The existing pipelines from Platform Irene to the LOGP will be used to move the production from the Tranquillon Ridge Field.