Safety and Oil Spill Prevention Audit

DCOR, LLC

Fort Apache

June 2024

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EXECUTIVE SUMMARY

Safety and Oil Spill Prevention Audit of DCOR, LLC (DCOR), Fort Apache Onshore

A Safety and Oil Spill Prevention Audit of DCOR, LLC's Fort Apache Onshore facility began in February 2024. Safety and Oil Spill Prevention Audit Team fieldwork was completed in March 2024. The electrical portion of the audit was performed by a third-party – P2S, Inc. – and fieldwork was completed in March 2024.

The objective of this Safety and Oil Spill Prevention Audit is to ensure that oil and gas production facilities on State granted lands are operated in a safe and environmentally sound manner, comply with state and federal regulations, and meet the Best Achievable Protection (BAP) requirement of Public Resources Code 8755. The audit followed the established procedures that have been used by the California State Lands Commission (Commission) for many years. Applicable regulations and standards used during the audit are provided in Appendix C. Audit findings are based on and reference these regulations and standards.

Company Background

DCOR, LLC (DCOR) is the current owner and operator of the Fort Apache Onshore facility. The company was formerly known as Dos Cuadras Offshore Resources, LLC and changed its name to DCOR, LLC in 2005. DCOR was founded in 2001 and is based in Oxnard, California with additional offices in Dallas, Texas. DCOR operates two offshore oil production platforms within State waters – Platforms Esther and Eva. The company is owned and controlled by Mr. William M. Templeton.

Facility Description

Ft. Apache is an onshore oil production processing facility located in Huntington Beach that directly supports Platform Eva's operations. The site is bounded by Heil Avenue on the south, residences on the east and west, and a storm drainage channel on the north. The facility is surrounded by ten-foot-high cement block walls and is accessible by two entrance gates, at the front and rear of facility. The topography of the site is essentially flat. The facility separates water from the produced oil and prepares the oil for sale. Any produced gas is used for makeup gas and burned as fuel in the Heater Treaters along with city gas.

Ft. Apache has four pipelines that enter or leave the facility. Processed crude oil from Platform Eva arrives at the facility via an 8-inch steel pipeline. Sales oil leaves the facility via a 6-inch steel pipeline owned by Crimson Pipeline Company to supply area refineries. Make-up gas used for blanketing in tanks and vessels or used as fuel in the Heater Treater burners is supplied, as needed, from a 2-inch city gas supply line. Produced water is treated and subsequently released into the city sewer system through a 6-inch pipeline.

Safety Audit Results

The Safety and Oil Spill Prevention Audit found that the Fort Apache Onshore facility complies with applicable safety and regulatory requirements apart from the items listed in the action item matrix. The facility is currently idle. It appears to be in relatively good condition and safety systems and equipment remain fit for service; however, the Wastewater Treatment Vessel must be repaired prior to being returned to service.

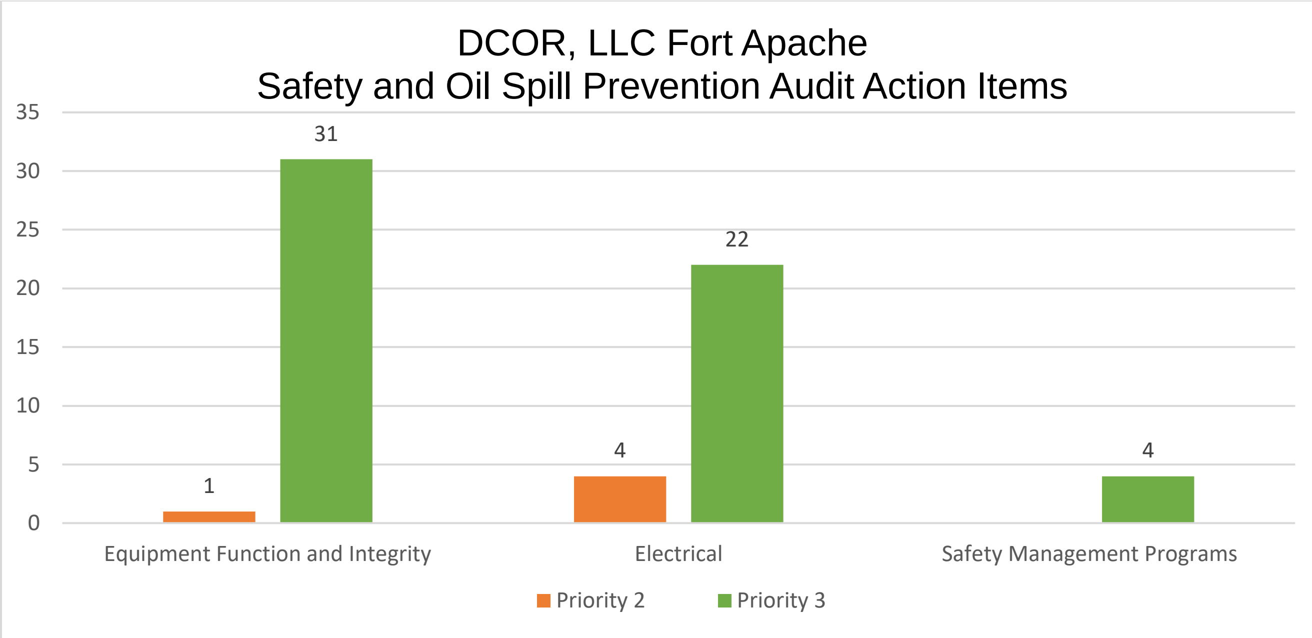
DCOR has established behavior-based safety policies, health, and environmental programs. Operations personnel are knowledgeable and provided valuable assistance to the State Lands Audit Team. The established safety culture also helps to ensure the protection of workers, the public, and the environment.

Safety systems and equipment remain fit for service during the extended shutdown. However, the Wastewater Treatment Vessel has through-wall holes and other required repairs that would need to be completed prior to returning to service. Pressure vessels and tanks have been periodically inspected, both externally and internally. Safety systems are tested monthly with MRMD inspectors. Risk reduction and environmental protection can only be ensured through scheduled inspections, testing, and preventive maintenance practices.

Action items from the audit are categorized into three subject areas: equipment function and integrity (EFI), electrical (ELC), and safety management programs (SMP). Each of these action items are assigned a priority ranking from one to three: priority one action items pose a high or immediate risk to personnel, the facility, or the environment and must be resolved within 30 days of this report; priority two action items pose a moderate risk potential and must be resolved within 120 days; and priority three action items pose a low-risk potential and must be resolved within 180 days.

The Mineral Resources Management Division (MRMD) Safety Audit Team identified a total of 62 action items, a 40% decrease from the previous audit. The current audit found no priority one action items. The number of priority two action items decreased to five from 21 in the previous audit. The number of priority three action items decreased from 82 to 57. This is a favorable result as the number of action items is on par with comparable facilities.

Figure 1 displays the distribution of the action items by subject areas. This distribution is similar to other facilities in California where the items identified are typically related to process equipment, maintenance practices, and electrical systems.



DCOR, LLC Fort Apache
Safety and Oil Spill Prevention Audit Action Items
35
30
25
20
15
10
5
0
31
22
4
1
4
Equipment Function and Integrity
Electrical
Safety Management Programs
Priority 2
Priority 3

Figure 1

Introduction

DCOR, LLC

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1.0 INTRODUCTION

1.1 Safety Audit Background

The California State Lands Commission (Commission) Mineral Resources Management Division (MRMD) conducts safety and oil spill prevention audits of operators and/or contractors for lands in which the State has an interest. Commission sponsored safety audits ensure oil and gas production facilities on State leases or granted lands are operated in a safe and environmentally sound manner and comply with Federal, State, and Local codes or permits, as well as industry standards and practices. Commission staff is tasked with oil spill prevention in California's ocean and tidelands, prevention of waste, conservation of natural resources, and ensuring that safety and health standards are being met. Public Resources Code (PRC) 6103, 6108, 6216, 6301, 6873(d), 8755 and 8757 provide authority for Commission regulations, as well as the existing inspection and the Safety Audit program.

In 1990, the California Legislature enacted the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act (California Government Code 8670.1). The Act covers all aspects of marine oil spill prevention and response in California. Under the legislation, marine facilities must provide the Best Achievable Protection (BAP) of the coast and marine waters.

Frequent monitoring and inspections by MRMD staff of onshore and offshore oil and gas drilling and production facilities ensure that BAP is in place to safeguard the public and environment. The MRMD Safety Audit Program, in conjunction with the monthly inspection program, helps prevent oil spills and other accidents with on-site inspection and verification activities. The Safety Audit Program also aids prevention through design review of facility producing, processing, and safety systems, maintenance condition, operating procedures, emergency plans, training and certification programs, human factors, and other aspects of safety management.

During a safety and oil spill prevention audit, MRMD team members systematically assess an organization's facilities and safety management programs, identify action items to be addressed, and provide feedback for improvement through preparation of a formal written report. The areas of emphasis include:

- Equipment Functionality and Integrity (EFI)
- Electrical (ELC)
- Safety Management Programs (SMP)
- Human Factors (HF)

Appropriate company contacts and resources are identified prior to the start of the audit. Progress reports are communicated to MRMD management personnel and the company throughout the safety audit process and an "action item matrix" is developed to categorize and track action items. The matrix identifies deficiencies and contains recommended corrective actions and a priority ranking for the specified corrective actions. A graph and table are generated showing the breakdown of the facility's identified action items by areas of emphasis.

Draft copies of the report and the action item matrix are provided to the company during the safety audit. The final audit report is presented to company management formally, which affords the opportunity to discuss the findings and the corrective actions proposed. Throughout the clearance phase of the audit, the MRMD team continues to communicate with the company in resolving the action items and tracks the progress of the proposed corrective actions.

This program could not be successfully undertaken without the cooperation and support of the operating company. The safety audit benefits both the company and the State by reducing workplace hazards, environmental accidents, property damage, and oil spills. Previous experience shows safety assessments help increase operating effectiveness, efficiency, and lower operating costs.

1.2 Facility Background

The Fort Apache (Ft. Apache) Onshore Facility began operation in 1963, as an asset of Union Oil Company (Unocal). Nuevo Energy, a Houston based company, purchased Ft. Apache in conjunction with the purchase of Platforms Eva and Esther in April of 1996 from Unocal Oil. Nuevo Energy exclusively owned and operated the facility until May of 2004 when Plains Exploration and Production Company (PXP) took over after a merger with Nuevo Energy. PXP subsequently entered into a purchase and sales agreement with Dos Cuadras Offshore Resources, a Texas-based Limited Liability Company (LLC.), in September of 2004. This sale involved PXP assets including Platform Eva, Esther, and Ft. Apache. The sale closed in December of 2004 with the approval of the lease assignment by the Commission on October 20, 2005.

The company formerly known as Dos Cuadras Offshore Resources, LLC, officially changed its name to DCOR, LLC, (DCOR) in July 2005. Ft. Apache is currently owned and operated by DCOR. DCOR is an oil and natural gas exploration and production company with offices in Ventura, California and Dallas, Texas. DCOR explores for, produces, gathers, processes and markets crude oil, natural gas, and natural gas liquids. DCOR owns and operates eleven offshore platforms, two of which are in California state waters (Platforms Eva and Esther).

Ft. Apache processes the production from Platform Eva. Platform Eva's operations are currently suspended following the discovery of a leak in the subsea pipeline connecting it to the Fort Apache onshore facility in December 2021. Prior to the suspension of operations, Platform Eva produced roughly 840 barrels of oil per day (BOPD) which were processed to sales quality at Ft. Apache.

1.3 Facility Description

Ft. Apache is the onshore oil production processing facility that directly supports Platform Eva's operations. Ft. Apache is located in Huntington Beach. The site is bounded by Heil Avenue to the south, residences to the east and west, and a storm drainage channel to the north. The facility is surrounded by ten-foot-high cement block walls and is accessible by two entrance gates, at the front and rear of facility. The topography of the site is essentially flat. The facility separates water from the produced oil and prepares the oil for sale. Any produced gas is used for makeup gas and burned as fuel in the Heater Treaters along with city gas.

Ft. Apache has four pipelines that enter or leave the facility. Processed crude oil from Platform Eva arrives at the facility via an 8-inch steel pipeline. Sales oil leaves the facility via a 6-inch steel pipeline owned by Crimson Pipeline Company to supply area refineries. Make-up gas used for blanketing in tanks and vessels or used as fuel in the Heater Treater burners is supplied, as needed, from a 2-inch city gas supply line. Waste water from V-1 is transferred to the Produced Water Tanks, T-1 and T-2, for treatment and subsequent release into the city sewer system through a 6-inch pipeline.

The Control Room is located on the south end of the facility next to the main entry gate. Ft. Apache is currently only manned when regulatory, contractor, or internal personnel require access for periodic inspection, testing, and maintenance. The facility is currently remotely monitored and controlled from Platform Eva or Platform Esther.

Facility Condition Audit

DCOR, LLC

Fort Apache

June 2024

2.0 FACILITY CONDITION AUDIT

2.1 Goals and Methodology

The goal of the facility condition portion of the audit was to evaluate the current equipment maintenance and integrity of Fort Apache. The on-site inspection involved a systematic evaluation of the different systems, equipment, and facilities using various checklists and methods that the team has developed over the years of auditing. A variety of codes and standards apply in addition to California State Lands Commission (Commission) regulations. Initial tasks to accomplish this goal included field verifications of the key drawings/plans, overall condition inspection and evaluation, a review of system and equipment maintenance histories, further evaluation of specific systems and equipment using checklists, technical review of safety systems design, and verification of compliance with applicable state regulations and industry codes. The layout of the audit report generally follows a "system by system" method that includes a description and assessment of the facilities with any significant observations. The report addresses the safety of personnel as well as environmental protection and facility and process safety. The assessments of both areas of safety are important when identifying an organization's current level of safety program development.

2.2 General Facility Conditions

2.2.1 Workplace Housekeeping: Facility work areas were clean and orderly, generally free of slip and trip hazards, waste materials (e.g., refuse, oilfield wastes) and fire hazards. The Commission staff observed some vegetation growth around tanks during the fieldwork. (*Action Item EFI 2.2.1.01*). The VRU skid was also oily and slippery to walk on. (*Action Item EFI 2.2.1.02*). There was an adequate supply of clearly marked refuse containers throughout the facility and all refuse appeared to be well controlled. Regular collection of waste is considered to contribute to good housekeeping practices. Employee facilities are adequate, clean, and well maintained. The washroom is cleaned frequently and has a good supply of soap and hand towels. The facility was found to be in satisfactory condition with no obvious health concerns.

Drip pans and a constructed containment system are used throughout the facility to prevent spills and pollution. If a substance accidentally drips onto the floor, personnel clean it up immediately. Absorbent materials are stored in a quickly accessible facility storage shed and are available for wiping up greasy, oily residue or other liquid spills. Tools are available and stored in suitable fixtures for easy access. They are quickly returned after each use and regularly inspected, cleaned, and taken out of service if visibly worn or damaged. Management policies require workers to pay attention to good housekeeping practices as a basic part of accident and fire prevention.

2.2.2 Stairs, Walkways, Gratings and Ladders: Stairs, walkways, gratings, and ladders throughout the facility appeared to be of a safe design and construction. Safeguards were in place wherever there was a need to transition between levels and for routine access to equipment. The aisles, passageways, stairs, and gratings had sufficient safe clearances, were in good repair, and were clear with no obstructions across or in the aisles to create a hazard. Portable ladders and other necessary work equipment appeared to be in good working order and free from oil and grease. Fixed metal ladders and appurtenances were painted to resist corrosion. DCOR's safe work practices cover the use and care of ladder equipment on the facility.

2.2.3 Escape / Emergency Egress / Exits: Emergency exits, escape routes and gathering points are clearly posted and easily accessible. Evacuation routes are explained during initial worker orientation, safety meetings, and are reviewed as part of the work permit system. They are clearly identified with signs posted throughout the facility. Due to the design, size, and open arrangement of equipment inside the facility, there were no areas of concern regarding access and egress.

2.2.4 Labeling, Color Coding and Signs: The design, application, and use of signs and symbols within the facility define specific workplace hazards. DCOR adheres to Occupational Safety and Health Administration (OSHA) and American National Standards Institute (ANSI) recommendations. All employees receive instruction on what the signs signify and what, if any, special precautions are necessary to perform their task safely. Workplace hazards (e.g., slip, trip, overhead clearance) are marked in yellow. An identifiable red protective coating on fire service piping is required by the National Fire Protection Association (NFPA) and is provided on most piping.

Required signs, including owner/operator contact information, were posted at the entrance and where needed within the facility. Warning signs were posted properly to identify known safety hazards. They were visible and identified safety hazards, though some signs could be refreshed for legibility. Tanks and vessels within the facility were clearly identified as confined spaces with warning placards posted at manways to warn personnel of potential hazards. There were, however, a couple missing and/or illegible confined space warning signs that need replacing. (*Action Item EFI 2.2.4.01*). In addition, various signs were not secured in place near the hazard or were not legible. (*Action Item EFI 2.2.4.02*). Commission staff observed various pumps and vessels with damaged/illegible signs or did not have any identifying signs or other labeling. (*Action Item EFI 2.2.4.03*).

NFPA 704 hazard identification labeling, hazard diamonds, were visible on all tanks, vessels, and chemical storage totes. The posting of hazard diamonds is an indication of good facility emergency planning and conformance with good oilfield practice.

2.2.5 Security: Physical and operational security measures are in place to prevent unauthorized entry into Ft. Apache. The facility is monitored remotely twenty-four hours a day, seven days a week by security cameras. Concrete walls, fencing, facility lighting, locked doors, and an electronically controlled gate at the main entrance are used as a deterrent to unauthorized entry and vandalism. Facility personnel also provide additional monitoring with their normal operational surveillance. Operations management software (Wonderware) also provides Platform Esther and Platform Eva personnel with a display of Ft. Apache's plant status and alarms.

2.2.6 Hazardous Material Handling and Storage: Empty and unused portable gas cylinders had closed valves with protective caps in place. Cylinders were kept and safeguarded to prevent them from being knocked over or damaged. However, some compressed gas cylinders were found to be secured by rope with their protective caps not in place, and others were exposed to direct sunlight. (*Action Item EFI 2.2.6.01*).

Flammable and combustible liquids were found properly stored and documentation readily available, corresponding to Cal/OSHA and NFPA 30 regulations. The bulk chemical totes were correctly labeled, appeared structurally sound, and had adequate containment in the event of a leak. However, the labeling on the chemical totes located near the VRU skid are illegible and require replacing. (*Action Item EFI 2.2.6.02*). No loose combustible material or opened empty totes/drums were seen on the premises.

Safety Data Sheets (SDS) containing information on all chemicals used in the workplace were up-to-date and accessible to all employees through the company intranet and within the operations control room.

2.3 Field Verification of Plans

2.3.1 Process Flow Diagrams (PFD) and Equipment Plot Plan: The PFDs are part of the process safety design information for the facility and indicate the general flow of plant processes and equipment. The Equipment Plot Plans illustrate the location of pieces of equipment, including safety equipment, and where they are relative to other pieces of equipment. Some minor changes were needed on the Process Flow Diagram and the Equipment Plot Plan to reflect current equipment and placement. (*Action Items EFI 2.3.1.01 – 2.3.1.02*).

2.3.2 Piping and Instrumentation Diagrams (P&ID): Field verifications of the P&IDs were reasonably accurate; however, minor updating is required. The discrepancies in the P&IDs included valve sizing and piping identification errors, missing equipment, and idle or removed equipment. (*Action Items EFI 2.3.2.01 – 2.3.2.12*).

2.3.3 Fire Protection Drawings: The fire protection drawing was mostly accurate with only minor updates or corrections needed. The drawing shows important information about the fire-fighting system including the firewater pump and source of fire-fighting water. It also includes the distribution system, location of main valves, stationary monitors, and hose reels.

Fire protection equipment (fire eyes, area heat sensors, area monitors, etc.) is shown on the Equipment Plot Plan, which needs to be updated to reflect current equipment and placement.

2.4 Condition and Integrity of Major Systems

2.4.1 Pumps and Piping: Visual inspections were performed to evaluate the mechanical integrity and maintenance of the piping in conjunction with the Piping and Instrumentation Diagram verification. The visual inspection and evaluation work observed the external condition of the piping, coating, signs of misalignment, temporary repairs, vibration, and leakage. The evaluation also included the condition of pipe hangers and supports as well as any field modifications not recorded on the piping drawings. The evaluation considered other key information such as material selection, piping design and maintenance practices, as well as any field modifications or temporary repairs not recorded on the piping drawings. The selection process of piping materials and components (e.g., valves, flanges, bolts, welds) are compatible with the operating parameters and environment. The condition and maintenance of piping throughout the facility were found to be generally good. However, the field survey identified some corrosion present throughout the facility. The Commission staff recommends DCOR conduct a failure analysis of paints and coatings and determine which systems are most in need of painting. (*Action Item EFI 2.4.1.04)*.

DCOR uses a combination of ongoing routine and risk-based piping inspections to achieve the desired level of facility safety, environmental protection, and reduce unscheduled downtime. Inspection frequencies and condition changes are set up according to regulatory requirements and established guidelines (i.e., MRMD 2132(h)(6)(A), American Petroleum Institute (API) 570, Department of Transportation (DOT) pipeline inspections, NFPA & National Association of Corrosion Engineers (NACE) guidelines etc.). Results from thickness measurements, inspections, repairs, and other tests are readily available and recorded within a computer-based Microsoft Access database. A software-based maintenance management system called Mainsaver is used to generate work orders for maintenance and inspection activities.

The fitness and maintenance of piping throughout the facility was found to be in generally good condition, compatible with the process, operating parameters and environment. There were a number of Priority 3 action items generated, mostly due to missing and/or added miscellaneous appurtenances, surface oil residue observed, the use of wood blocks as pipe supports, the lack of proper fixed pipe support brackets, and temporary pipe clamps used throughout the facility. *(Action Items EFI 2.4.1.01 – 05)*.

The production pipeline entering and the sales oil pipeline leaving the facility have been shut in and out of commission due to a sheen reported by DCOR to the California Governor's Office of Emergency Services (Cal OES) on December 22, 2021, which divers were subsequently able to confirm and identify the leak's origin as the subsea pipeline to Platform

Eva on January 2, 2022. The production pipeline from Platform Eva to Ft. Apache consists of an 8-inch steel subsea pipeline. Commission regulations in 2 CCR 2132(h)(4) and 2 CCR 2132(h)(6) require DCOR to maintain the pipelines in a condition that protects against risks to life, property, and the environment. Any exposed sections of the pipelines must be visually inspected for damage, evidence of corrosion and any hazardous conditions on an annual basis. The pipelines have the highest safety and environmental consequences if failure or loss of containment should occur. The safety devices and condition of the incoming subsea pipelines are discussed in more detail in the Platform Eva Safety Audit report. The sales oil pipeline leaves the facility via a 6-inch steel pipeline owned by Crimson Pipeline Company and is used to supply area refineries.

A Priority 2 action item was generated due to rotating parts of pumps lacking adequate guarding including on pump P-2 and P-9 where oil bulb placement brings operators within the zone of danger for exposed moving parts. To ensure protection for facility personnel and equipment properly guard all moving parts. *(Action Item EFI 2.4.1.06)*

2.4.2 Tanks: The tanks at the facility appear to be in good condition and have been inspected within API 653 guidelines. Facility tanks are subject to DCOR's written inspection and maintenance plan. The maintenance plan follows API Recommended Practices (RPs) and standards. The maintenance strategy also conforms to applicable State regulations and uses appropriate work practices and procedures. Routine external/internal maintenance inspections occur on a regular cycle. Tank documentation includes inspections, repairs, alterations, and reconstruction records. In addition, tank shell ultrasonic thickness (UT) data showing locations and results are completed as part of the inspection process. This inspection method searches for flaws and service induced damage as part of determining the suitability of the tank for the intended service. Tank exterior coatings, piping, valves, walls, anchor bolts, and labeling appeared to be in good condition with no evidence of recent damage or active leaks.

There are a total of fifteen tanks at Ft. Apache. Four of them are permanent steel process tanks while the remaining eleven include two drain pits and nine portable storage tanks ranging in size from 55 to 500 gallons. Externally the tanks appear to be in good condition. A comprehensive review of the tank inspection records was performed to assess the current maintenance condition.

2.4.3 Pressure Vessels: Ft. Apache has a variety of pressure vessels ranging from air receivers to fired type three phase separators. These pressure vessels are maintained following a program of external and internal examination for compliance with applicable regulations, recommended practices (e.g., API 510 and Mineral Resources Management Division (MRMD) 2132(g)(3)), and recordkeeping. These pressure vessels are designed and constructed according to the American Society of Mechanical Engineers (ASME) Codes and have appropriate controls and safety devices. To improve maintenance efficiency, DCOR has tailored inspection cycles to match the safety risks posed by particular classes of pressure vessels. DCOR's Mechanical Integrity Engineer uses vessel wall thickness, corrosion allowance, and minimum thicknesses (t-mins) as well as operating temperature and pressures to determine the inspection frequency. External vessel inspections are completed within 5-year intervals, while internal inspections and thickness measurements are completed within 10-year intervals using non-destructive examination techniques.

The audit team performed a visual examination to assess the general exterior condition of the pressure vessels and their maintenance history. This inspection method detects specific problems such as external coating failure, corrosion, leaks, labeling, inadequate anchoring or foundations, required instrumentation and gaps in inspection frequencies. Commission staff observed missing and/or illegible manufacturers data plates for various vessels. (*Action Item EFI 2.4.3.01*). Further analysis determined that manufacturer's data reports were not available for several pressure vessels. (*Action Item EFI 2.4.3.02*). Inspection recommendations, maintenance activities, and design information should be documented and recorded in the pressure vessels permanent record. Visually the pressure vessels appeared to be in good condition except V-5 where the protective coating has significant areas of deterioration. (*Action Item EFI 2.4.3.03*). The Wastewater Vessel, V-1, which has through-wall holes, is currently air-gapped from all other equipment and will require repairs prior to its return to service.

2.4.4 Relief Systems: The primary purpose of the pressure relief system is to ensure protection for facility personnel and equipment from overpressure conditions that may happen during process upsets, equipment failure, and external fires. The relief system serves the major process vessels and components while other relief devices may be located on smaller ancillary components. The relief system components were evaluated for installation, design, maintenance, and functionality. Relief system components that were evaluated included:

- Pressure safety valves (PSVs)
- Relief system piping
- PSV Blowdown Vessel
- Flame arrestors

A visual inspection of the system determined that all piping laterals and headers are arranged so that the outlet from each PSV does not form a liquid trap. Similarly, the sizing of the discharge piping and the relief manifold provide adequate relieving capacity and protection to the corresponding vessel(s) from overpressure. In addition, the Blowdown Vessel is designed for efficient vapor-liquid separation and prevention of liquid carryover. As with older installations, the relief valves and associated piping were sized for a much higher production rate than present.

Isolation valves are installed on the inlet lines to PSVs and on the outlet lines for ease of maintenance. They are used to isolate a relief valve for inspection, servicing, and repair while the facility is operating. Due to the critical nature of this safety system, these valves are locked and/or car sealed in the open position during normal operations. The inspection found these valves properly car sealed and/or locked open.

Flame arrestors are normally used in vent systems to prevent ignition from entering the vent from an external source. According to manufacturer recommendations, flame arrestors should be checked at least annually to see if the elements are clean. DCOR's computerized maintenance management system (Mainsaver) schedules an annual inspection of the flame arrestor on the PSV Blowdown Vessel, V-13. This annual inspection also includes the flame arrestors on Heater Treaters #2, 3, and 4.

The maintenance and servicing records for all PSVs comply with applicable regulations and recommended standards (e.g., American Petroleum Institute Recommended Practice 520, 521 and Cal/OSHA 6551). PSVs are tested and serviced by an outside contractor. The inspection frequency is normally every six months regardless of the service of the relief valve. Service records were in order with no action items identified.

2.4.5 ESP, Pump Units, Wellhead Equip.& Well Safety Systems: Ft. Apache processes produced fluids from Platform Eva. The facility has no production or injection wells on location.

2.4.6 Firefighting Detection Systems: MRMD regulations and other fire protection requirements include fire detection and alarm systems. These systems are intended to provide early warning and notification of a fire situation. The process area at Ft. Apache, where there is potential for a flammable liquid spill, is monitored using numerous methods. These methods include:

- Personal observation and surveillance
- Process monitoring equipment
- Ultraviolet/Infrared (UV/IR) flame detectors
- Fusible heat sensing detectors
- Smoke detector

The fire system at Ft. Apache is comprised of UV/IR fire-eye flame and fusible heat sensing detectors. In the event of a fire, the UV/IR flame detectors will alarm at both Ft. Apache and Platform Eva and activate the emergency shutdown for Ft. Apache. UV/IR flame detectors are provided around the Heater Treaters and are located peripheral to the monitored area. This reduces nuisance alarms caused by foreign sources (i.e. distant welding, flash photography, etc.) external to the facility. UV/IR flame detectors are tested monthly, and records are maintained.

Fusible heat sensing detectors are strategically placed throughout the facility. If activated they will shut down the facility, alarm at Ft. Apache and Platform Esther and Platform Eva, and activate the deluge system in the Heater Treater, Lease Automatic Custody Transfer (LACT) and Vapor Recovery Compressor areas. In addition, facility personnel who observe a fire or an alarm may also manually initiate the fire suppression before automatic sensing devices respond. The heat sensing detectors and plug loops were visually inspected and found to be in good working order. The fusible plug system was pressurized, constructed of noncorrosive materials and in good condition. Records showed that DCOR technicians test the fusible plug system tri-annually.

A stand-alone smoke detector, located on the ceiling of the electrical control room, was found to be energized, free of excess dust and overall, in physically good condition. Mainsaver records indicated that facility personnel visually inspect it on a routine basis and that it is tested (push button) monthly.

2.4.7 Firefighting Equipment: The primary firefighting system consists of a main electrically driven firewater pump, three hose stations, two stationary monitors, and twelve portable fire extinguishers. A four-inch city water main supplies suction to the firewater pump. The fire pump is a 200-gallon per minute at 65-psi (rated pressure) centrifugal pump, driven by a 15-horsepower electric motor. The electric firewater pump provides the sole source for onsite fire suppression. The facility relies on the City of Huntington Beach Fire Department for backup fire protection. The fire pump is located between the lab and the new control room, along the south perimeter wall. It is fed by the normal power system from Motor Control Center - 1 in the electrical control room at 480 volts.

From the fire pump, the firewater main line supplies an open head deluge system, stationary monitors, and hose stations that provide protection for the entire process facility. This system can be operated manually or can be started automatically by the fusible heat sensing detectors. The deluge system control and bypass switches and status lights are located on the main control panel. Testing of the primary firewater pump is performed weekly, and the automatic spray systems are tested monthly as required by Commission regulations. Test results are recorded and retained for comparison purposes as required by the National Fire Protection Agency (NFPA) 25, 5-4. The firefighting system appears to meet the minimum fire equipment requirements found in NFPA 11, 13, 15 and 20 guidelines.

Facility operators also visually check the other fire suppression equipment monthly. An outside contractor is used to conduct the required inspections and testing annually. DCOR maintains the required test/inspection records and ensures that all personnel responsible for the use and operation of the fire protection equipment are trained in the use of that equipment.

Portable fire extinguishers are located strategically throughout the facility and comply with MRMD 2132(g)(4), NFPA, and OSHA regulations. Portable fire extinguishers are visually inspected monthly, maintained in a fully charged and operable condition, and subject to an annual maintenance check. Cal/OSHA regulations require that employees receive annual training in the use of fire extinguishers for incipient firefighting. The company provides the required annual online training to familiarize employees with the general principles of fire extinguisher use and the hazards involved. The hands-on training is provided as part of DCOR's annual block training.

A visual inspection of the firewater piping, hose stations and monitors found that they were in good condition with respect to paint, rust, or other damage. One Priority 3 Action Item was generated with regards to portable fire extinguishers needing replacement covers, missing identification labels, and fire piping missing identifiable red protective coating/paint. (*Action Item 2.4.7.01*).

The two stationary water monitors in the processing area were also inspected. There was no evidence of any leaks, and the nozzle range of motion was acceptable. As part of DCOR's maintenance program, pivot points on the monitor are regularly greased, ensuring proper operation in the event of a fire.

Currently all fire protection components and related safety systems have been approved and deemed adequate by the City of Huntington Beach Fire Department who has primary authority regarding firefighting requirements. A city fire department station is located less than one mile from the facility.

2.4.8 Emergency Shutdown System (ESD): An Emergency Shutdown System is part of the Emergency Support Systems that requires a combination of devices arranged to safely initiate a facility shutdown. Failure of external power to a safety control circuit requires an audible or visual alarm to be initiated or operation of equipment in a fail-safe condition.

Ft. Apache is equipped with both manual and automatic ESD features. There are six manual ESD stations strategically located throughout the facility in the following areas:

- #1 Operator's Office/Control Room
- #2 South Gate (main entrance)
- #3 Electrical Control Room
- #4 LACT Programmable Logic Controller (PLC) Panel
- #5 Touch Screen (field)
- #6 North Gate

The manual ESD stations are clearly numbered and easily identified in case of an emergency. The stations are hard wired to the control panel (CP-1) in the control room. In addition, the Ultraviolet/Infrared (UV/IR) fire-eye flame and fusible heat sensing detectors will also activate the ESD automatically if flames are detected. Relays in panel CP-1 are fail-safe type. The system is reset from a button on the control panel.

Manual ESD stations and UV/IR fire-eyes are tested monthly, and the fusible heat sensing detectors are tested tri-annually. This is required by California State Lands Commission and National Fire Protection Agency regulations to verify proper operation and alarm annunciation. Test records are maintained at the facility and history indicates the system remains in good working order.

2.4.9 Safety and Personal Protective Equipment (PPE): DCOR has a written policy to provide a safe and healthy workplace and to comply with all applicable federal and state regulations about occupational safety and health. All personnel entering a DCOR facility must at a minimum wear hard hat, safety glasses, hard toe boots, fire resistant clothing (FRC), and personal H_2S monitors. Additional PPE, such as hearing protection, face shields, rubber gloves, aprons, and fall protection that may be needed are found in the DCOR Safety Manual, safe work permit, or Job Safety Analysis (JSA). No issues about the use of PPE were noted during fieldwork at Fort Apache.

The Commission staff observed one missing emergency eyewash or shower combination unit within ten seconds (unobstructed) near Storage Tank (T-6), where operators are exposed to potential chemicals corrosive to the eyes and skin. (*Action Item EFI 2.4.9.01*).

2.4.10 Instrumentation, Alarm and Paging: Process instrumentation and control is comprised of a Digital Control System (DCS) that is connected to the operator's control room by digital networks. Within the DCS, Programmable Logic Controllers are used to control and monitor the process equipment and instruments. Operations management software (Wonderware) provides the operator interface displaying plant wide activities and can detect instrument malfunction and equipment failure. This capability, in combination with optimizing features of process control, makes both startup activity and operational routines much easier and more efficient for operators. Wonderware also supports information management that shows historical information which can be used to improve process efficiency and plant performance.

The computer screens used to operate the facility are known as Human Machine Interfaces (HMIs). They are a simple graphic display that mimics the process on the operator's consoles, typically located in the control room. The HMI display allows the operator to access information and control the process in an uncomplicated manner. Common operator actions possible from the displays include:

- Setpoint Change
- Mode (Auto or Manual)

- Output Change
- Trending
- Loop Tuning
- Alarm Management
- Report(s)
- Shutdown of Selected Processes

The integrated alarm systems give an audible and visual indication to alert the operator that an alarm has been activated. Visual indication is used for specific alarm identification and evaluation. Audible tones are different for each process. The difference in sound is used to help operators identify the origin of the alarm.

The display methods and components are consistent throughout the HMI screens. Adequate information is contained in the video displays and all functions are labeled for quick assessment of key information. The graphic displays are concise and clear-cut which reduces the possibility of confusion and operator error.

The facility instrumentation is tested, maintained, and calibrated on a regularly scheduled basis. Records are readily available, and device history can be tracked through Mainsaver. All local instrumentation (e.g., pressure gauges, temperature gauges and recorders) appeared to be properly maintained and in good operating condition. The design and logic of these systems is further addressed in the Production Safety Systems section of this report.

2.4.11 Auxiliary Generator / Prime Mover: There is no auxiliary generator located at Ft. Apache. In the event of a power failure, the facility is designed to shut down in a safe manner. An APC Symmetra LX Uninterruptable Power Supply (UPS) system provides the only emergency power to the facility. Critical system controls, alarms, communication and office lighting are powered from the UPS. The unit is located in the electrical control room and is further addressed in Section 3.6 Emergency Electrical Power.

2.4.12 Spill Containment: The secondary containment around tanks and fluid handling equipment is adequate for meeting the Environmental Protection Agency's (EPA) Spill Prevention, Control and Countermeasures regulations. This spill containment system coupled with routine visual inspections by operating personnel reduces the consequences if a leak or rupture were to develop. The containment volumes provided by the spill containment walls were carefully reviewed. The assessment found that containment for the stock tank as well as for the pressure vessels is correctly sized to meet regulatory requirements. The containment volumes provided contain more than the volume of the largest tank plus the recommended allowance for precipitation while excluding the volumes occupied by other tanks.

2.4.13 Spill Response: The DCOR Oil Spill Response Plan (OSRP) was developed following Federal and State Facility Response Plan requirements and is discussed in more detail in the Safety Management section of this report.

Spill response equipment identified in the plan is stored in an emergency shed located next to the Supervisors office. DCOR maintains spill response equipment at the facility for spill response including spill booms and absorbent pads. Spill response supplies are maintained and inventoried monthly by DCOR operating personnel and are part of the Commission monthly safety inspection.

Facility personnel are considered the primary responders in the event of a spill and are prepared to effectively clean up small to moderate spills using the on-site response equipment. For larger spills, outside spill response companies are under contract to respond.

2.5 Mechanical Integrity / Preventive Maintenance Program

Preventive maintenance and job scheduling are controlled by Operations foremen and craft supervisors. New work orders are reviewed daily and assigned to an in-house craft or outsourced to a contractor/vendor depending upon the workload and specific job requirements. Critical spare parts and commonly used parts are stored at Ft. Apache or in the onshore warehouse. This approach provides DCOR with maintenance task optimization and decreases the chance of equipment failure. Recordkeeping for PSVs, tanks, and pressure vessels has migrated to electronic files.

The computerized maintenance management system, Mainsaver, is utilized to manage and track activities. Operating personnel can access the system to generate a work order. These work orders can range from a simple filter change to major equipment repair. Mainsaver gives DCOR flexibility to schedule and record these activities based upon the manufacturer's recommendations, operating history, and recognized and generally accepted good engineering practices. Tank and pressure vessel reliability are maintained through regularly scheduled internal, external, and ultrasonic inspections and repairs. Reliability inspections are also standard for all rotating equipment.

Facility Engineers have developed a risk management system to decrease the incident rate of leaks for the various systems at the facility. The system uses regularly scheduled internal, external and ultrasonic inspections and repair information to assess risk. A risk level is established for the various pieces of equipment based on service and consequence of failure. When the risk level for a particular tank, pressure vessel or section of piping reaches an unacceptable level, the facility engineer is expected to implement a corrective or mitigating action to lower the risk level to an acceptable level. Several different methods are being used to preserve the life of the various plant equipment and systems that include:

- Primer, Paint and Tape Wrap Coatings (External)
- Epoxy Coatings (Internal)
- Cathodic Protection
- Chemical Treatment

A chemical vendor provides Ft. Apache with a chemical treatment program that satisfies the operational needs of the facility. The main component of the program is corrosion inhibitor. The chemical protects the internal surfaces and metal components by forming a protective film. Additionally, the program incorporates corrosion coupons at critical points in the piping for monitoring the effectiveness of the chemical treatment program.

Cathodic protection and sacrificial anodes are also used in conjunction with other forms of corrosion control such as protective coatings, wherever internal and/or external surfaces are exposed to aggressive environments. This means of corrosion control is provided for select pressure vessels, tanks and piping. Appropriate record keeping from regularly scheduled internal, external and ultrasonic inspections and repairs would help to provide historical data and signs as to the source of a detected deficiency.

An overall evaluation of the effectiveness of DCOR's maintenance management practices found that Ft. Apache is currently designed, operated, and maintained in a stable and reliable manner. There appears to be room for additional improvement to the preventive maintenance system so that fewer unanticipated repairs are needed.

2.6 Production Safety Systems

Analysis of Fort Apache drawings and PLC logic found that the design of process controls and safety systems is adequately documented, has the appropriate level of safety controls, and is consistent with the previous Commission staff audit. The automated control and safety systems have been designed using applicable codes, standards, and industry practices in accordance with MRMD regulations.

Fort Apache status, controls, and alarms are displayed in real-time via HMI displays located in the control room. The automated control system monitors and controls facility processes in separate operating areas. Automated displays help minimize the effects of undesirable events and mitigate consequences from upsets. The safety systems are independent of the DCS alarm system on Platform Eva in case of loss of the communications link.

This equipment allows operators to control the process within authorized parameters. Uniformity in process settings among the different operating crews is carried out through a strict safety systems procedure that restricts operator access to the program control code.

Separation of safety related functions from process control reduces the risk of common cause failures and assures the safety system will function properly. Bypass switches for functional testing provide “no interruption” to the normal process operation. System safety integrity is maintained when a device is placed in bypass by procedures and the use of an alarm to signal an active bypass. Additionally, facility controls and safety features are designed to be fail-safe and have redundant capacities.

Extensive fire and safety systems are installed throughout the facility. Included in these systems are safety devices that automatically shut down oil and gas production at Ft. Apache as well as Platform Eva if an emergency occurs. Every operator/contractor at the facility is authorized to shut down the facility should an unsafe condition be detected.

DCOR has performed a Hazard and Operability (HazOp) Process Hazard Analysis (PHA) study for the facility. Their Management of Change (MOC) process includes the use of a PHA tool, in a style similar to HazOp, for changes to facilities, equipment, and processes, when the Facility Engineer decides it is appropriate. This systematic approach for identifying, evaluating, and controlling the hazards of the process helps build-in additional safety and can help evaluate the contribution of each safety device or system protection. When hazards cannot be removed or controlled through design, DCOR uses a hierarchy of health and safety controls (e.g., elimination-substitution-engineering controls-administrative controls-PPE) to eliminate hazards or reduce exposure to hazards.

Electrical System Audit

DCOR, LLC

Fort Apache

June 2024

3.0 ELECTRICAL SYSTEM AUDIT

3.1 Goals and Methodology

The primary goal of the Electrical Team (ELC) was to evaluate the electrical systems and operations of the DCOR Fort Apache onshore facility to determine if it conforms to recognized and appropriate electrical Codes and industry standards.

References used in review of facilities include documents published by the American Petroleum Institute (API), National Fire Protection Association (NFPA), the State of California Electric Code (CEC) and State Lands Commission Regulations. The ELC Team review comments are based on those publications, which primarily include API RP 14F, API RP 500, API RP 540, CEC documents, and other industry standards. The drawings used in support of the audit were electrical single-line diagrams and area classification drawings provided by DCOR for the facility.

Specific tasks to accomplish this goal included a systematic process of field verification of electrical single-line diagrams, plan drawings, area classification drawings, and operation and maintenance practices. A comprehensive use of inspection checklists, code and standard compliance checklists, and review of electrical system design for conformance to codes and standards was utilized to complete the audit. This report includes a summary of the electrical systems included in the audit.

The ELC Matrix, Section 3.0, provides a detailed listing of the locations and items identified for correction. The matrix is organized into sections. Each section is discussed below along with examples of typical items encountered.

3.2 Hazardous Area Electrical Classification Drawings (HAECD)

The API recommended practices and CEC requirements provide specific guidelines for the electrical classification of hazardous areas and installation practices for electrical equipment and materials within classified areas. The basis for observations and review comments for all hazardous areas are API RP 500, CEC Articles 500, 501, and 504 as well as API RP 14F. The hazardous area electrical classification drawings are generally representative of the existing conditions and area class elements. However, the drawings do need to be updated to include process and equipment additions and deletions made since the last revision in 2015.

The purpose of an electrical area classification drawing is to define the locations of boundaries and areas where specific electrical materials and installation practices are required to manage the explosive properties of flammable liquids, vapors, gases, and other volatile materials. Installation and maintenance of electrical systems will require attention to the type of hazard and the level of the hazard to assure compliance with CEC requirements. Electrical area classification drawings are required to include the information necessary for a Qualified Electrician to perform work in and around classified areas. DCOR drawing DCOR-FA-EL-D-0101 was last revised in December 2012 and requires an update.

Areas that contain walls, depressions, and barriers to natural ventilation where flammable liquids or vapors may be present require evaluation and identification of the appropriate electrical area classification. All areas known to contain flammable liquids or vapors are required to be identified on an electrical area classification drawing. The area classification plans include details to define and illustrate the facility area class boundaries more clearly.

General-purpose electrical enclosures (Load Centers, MCCs, control panels, etc.) are only suitable for use in unclassified areas. In general, electrical equipment installed in Classified areas was found to be classified as explosion-proof, NEMA 4, purged or otherwise suitable for use in Classified areas. Purged enclosures must have purge systems monitored and equipped with an alarm when purge pressures drop below a minimum level.

Some junction box and conduit fitting covers are missing or not properly seated against box flanges to provide adequate seal in classified areas. Covers must be flange-face to flange-face or box if bolt-on type or five full threads engaged if screw-cover type.

Conduit seals are required at classification boundaries. Locations where conduits originate outside of classified areas and travel through classified areas without the use of a box, fitting, or coupling may cross area classification boundaries of Division 2 areas without a seal. Some equipment is in the process of being added, relocated and/or repurposed and requires seal-offs to be packed and poured prior to energization.

3.3 Electrical Power Distribution System, Normal Power

Utility service is supplied by Southern California Edison (SCE) from an overhead pole top transformer line and service drop consisting of pole line disconnects and three (3) 50kVA, 4160-480V, single-phase transformers on a pole line structure adjacent to the facility.

The SCE-supplied transformers provide 480 volt, three-phase, three-wire power to Fort Apache via parallel runs of 3-1/C #750kcmil 600V cable routed in conduit to the main Service Switchboard (MS-1). The aerial cable includes a steel “messenger” cable to support the weight and provide stress relief for the phase conductors. The messenger cable is not connected on multiple phases. SCE should be contacted to inspect and complete any repairs that may be required for the service entrance cables.

This switchboard lineup includes a service entrance section consisting of a Utility metering compartment and one main 1000 amp frame / 800 amp trip breaker, to supply power to the 480V motor control center lineup (MCC-1) and one main 600A circuit breaker to supply power to MCC-2. The main service has been reconfigured with the addition of MCC-1 and MCC-2.

<u>3.3.1 Electrical Single-Line:</u> The electrical single-line drawings were prepared by West Coast Switchgear and are dated March 26, 2012, and May 8, 2012. This set was used for the review of the facility electrical system. The audit focused on power distribution systems 480V and above and excluded the lower voltage systems. DCOR will need to add missing information identified in the Matrix and incorporate the corrected information into single-line drawings.

<u>3.3.2 Electrical Service Capacity:</u> The customer 800A service switchboard is adequate to supply the utility metered load based on the present power meter peak demand of 118.4kVA. The utility service transformer has a three-phase rating of 150kVA which is also adequate to supply the facility peak load. It is recommended that the serving utility be contacted regarding any service capacity and motor starting limitations and to determine the peak load. Electrical system utility short circuit duty data was not available to confirm equipment withstand rating and is required to be included on the single line diagram. The application of overcurrent devices with respect to equipment and conductor ratings is generally satisfactory.

3.4 Electrical Power Equipment Condition and Functionally

<u>3.4.1 Equipment Condition:</u> CEC 110-13, Mounting Electrical Equipment, requires all electrical equipment to be firmly secured to the surface on which it is supported. CEC Article 300-11, Securing and Supporting, requires all electrical raceways, cable assemblies, boxes, cabinets and fittings to be secured or fastened in place. Additional securing requirements are also provided in the CEC for individual types of installations and conditions. Securing and supporting of electrical equipment, cables and materials needs to be consistently addressed and managed throughout the facility.

There were several openings in equipment noted such as missing cover plates in panelboards, open conduits, and gaps in equipment cover plates that would allow rodent nesting. The openings should be closed.

The electricians must follow a mandatory set of procedures designed to enhance personnel safety and reduce the potential for shock and injury. The safety procedures are documented in the Safety Procedures Manual, dated February 2020. Part 4.15 of the Manual covers the Electrical Safety Policy. Electricians are responsible for completing a task checklist prior to beginning any work. The checklist includes identification of hazards that might be associated with the task and the measures to be employed to minimize the hazard, risks. It is recommended that the forms and checklists required to be completed prior to performing electrical work be included in the manual. A lock-out tag-out program is well documented and implemented.

<u>3.4.2 Equipment Maintenance Practices:</u> DCOR uses MAXIMO software to track and generate maintenance work orders. The server for the Maximo database is located at a DCOR corporate facility and is used primarily as a scheduling program.

Reliability of the electrical system is primarily dependent on the availability of the SCE power supply in addition to the condition and operational readiness of the onshore facility distribution system. A sound maintenance and inspection program, properly implemented, is key to assuring the highest level of reliability. Electrical maintenance tasks are being managed by operating personnel through work orders. The MAXIMO system is not the primary source, or tool, being used. At the time of this assessment there was an unidentified number of preventive maintenance backorders in the system.

In addition to Maximo-generated work orders, corrective work orders are generated by personnel. Corrective work orders document field observations and are submitted to the Supervisors for review and implementation.

The 480V MCC-1 and MCC-2 are newly installed, but no acceptance test or commissioning documentation was available at the time of the on-site assessment. NFPA 70B, Recommended Practice for Electrical Equipment Maintenance, and International Electrical Testing Association (NETA) recommend visual inspection of switchgear every twelve months and electrical testing and calibration at thirty-six month intervals.

The CEC requires facility electrical equipment that is likely to be examined, adjusted or serviced while energized to be marked to warn qualified persons of potential electric arc flash hazards. The labels installed are out of date and no longer comply with the revised NFPA 70E arc flash hazard label requirements. NFPA 70E recommends that the arc flash hazard study be reviewed and updated every five years or whenever electrical system modifications are made. The arc flash hazard study is required to be updated and arc flash hazard labels should be replaced as needed. Part 4.15, Electrical Safety Policy, of the Safety Procedures Manual requires an update and revisions based on recent Code and regulatory changes.

3.5 Grounding

CEC Articles 250 and 501 provide the requirements for power system grounding and bonding in oil production facilities. Significant portions of the requirements for grounding are established to prevent or reduce the possibility of injury to personnel from shock. The rules of grounding also contribute to reduction of equipment damage either from induced voltages or during fault conditions. The three types of grounding required at the facility are power system circuit grounding, equipment equipotential grounding, and static control grounding.

Article 501-16, Bonding in Class I Areas, states that all non-current carrying metal parts and enclosures associated with electrical components shall be connected, bonded, and be continuous between the Class I area equipment and the supply system ground. That is, ground circuit bonding shall be continuous from the load all the way back to the power transformer grounding electrode system. The best way to achieve ground circuit continuity is to include properly sized (CEC 250) equipment grounding conductors with each set of power conductors from the source of power to the load.

3.6 Emergency Electrical Power

3.6.1 System Configuration: The uninterruptible power supply (UPS) installed in the electrical room provides power for critical control and communications systems. The APC Symmetra LX UPS unit requires maintenance to verify that it is operating properly. The display on the UPS is displaying corrupted data. The UPS feeds power strips in the new server rack and a 120/240V panelboard located adjacent to the server rack to maintain power for the emergency systems listed below:

- Control Room computers and equipment
- General Alarm and Shutdown systems
- Allen Bradley PLCs and I/Os for process control and monitoring
- Communications system
- Fire eyes and gas detection systems

3.6.2 Equipment and Component Ratings: UPS power is provided from a new APS Unit in the main control room. The APC Symmetra LX UPS is a packaged unit complete with batteries. The load could not be verified due to corrupted display fonts. The UPS requires maintenance to assess the battery condition and resolve the corrupted display data.

Full load battery capacity should be in excess of 4 hours. The UPS has expandable battery capability to extend runtimes. DCOR should confirm existing battery capability and determine that the 4-hour requirement is satisfied.

3.6.3 Electrical System Design Safety: No backup generator is provided for the facility. Critical system control, alarms and communication are powered from the UPS in the control room. An extended power outage would eventually drain the UPS batteries requiring a shutdown of the facility. It is recommended that provisions, such as a manual transfer switch for connection of a temporary generator, be provided.

3.7 Electric Fire Pump

A 15hp electric firewater pump is located between the control building and the front entry gate and supplied electricity by the normal power system from a 480V feeder in MCC-1. The electric firewater pump provides the sole source of pressurized water for onsite fire suppression. The deluge system control and bypass switches and status lights are located on the main control panel. The Fort Apache facility relies on the local fire department for backup fire protection. The present installation complies with CEC 695.3(A) for reliable power source requirements, as long as the SCE utility power source is deemed to be reliable. The SCE source is deemed to be reliable based on the outage history for the facility.

3.8 Process Instrumentation

The process control system uses a combination of pneumatic, hydraulic, and electrical instruments and controls. It includes the use of computers, PLCs, and relay logic to control and interface with valves, solenoids, and pump controllers. Alarms are produced by level, temperature, pressure, and flow sensors advising operators of process conditions.

Two PCs located in the control room provide operator interface to the process control system. The PCs are linked via Modbus+ to the new Allen Bradley PLC and run the Wonderware software package. A second Allen Bradley PLC core processor is also located in the facility.

Programming for the PLC is resident on the PLC. In the event of a PLC processor failure, programming is available to upload from the PCs in the office. No formal written documentation has been provided to verify that a written procedure for management of change is in place to track changes to the programming or sequence of operations.

The Allen Bradley PLC located in the control board CP-1 in the control room effectively monitors and controls operations at the facility. Control and monitoring from the offshore platforms is provided through the spread spectrum radio system from the remote terminal unit (RTU) on Platform Esther to an RTU located at the First Street Seal Beach facility.

3.9 Standby Lighting

Standby lighting was not included in this investigation.

3.10 Special Systems

The ELC Team review comments for special systems are based on API RP 540 and CEC documents.

3.10.1 Safety Control Systems: Safety control systems are required to be a combination of devices arranged to safely affect facility shutdown. Electrical safety control systems are normally operated energized and fail-safe. Failure of external power to a safety control circuit requires an audible or visual alarm to be initiated or operation of equipment in a fail-safe condition.

Emergency Shutdown Stations (ESDs) are located on the main control panel and at the North and South gates of the facility. The stations appeared to be in good working order. The provided plot plan did not accurately reflect the location of all safety devices. This deficiency is captured in *Action Item EFI – 2.3.1.01*.

Stations are hard-wired to the control panel, CP-1, in the control room. In addition, the flame detection system will activate an ESD automatically if flames are detected. Relays in panel CP-1 are fail-safe type. The system can be reset from a button on the control panel. ESDs are tested monthly and records are maintained.

3.10.2 Gas Detection Systems: Combustible gas detection systems, LEL and H_2S type are usually employed to detect combustible gas leaks in equipment and piping, to warn personnel of explosive and toxic concentrations and to initiate remedial action. Ft. Apache has LEL detectors located around the tank and heater treater areas. H_2S detection is not included in this facility as the level of H_2S in the gas stream is negligible. Detectors are hard wired to the control room panel CP-1. Gas detectors and monitors are tested monthly, and records are maintained.

3.10.3 Fire Detection Systems: Fire detection and smoke detection are usually employed to detect and warn personnel of fire and smoke conditions and to initiate remedial action.

Fire-eye type UV detectors are provided around the heater treaters. Fire-eye detectors are located on the periphery facing into the monitored area. This was done to reduce nuisance alarms caused by foreign sources (i.e. distant welding, flash photography, etc.) external to the facility. At the time of the inspection, the fire-eyes were bypassed because of maintenance on one heater treater.

Fire-eye signals are returned to the Fire Detection Modules in the control room panel CP-1. Fire detectors are tested monthly, and records are maintained.

Stand-alone smoke detectors are provided on the ceilings of the control room and office trailer. Units appear to be active but were not tested during the inspection.

3.10.4 Aids to Navigation: Not applicable

3.10.5 Communication: Communications systems are established to provide for normal and emergency operations. Systems used for emergency communication should have battery-operated supplies good for at least four hours continuous operation as required by API RP 14F. Communications equipment is located in the control room.

Incoming Service: Verizon phone service (Time-Warner/Spectrum is the service provider) is connected to a 10-base T hub located in the control room.

Communications to the platforms: A dedicated T1 line extends via Verizon to the Goldenwest facility in Huntington Beach. There the signal is routed through an Ethernet/FO converter. The fiber optics cable routes in the submersible power cable to Platform Eva. At Eva, the fiber optic cable is separated from the power cables at the main interrupter switchgear in the switchgear room and routed through a FO/Ethernet converter to the platform Ethernet. A spread spectrum radio system links the telecom system at Eva to platforms Esther and Edith. Communications equipment on Esther is powered through the UPS unit.

Fort Apache is not currently manned full time. Remote monitoring and control of Fort Apache during off hours is provided from Platform Esther, which is manned a full 24 hours. Loss of the Verizon signal results in loss of control of Fort Apache from Platform Esther.

A radio base station in the control room provides radio communication with the crew boat. This system and the other installed systems are also backed up by cellular phone.

3.10.6 General Alarms: General Alarms annunciate at the main control board.

3.10.7 Cathodic Protection: The production pipeline receives its protection against corrosion from an impressed current rectifier located outside the facility wall North of the Shipping Tank. A 30-amp fused disconnect protects the rectifier. The rectifier operation could not be verified. The safety devices and condition of the incoming subsea pipeline are discussed in the Platform Eva report.

Safety Management Programs

DCOR, LLC

Fort Apache

June 2024

4.0 SAFETY MANAGEMENT PROGRAMS

4.1 Goals and Methodology

The goal of the safety management program section of the audit was to verify that DCOR, LLC (DCOR) has required programs, plans, and manuals in place and that the company uses a safety management approach to manage hazards and thereby reduce the frequency and severity of undesirable events. DCOR's safety management programs are composed of organizational and operational procedures, design management, audit programs, and other methods defined by California State Lands Commission (Commission) Mineral Resources Management Division (MRMD) Article 3.4, 3.6 and American Petroleum Institute (API) Recommended Practice (RP) 75. The audit began with a review of the operating procedures, other required emergency and spill response plans, training programs, and additional specific programs that DCOR uses to cover other elements of the Safety and Environmental Management System (SEMS) for the Fort Apache facility.

4.2 Operations Manual: Operating Procedures

DCOR's Operating Procedures provide the necessary information for operations employees to understand what procedures and system processes are needed to safely operate a facility. Individuals knowledgeable with the process and its hazards write the Standard Operating Procedures (SOPs). These individuals are also familiar with the subject matter and typically have performed the work and operated the process. The SOPs are written in a simplified, easy-to-read format with sufficient detail so that trainees with limited experience or knowledge of the procedure can successfully carry out a given task with minimal supervision. Operations employees, HSE, Engineers and Management validate the procedures before finalization. A thorough review of individual procedures noted that some of the information does not appear to be current or is missing, including equipment location plans, pressure safety valve settings, and various other discrepancies (*Action Items SMP 4.2.01*). The contents of an Operations Manual, including Operating Procedures, are required to be kept current at all times. (MRMD 2174(b)(1), 2175(b)(5)(B))

The SOPs are maintained and accessible via the company intranet system to all DCOR personnel and available to print. Hard copy versions are located at the facility in the main office control room. A periodic review of the SOPs by operators, engineers, and management personnel is performed to ensure that pertinent operating information is readily available and correct. The SOPs are also reviewed when operations or equipment are substantially changed. They are updated by authorized DCOR personnel to ensure the contents remain current and the date of review/revision is recorded in each SOP. If an SOP describes a process that is no longer followed, it is removed from the file and/or manual.

4.3 Spill Response Plans

An Emergency Response Plan (ERP) that complies with California CCR Title 8 Section 3220 and 5192(q)(1) & (2) was provided. Changes to this plan should be managed by authorized DCOR personnel to ensure new or different operating conditions are contemplated, qualified staff is available to perform necessary functions, operator and personnel certifications are current, and information relating to regulatory agencies is up to date. A review of DCOR's Emergency Response Plan (ERP) identified needed updates to personnel, contact information, process flow diagrams, and other various information. (*Action Item SMP 4.3.01*).

The DCOR Oil Spill Response Plan (OSRP) was developed following Federal and State Facility Response Plan requirements. The document defines procedures and plans for responding to discharges of oil into navigable waters and seeks to minimize damage to the environment, natural resources, and facility installations. The plan covers Platform Eva, Platform Esther, Ft. Apache and other onshore facilities, and associated pipelines. The following elements are addressed within the plan:

- Incident Command Organization
- Facility description
- Hazards Evaluation Study and potential worst-case spill scenario evaluation
- On-water containment and recovery procedures
- Shoreline protection and clean-up
- Wildlife care and rehabilitation procedures
- Response procedures

Also contained within the OSRP are operating procedures the facility implements to prevent oil spills, control measures installed to prevent oil from entering navigable waters or adjoining shorelines, and countermeasures to contain, clean up, and mitigate the effects of an oil spill. The OSRP was reviewed and noted to have a long approval history. It meets Federal (Code of Federal Regulations (CFR) Title 40 Section 112.5) and State Office of Spill Prevention and Response (OSPR), CCR Title 14, Regulation 817.02 standard requirements. DCOR staff is familiar with the OSRP and holds annual spill drills to increase the effectiveness of their spill response. The OSRP presented for audit review was revised in June 2023 and includes a copy of the California Certificate of Financial Responsibility (COFR). Spill plans are required to be resubmitted for review once every five years (CCR Title 14, 816.05(a)(1)(A)). A thorough review of the OSRP by Commission Staff noted that some of the information does not appear to be current or and could be updated with the latest information. (*Action Item SMP 4.3.02*).

The Spill Prevention Control & Countermeasure (SPCC) Plan is an EPA requirement. A hard copy version of the plan was reviewed for compliance and appears to meet the EPA Rule.

However, there were a few minor concerns regarding some information that appeared to be outdated, including contact information, and P&IDs. (*Action Item SMP 4.3.03*). The plan is prepared in accordance with good engineering practices. It provides engineering, operation, maintenance, and management strategies to lessen the potential of a spill or release of oil products (e.g. fuel and petroleum/lubricating based oil/product) from certain storage and entering a navigable waterway or neighboring community. The plan is approved by management and certified by a licensed professional engineer.

In addition, an August 2021 submittal to the California Environmental Reporting System for Ft Apache was provided by DCOR. The provided submission included the Equipment Plot Plan which needs to be updated to accurately reflect current equipment and placement prior to their next submission.

4.4 Training and Drills

Facility operations' training consists of on-site facility instruction. Operators are trained on the operation of the facility and safe work practices for the process. The on-the-job training process includes hands-on procedural performance and evaluation. Both the lead operator and operations supervisor must sign off on the training and qualification. Promotion to the next Operator level is based on progression through these operating requirement elements. Successful completion of all elements and a field competency demonstration is required before advancement to the next level can occur. Situational awareness training helps employees recognize abnormal operating conditions as well as what to do if an abnormal event occurs.

Compulsory OSHA and spill response training is also provided. DCOR conducts annual online training to satisfy Cal/OSHA training requirements. DCOR's administrative training coordinator employs a computer-based training (CBT) matrix that tracks all training activities and is used to alert management and individual personnel of training requirements. All DCOR operating personnel receive Production Safety Systems (API RP T-2) Training, as well as other annual required CBT courses that are developed by DCOR in-house through PetroSkills on-line training programs. The training program is designed to certify personnel working on offshore production platforms and interconnected facilities to operate, repair, and maintain facilities and safety devices in accordance with the requirements described in API RP 75 that "initial" and "periodic" training be provided to employees and contractors on operating procedures, safe work practices, and emergency response and control. This standard requires that offshore operations and maintenance personnel receive training on safety and anti-pollution devices, maintenance and crane operation, well control, and hydrogen sulfide, as appropriate. Other applicable regulations can be found in CFR Title 30 Chapter II Subchapter B – the Bureau of Safety and Environmental Enforcement's (BSEE) offshore regulations.

Spill response team members are trained in the procedures developed for the facility spill plan. This training consists of classroom instruction, exercise evaluation briefings, tabletop exercises, and equipment deployment drills. Exercises range from a discussion about how things would occur to the deployment of equipment and mobilization of staff. Most spill drills are unannounced, and personnel are given a scenario that they must respond to. If DCOR finds any significant deficiencies in the spill plan after a drill or exercise is complete, the company will record the deficiencies and require changes to the plan. DCOR management reviews the lessons learned during oil spills and exercises to revise and improve contingency plans. Revisions of the plan may require additional inspections, drills, and training.

Fort Apache personnel conduct mandatory safety meetings for task specific condition changes or scheduled operator rotation that include all persons performing work at the facility for both general and topic specific safety subjects. Training and pre-job safety meetings are documented; records are retained and available upon request. During fieldwork, the Safety Audit Team observed Ft. Apache’s personnel’s acknowledgment of the importance of proper Personal Protective Equipment (PPE) and its use at all appropriate times. There were no action items identified regarding these safety elements.

4.5 Safety Management Programs

DCOR’s Safety and Environmental Management Systems (SEMS) plan parallels API RP 75 for a Safety and Environmental Management System for Offshore Operations and Assets and is used to control workplace hazards. DCOR has voluntarily integrated its corporate safety management program into the facility. This practice has improved its operating reliability, system operating efficiency, and reduced incidents involving the release of hazardous materials beyond the facility boundaries.

DCOR’s safety policy sets a clear direction for the organization to follow and is a part of their established business performance goals. The objective of their safety policy is to set down in clear-cut terms management's approach and commitment to health and safety at their facilities. Audit team observations and interviews with employees and contractors confirmed that DCOR’s senior management has defined, documented, and endorsed its safety policy. Safety management functions within the organization correlate with the safety of their personnel. This connection can be seen in the planning, developing, organizing, and implementing of DCOR’s safety policy.

Additional assessment and feedback regarding DCOR’s safety management programs will be afforded by the Commission’s Safety Assessment of Management Systems (SAMS) that is conducted after the safety and oil spill prevention audit. The SAMS also provides significant benefits regarding human factors observations and assessments described in the next section of this report. The SAMS is a separate effort from this audit and the results are kept confidential between the Commission and the operating company.

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Human Factors Audit

DCOR, LLC

Fort Apache

June 2024

5.0 HUMAN FACTORS AUDIT

5.1 Goals of the Human Factors Audit

The primary goal of the Human Factors Audit is to evaluate the operating company's human and organizational factors by using the Safety Assessment of Management Systems (SAMS) interview process. The SAMS will follow the safety and oil spill prevention audit of the DCOR Huntington Beach lease facilities (Platform Esther, Platform Eva, and Fort Apache Onshore). Interview results are considered confidential between the Commission and DCOR and will be contained in a separate report.

SAMS was developed under the sponsorship of government agencies, including the California State Lands Commission (Commission), and oil companies from the United States, Canada, and the United Kingdom to assess organizational factors, enabling companies to reduce organizational errors, reduce the risk of environmental accidents, and increase safety. The assessment was divided into nine major categories to examine the following areas (The number of sub-categories – areas of assessment for each category – are included in parentheses.):

- Management and Organizational Issues (9)
- Hazards Analysis (9)
- Management of Change (8)
- Operating Procedures (7)
- Safe Work Practices (5)
- Training and Selection (14)
- Mechanical Integrity (12)
- Emergency Response (8)
- Investigation and Audit (9)

Assessment of each of the sub-categories is derived from one main question with several associated and detailed questions to help better define the issues and degree of integration of safety management programs.

The SAMS process is not intended to generate a list of action items. Its purpose is to provide the company with a confidential assessment of where it stands in developing and implementing its safety culture, areas of relative strength and weakness, and a benchmark for future assessments.

5.2 Human Factors Audit Methodology

The Commission's Mineral Resources Management Division (MRMD) will schedule interviews with a cross section of DCOR field operators and sub-contractors and engineering, supervisorial, and management staff after the safety audit reports for all covered facilities are completed. Interview responses will be evaluated according to SAMS guidelines and a separate confidential report summarizing the results will be generated. Responses of specific individuals to questions are kept anonymous in the report. MRMD staff will provide a confidential report and offer a formal presentation that summarizes the report to DCOR management.

Action Item Matrix

DCOR, LLC

Fort Apache

June 2024

Appendices

DCOR, LLC

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Appendix A
Acronyms

ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
BAP	Best Achievable Protection
BOPD	Barrels of Oil Per Day
BSEE	Bureau of Safety and Environmental Enforcement
Cal/OSHA	California Occupational Safety and Health Administration
CBT	Computer Based Training
CCR	California Code of Regulations
CDFW	California's Department of Fish and Wildlife
CEC	California Electrical Code
CFR	Code of Federal Regulations
COFR	Certificate of Financial Responsibility
Commission	California State Lands Commission
DCOR	Dos Cuadras Offshore Resources
DCS	Digital Control System
DOT	Department of Transportation
EFI	Equipment Functionality and Integrity
ELC	Electrical
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ESD	Emergency Shutdown Device
ESP	Electrical Submersible Pump
ESS	Emergency Support Systems
FO	Fiber Optic
FRC	Fire Resistant Clothing
HAECD	Hazardous Area Electrical Classification Drawing
HazOp	Hazard and Operability
HF	Human Factors
HMI	Human Machine Interface
H_2S	Hydrogen Sulfide
IR	Infrared
ISA	International Society of Automation
JSA	Job Safety Analysis
LACT	Lease Automatic Custody Transfer
LEL	Lower Explosive Limit
LLC	Limited Liability Corporation
MCC	Motor Control Center
MCFD	Thousand Cubic Feet per Day
MOC	Management of Change
MRMD	Mineral Resources Management Division
NACE	National Association of Corrosion Engineers
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NETA	International Electrical Testing Association

NFPA	National Fire Protection Association
OSHA	Occupational Safety & Health Administration
OSPR	Office of Spill Prevention and Response
OSRP	Oil Spill Response Plan
P&ID	Piping and Instrumentation Diagrams
PFD	Process Flow Diagram
PHA	Process Hazard Analysis
PLC	Programmable Logic Controller
PPE	Personal Protective Equipment
PRC	Public Resources Code
PSI	Pounds per Square Inch
PSV	Pressure Safety Valve
RP	Recommended Practice
RTU	Remote Terminal Units
SAMS	Safety Assessment of Management Systems
SCE	Southern California Edison
SDS	Safety Data Sheet
SEMS	Safety and Environmental Management Systems
SMP	Safety Management Programs
SOP	Standard Operating Procedures
SPCC	Spill Prevention Control & Countermeasure
T-Min	Minimum Thickness
UV/IR	Ultraviolet/Infrared
UPS	Uninterruptable Power Supply
Unocal	Union Oil Company of California
USCG	United States Coast Guard
UT	Ultrasonic Thickness
UV	Ultraviolet
V	Volt

Appendix B
Best Practices

Regulatory References

MRMD – California Code of Regulations (CCR) Title 2
CalGEM – CCR Title 14
Cal/OSHA – CCR Title 8
OSHA – CFR Title 29
EPA – Code of Federal Regulations (CFR) Title 40

1.0 INTRODUCTION

1.1 Best Achievable Protection/ Best Achievable Technology	PRC 8750
Inspection of Marine Facilities	PRC 8757
Commission Oil & Gas Regulations	MRMD Articles 3 - 3.6

2.0 FACILITY CONDITION AUDIT

2.1 Goals and Methodology	
2.2 General Facility Conditions	
2.2.1 Workplace Housekeeping	MRMD 2129; API RP 51R Cal/OSHA 6539
2.2.2 Stairs, Walkways, Gratings, & Ladders	MRMD 2129; Cal/OSHA 3273,3212; OSHA 5(a)1,1910.22(d)(1)
2.2.3 Escape/ Emergency Egress/ Exits	Cal/OSHA 3215; 6577
2.2.4 Labels, Color Coding and Signs	MRMD 2129; Cal/OSHA 3340; OSHA 5(a)1, 1910.146; NFPA 704
2.2.5 Security	API RP 51R
2.2.6 HAZMAT Handling & Storage	MRMD 2129; Cal/OSHA 4650, 5194, 5164(c); OSHA 1910.106, 1910.1200; NFPA 400, 30
2.3 Field Verification of Plans	
2.3.1 Process Flow Diagrams (PFDs)	MRMD 2129, 2132; OSHA Section 5(a)1, 1910.151, 1910.266; NFPA 10, 30, 72; API RP 51R
2.3.2 Piping & Instrumentation Diagrams	MRMD 2129 2132; OSHA Section 5(a)1; API RP 51R
2.3.3 Fire Protection Drawings	MRMD 2129, 2132; Cal/OSHA 6183; OSHA 1910.144; NFPA 72, 14
2.4 Condition and Integrity of Major Systems	
2.4.1 Pumps & Piping	MRMD 2129; Cal/OSHA 6533; OSHA Section 5(a)1, 1910.106; API 570; ANSI B31.3

2.4.2	*Tanks*	MRMD 2129; API 650, 653
2.4.3	*Pressure Vessels*	MRMD 2129; API 510, RP 572 ASME B&PV Code Sect. VIII Cal/OSHA 6551
2.4.4	*Relief Systems*	MRMD 2132 API 520, 521, RP 576
2.4.5	*ESP, Pump Units & Wellhead Equip.*	MRMD 2132
2.4.6	*Firefighting Detection Systems*	MRMD 2132; NFPA 25 & 72
2.4.7	*Firefighting Equipment*	MRMD 2129, 2132; OSHA 1910.144, 1910.160; NFPA 20, 25, 80; DCOR Safety Manual Section 3.01
2.4.8	*Emergency Shutdown System (ESD)*	MRMD 2132
2.4.9	*Safety & PPE*	MRMD 2129, 2132; Cal/OSHA 5162, 1602, 3380; OSHA 1910.151, 1910.134; ANSI Z358.1; DCOR Safety Manual
2.4.10	*Instrumentation, Alarm and Paging*	MRMD 2129, 2132; OSHA 5(a)1
2.4.11	*Auxiliary Generator / Prime Mover*	MRMD 2129, 2132; Cal/OSHA 2940.13; OSHA Section 5(a)(1); DCOR Safety Manual Section 4.0
2.4.12	*Spill Containment*	MRMD 2139, 2140; EPA 112.7(c); California Government Code 8670
2.4.13	*Spill Response*	MRMD 2139 & 2140; California Government Code 8670
2.5	Mechanical Integrity/Preventive Maint.	MRMD 2129; API RP 572, 574
2.6	Production Safety Systems	MRMD 2129

3.0 ELECTRICAL SYSTEM AUDIT

3.1	Goals and Methodology	
3.2	Hazardous Area Electrical Classification Dwgs.	CEC 501.15; API RP 500; NFPA 70
3.3	Electrical Power Dist. System, Normal Power	CEC 90, 110; API RP 540; NFPA 70E
	3.3.1 System Configuration	
	3.3.2 Electrical Service Capacity:	
	3.3.3 Electrical System Design:	
3.4	Elec. Power Equip Condition and Functionality	CEC 110, 300, 314, 320, 344, 408, 500, 501; API RP 540; NFPA 70B
	3.4.1 Equipment Condition	
	3.4.2 Safety Procedures	
	3.4.3 Equipment Maintenance Practices	
3.5	Grounding	CEC 501; API RP 540; NFPA 70
3.6	Emergency Electrical Power	MRMD 2132; CEC 700;

		NFPA 70, 110
	3.6.1 System Configuration	
	3.6.2 Equipment and Component Ratings	
	3.6.3 Electrical System Design Safety	
3.7	Electric/Diesel Fire Pumps	NFPA 20; NEC 696
3.8	Process Instrumentation	API RP 540; NFPA 70
3.8	Process Instrumentation	Commission 2129 et seq. API RP 540, NFPA 70
3.9	Lighting Systems	Commission 2129 et seq. CALGEM 1743 (a)-(c)
3.10	Special Systems	Commission 2129 et seq. CALGEM 1743&1747 API RP 75 OSPR GOV CODE 8670 ISA RP7.1, RP 12.1, 12.2 ISA S7.4, S12.4
3.10.1	*Safety Control Systems*	Commission 2129 et seq.
3.10.2	*Gas Detection Systems*	Commission 2129 et seq. CALGEM 1747.6
3.10.3	*Fire Detection Systems*	Commission 2129 et seq. CALGEM 1743&1747 API 2001 & RP 75
3.10.4	*Aids to Navigation*	USCG 33 CFR Subcp. C, Part 67
3.10.5	*Communication*	USCG 33 CFR Subcp. C, Part 67
3.10.6	*General Alarms*	USCG 33 CFR Subcp. C, Part 67
3.10.7	*Cathodic Protection*	API RP 651, NACE RP 01-76, 0675

4.0 SAFETY MANAGEMENT PROGRAMS

4.1	Goals and Methodology	
4.2	Operations Manual	PRC 8758; MRMD 2129, 2175
4.3	Spill Response Plan	MRMD 2129; Cal/OSHA 3220; CCR Title 14 Sections 815-818; BSEE 254; DOT 194; EPA 112;
4.4	Training and Drills	MRMD 2132; Cal/OSHA 6507
4.5	Safety Management Programs	MRMD 2129, 2132; Cal/OSHA 6507 Cal. Government Code 8670; EPA 112.7; API RP 75

5.0 SAFETY MANAGEMENT PROGRAMS

5.1	Goals of the Human Factors Audit	
5.2	Human Factors Audit Methodology	MRMD 2129(b) & (c); Commission SAMS API RP 75; BSEE Subpart S

Appendix C
References

GOVERNMENT CODES, RULES, AND REGULATIONS

CCR California Code of Regulations

Title 2, Division 3, Chapter 1. State Lands Commission

2129 *General Provisions, including references to "all applicable laws, rules, and regulations of the United States and the State of California" and "good oilfield practice".*
2132 *Production Regulations*
2132(g) *Production Facility Safety Equipment and Procedures*
2175 *Manual Content*

Title 8, Division 1, Chapter 4. Division of Industrial Safety [Cal/OSHA]

3220 *Emergency Action Plan*
3273 *Working Area*
3340 *Accident Prevention Signs*
4002 *Moving Parts of Machinery or Equipment*
4650 *Storage, Handling, and Use of Cylinders*
5162 *Emergency Eyewash and Shower Equipment*
5194 *Hazard Communication*
6151 *Portable Fire Extinguishers*
6533 *Pipelines, Fittings, and Valves*

Title 14, Division 1, Subdivision 4. Chapter 3. Subchapter 3 [CDFW]

815-818 Tank Vessel and Marine Facility Oil Spill Contingency Plan

CFR Code of Federal Regulations

Title 29, Subtitle B, Chapter XVII [OSHA]

§5(a)(1) *General Duty Clause*
1910.106 *Flammable Liquids*
1910.144 *Safety Color Code for Marking Physical Hazards*
1910.146 *Permit-Required Confined Spaces*

Title 30, Chapter II, Subchapter B [BSEE]

Part 254 *Oil-Spill Response Requirements for Facilities Located Seaward of the Coast Line*

Title 40, Chapter I [EPA]

Part 112	*Oil Pollution Prevention*

Title 49, Subtitle B, Chapter 1, Subchapter D [DOT]

Part 194	*Response Plan for Onshore Oil Pipelines*

INDUSTRY CODES, STANDARDS, AND RECOMMENDED PRACTICES

ANSI — AMERICAN NATIONAL STANDARDS INSTITUTE

Z358.1	*Emergency Eyewash & Shower Standard*

API — AMERICAN PETROLEUM INSTITUTE

RP 51R	*Environmental Protection for Onshore Oil and Gas Production Operations and Leases*
API 510	*Pressure Vessel Inspection Code: Maintenance Inspection, Rating, Repair, and Alteration*
API 570	*Piping Inspection Code*
RP 574	*Inspection Practices for Piping System Components*

ASME — AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Boiler and Pressure Vessel Code, Section VIII, “Pressure Vessels,” Div. 1 and 2

NFPA — NATIONAL FIRE PROTECTION AGENCY

25	*Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*
70B	*Electrical Maintenance*

CEC — CALIFORNIA ELECTRIC CODE

90.1	*Introduction: Purpose*
110.3	*Examination, Identification, Installation, Use and Listing of Electrical Equipment*
110.7	*Envelope Air Sealing*
110.10	*Mandatory requirements for solar readiness*
110.16	*Arc-Flash Hazard Warning*
110.22	*Identification of Disconnecting Means*
110.26	*Working Spaces around Electrical Equipment*
230.79	*Service Entrance Conductors*
314.23	*Fastening Methods for Electrical Boxes*
344.30	*Securing and Supporting Rigid Metal Conduit*
408.4	*Circuit Directory or Circuit Identification*

500	*Hazardous (Classified) Locations, Classes I, II, and III, Divisions 1 and 2*
501.15	*Sealing and Drainage*
501.30	*Bonding in Hazardous (Classified) Locations*
700	*Branch Circuit Emergency Lighting Transfer*
700.12	*Emergency Systems and Power Source Considerations*

Appendix D
Team Members

FACILITY CONDITION TEAM

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ELECTRICAL TEAM

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