



human energy™

# PMLS Application on Big Foot TLP

Big Foot Project  
January, 2017



# Outline

- Introduction
- Project Development Overview
- Big Foot Electrical System Overview
- PMLS Design & Application
- PMLS Commissioning



# Field Development Overview

## Big Foot Project

### ■ Tension Leg Platform (TLP) Location:

- Walker Ridge 29 (WD = 5185 ft)

### ■ Facility:

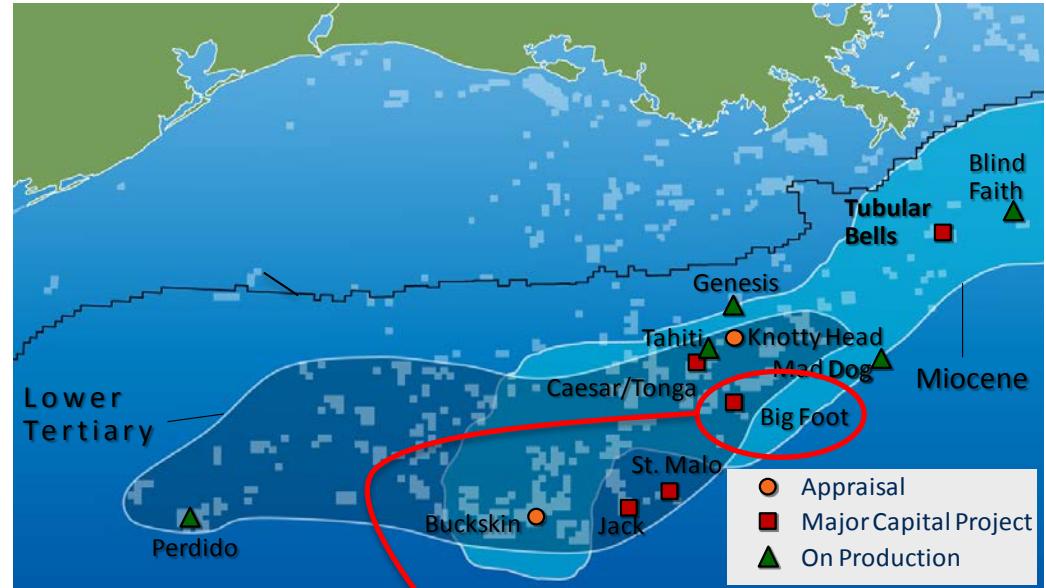
- 3 Modules: Process Module, Utility Module, Drilling Module (8,000 tons a piece)
- Nominally Living Quarters: 2,000 tons

### ■ Facility Capacity:

- 75K BOPD
- 25MMSCFD
- 100K BWPD Injection

### ■ Facilities Particulars:

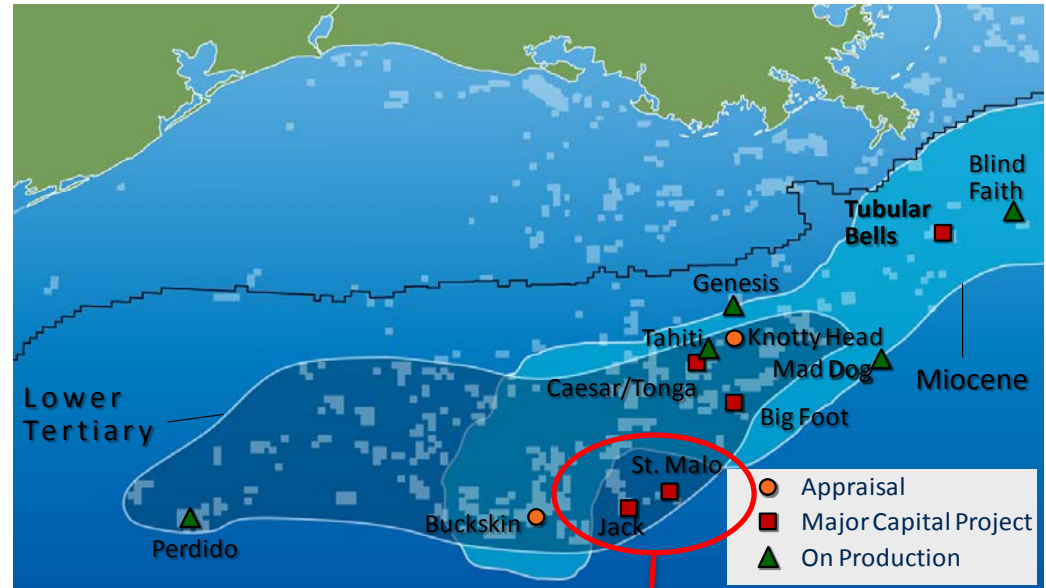
- Dry trees – 15 slots (8 production wells, 3 water injection wells, 4 spare slots)
- Drilling Rig (Rig Contract with Nabors), for drilling, completion, and future well intervention
- Artificial Lift: Electrical Submersible Pumps (ESPs)
- Living Quarters: 200 Personnel on Board



# Two Sister Projects

## Jack and St Malo Project

- **Two Platforms of similar electrical systems.**
  - Bigfoot (BGF)
  - Jack and St Malo (JSM)
- **JSM Facility:**
  - 3 Modules: Process Module, Generator Module, Compressor Module
  - Nominally Living Quarters:
  - Total of 20,000 tons of topsides.
- **JSM Capacity:**
  - A hub production facility with a capacity of 170,000 barrels of oil and 42.5 million cubic feet of natural gas per day.



# Power Systems for Bigfoot Platform

- Offshore power systems are fragile
  - Must operate reliably
  - Must survive contingencies  
high-speed load shedding
  - Must have flexibility to  
synchronize islands
- Power distribution system
  - Redundant
  - Flexible
  - Fault-tolerant



# SEL Power Monitoring and Load Shedding System (PMLS) Overview

- User interface
  - Visualization
  - Control
  - Alarming
  - Trending
  - Automatic Event Retrieval and Archiving
  - Engineering access
  - Onshore access
- High-speed load shedding
- Automatic synchronizing
- Simulation



# SEL Power Monitoring and Load Shedding System (PMLS) Overview

Primary operational & functional roles:

- Operator Interface – Allows operators to view and supervise status of platform's power grid, set operational parameters, and issue control commands to power system equipment.
- Load Shedding – Intelligent automatic reduction in load in response to predetermined contingencies to balance electrical supply and demand.
- Synchronization –
  - a) Automatic synchronization of the emergency and hurricane generator to the 13.8kV bus.
  - b) Automatic synchronization of the two Tie Breakers on main generation switchboard.
- PMLS Diagnostics – Provides tools to quickly and easily identify and diagnose system health and communication faults.



# SEL PMLS Security and User Levels

Level (Low to High)	Description	Navigate the HMI	Change LS Priority	Operate Breaker and Ack. Alarms	Change Settings	Account Management
1	Viewer	√				
2	Operator	√	√			
3	Electrician	√	√	√		
4	Engineer	√	√	√	√	
5	Administrator	√	√	√	√	√

