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

<table>
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<th>Level (Low to High)</th>
<th>Description</th>
<th>Navigate the HMI</th>
<th>Change LS Priority</th>
<th>Operate Breaker and Ack. Alarms</th>
<th>Change Settings</th>
<th>Account Management</th>
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