Santos is one of Australia’s largest domestic natural gas producers, with 3,200 employees and a market cap of nearly $14 Billion (AUS). In 2013, Santos produced 51 million barrels of oil. The Gladstone Liquefied Natural Gas (GLNG) project includes four coal seam gas or coal bed methane production fields, 260 miles of pipeline and an LNG plant with central control in Brisbane.

Santos is working with nine development partners, including Total, KOGAS, PETRONAS, Chevron, ExxonMobil, ConocoPhillips, GDF SUEZ, Woodside and Apache Energy. Because of strong global competition, they needed an evergreen strategy to help keep the focus on developing their assets, rather than dealing with unplanned outages.

Analyzing and optimizing Santos GLNG’s wells on a daily basis required heavy reliance on implementing best practices and automation of the maintenance management system as well as feeding real time data to the control center. With that data collected, Santos also uses Failure Mode Effects Analysis (FMEA) to focus its maintenance efforts.

Questions?
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**Challenge & Opportunity**
Because of the area covered, the biggest safety risk was driving between facilities. However, the primary challenge faced by Santos engineers was to increase production volumes 7X by the end of 2014. Working with a second tier resource (coal seam gas or coal bed methane), Santos needed to maintain very high levels of productivity in order to develop and market that resource economically. Plant availability was a critical concern, and had to be in the mid-90% range or higher.
Because of the geographic area that operations covered and the high level of asset availability needed, Santos looked at offshore practices and a high concentration of machine-to-machine connectivity to optimize their operations over such a large geographic area.

One asset of particular concern was down hole pumps. Positioned approximately one kilometer in the ground, the cost to maintain or even replace those assets was considerable. Using Meridium to consider different process variables to compare with real time asset data, Santos has been able to avert failures of this asset, and has been able to maintain and restart operation before significant failures happened.

The operating and maintenance philosophy used by Santos was one of:

- Remote Central Control
- Predictive Condition Monitoring
- AMS Analytics
- Expansion
- Asset Health
- Policy Manager

In order to meet their philosophy and production goals, Santos engineers knew that they needed to:

- Minimize field travel – biggest safety risk
- Connect losses to specific asset failures
- Maximize field productivity
- Minimize OPEX
- Sustain robust

Alignment with Meridium workflows offered an end-to-end strategy for Santos. Santos engineers review process, maintenance and equipment health data to help them make timely and informed decisions. Meridium Failure Mode Effects Analysis (FMEA) is used to verify that planned maintenance will actually improve availability, and that they aren’t wasting time on assets that don’t need maintenance. Combining feedback from maintenance teams with the information from the Meridium Mechanical Integrity and Failure Elimination solutions, Santos learned simple steps they were not taking that could have a major positive effect on availability.

Conclusion
Applying Meridium Enterprise APM as the core of its new maintenance management system, yielded the following benefits for Santos GLNG:

- A big picture view enabled by integration
  - Clear visibility of losses drives gap closure (presented in Volume or $)
- Centralized decision-making that prioritizes field work and speed proactive maintenance
- Visualization of upside/optimization that sets vision and potential
- Compressor fleet availability performance increases
- Bad Actor & Root Cause Analysis identifies and eliminates the repeat offenders
- Possibility for field/well assets expansion

Meridium solutions used: APM Failure Elimination
APM Strategy
APM Mechanical Integrity