



**Alyeska Pipeline Operationalizes Asset Strategies
with Itus APM**

Annual maintenance budget opportunity

10%

CHALLENGE

The Reliability team needed an approach to assess current equipment risk.

The company wanted to optimize O&M spend based upon actual asset performance.

SOLUTION

Utilized Itus APM to analytically evaluate maintenance history, identify bad actors and implement optimal asset strategies to lower O&M costs.

BENEFITS

Insights to equipment risk changes from original RCM studies

Strategies effectiveness continuously evaluated against operating data

Identified underperforming equipment and optimized strategies



Summary

Alyeska is a mature pipeline company with a mix of assets that range from older to newer. Over the years, the organization has followed good asset management practices which includes investments in Reliability Centered Maintenance studies. The energy transition that is underway means a very significant shift away from fossil fuels. This has driven changes in asset investment decisions, regulatory requirements, and how organizations like Alyeska invest in technology like artificial intelligence. These mega-trends impact asset management. As such, Alyeska needs to make decisions over:

- How to compete as a mature organization with aging assets
- OpEx asset lifecycle spend and CapEx planning
- How to reduce their carbon footprint

Alyeska's reliability team planned the next steps on the path to achieve these future outcomes.

- **Step one** was to generate a discrete list of under-performing assets, with quantified opportunity cost and measurable asset risk exposure.
- **Step two** combined existing data sources to establish a more complete context of the asset which enabled correlations that were previously difficult or impossible to make.
- **Step three** leveraged existing RCM studies and operationalized the resulting strategy to monitor compliance, watch for emerging threats, and changes to the risk profile.

Itus APM provides Alyeska with an objective and lucid view of asset cost, risk, and performance. It enabled a defensible decision to remove 10% of cost from the maintenance budget and exposed failure risk that would have otherwise gone undetected. The solution identified under-performing assets and a process to remediate them. With the implementation of operationalized asset strategies, the stage is set for continuous improvement as equipment ages and business objectives shift.

Itus APM provides a practical process to manage asset failure risk, implement asset strategies and optimize effectiveness based upon actual operating conditions

A culture of asset management to build upon

Despite the pipeline's complexity, remoteness, and harsh operating environment, Alyeska seeks to continually improve the productivity of its organization's expertise, reduce operating expenses, and optimize value from its assets.

The pipeline has a long history of innovation and applying generally accepted engineering practices. In the mid-2000s, they invested in Reliability Centered Maintenance (RCM) studies. The result of this work was clear visibility of asset risk exposure and defined a plan of investments needed to sufficiently reduce that risk.

Ten years later, the initiative was taken to update their understanding of asset risk, cost, and performance. There was an opportunity to leverage those previous RCM studies as a baseline for risk. This initiative also presented an opportunity to leverage investments made in applications including OSI Pi, Oracle EAM, Ivara, and condition monitoring.

The Alyeska team recognized Itus APM's modern capabilities to overcome the customary technical difficulty and administrative burden of implementing RCM studies.

Itus APM technology enabled Alyeska to review and update these critical asset strategies. More importantly, it enabled them to operationalize these asset strategies and take advantage of a dynamic approach to safely maximizing predictable production, at the lowest sustainable cost, while responding to shifting risk dynamics.

Quantify current risk to prioritize investments

A key limitation to RCM and FMEA studies is that they produce a 'point in time' analysis based the data and operational model at that time. As time passes, risk shifts, costs increase, equipment will age, and stakeholders will change and so will their expectations. All of this can shift away from the assumptions made years ago when crafting the original strategy. The Alyeska asset management team recognized this challenge as production throughput requirements not only changed, but also introduced new potential failure modes that would need to be managed moving forward.

The Alyeska team used Itus APM to expose failure risks that would have otherwise been undetected. They started with an analysis of the Oracle EAM work order history to calculate:

- The failure rate of all assets benchmarked against industry standards
- The average cost and actual consequence of each asset failure
- An operational risk score and the related improvement opportunity for each asset

While the reliability team had an intuitive understanding of some of the existing bad actors, the analysis provided evidence-based justification for go forward with reliability improvement initiatives.

Soon after moving forward with this initiative, the risk assessment process revealed one of its first successes. A population of cooling fans were exhibiting failure characteristics and unexpected risk and cost exposure. This process showed the organization that it had been reacting when the failures occurred and more proactive plans could be put in place to mitigate risk.

With the new insights the team is now able to develop an asset strategy that will leverage proactive techniques to monitor the fan belts and address issues before they drive more expensive reactive work or equipment failure.



Application of reliability limits for early warning

The Alyeska team now has visibility to risk that didn't previously exist. This allows them to identify the riskiest assets with the means to ensure condition-monitoring protections are in place with visible results.

Alyeska has a robust implementation of the OSI Pi process historian which provides key visibility to the operation and control of the equipment. Its APM is built to use OSI Pi data to continually monitor reliability limits, for potential symptoms of failure, as defined in the original asset strategy. This continuous monitoring of time series data comes with automated advisories that Its APM generates according to the strategy parameters. The Alyeska team can now be automatically advised on emerging threats involving:

- Winding temperatures on motors
- Vibration on main pumps & motors
- Changes in flow rates across the system

Reliability limits are designed to give the team early indication of changes or degradation in the asset based upon the failure modes identified in the RCM. Once conditions of concern are detected, the asset owners are automatically notified of the increased risk and recommended action. This allows them to drive interventions to potentially avoid failure or better plan resources and parts for corrective work in advance to minimize potential downtime impact.





Operationalize strategies to maximize benefit

The Alyeska team had made significant investments in RCM/FMEA studies but were not able to fully unlock the value of the strategies the studies produced. Although core EAM and monitoring solutions were in place, they did not have a dynamic strategy model that allowed them to react athletically when risks and conditions changed.

Like many industrial companies, they had inadvertently created unique islands of information which served only discreet organizational functions:

- **Reliability** – asset strategy database which documented failure modes, risks and mitigation activities
- **Maintenance** – Enterprise Asset Management solution for planning and execution of maintenance activities
- **Operations** – Process Historian for monitoring of key operational conditions

By integrating these core functions and systems, Alyeska was able to remove blind spots in their asset management system. They are now able to operationalize their asset strategies which can have an identified cost opportunity worth 10% of their maintenance budget by addressing underperforming assets.

Operationalized asset strategies fully leverage the knowledge and recommendations from the original RCM/FMEA analysis. Connecting the strategies to actual operating conditions drives continuous visibility of failure risks and the ability to evaluate the effectiveness of the strategy as equipment and operating conditions change.



PRACTICAL | EFFECTIVE | APM

About Itus Digital

Itus Digital offers innovative solutions which optimize the performance of industrial assets. We offer a practical and scalable approach to manage equipment failure risk in real time through Asset Twins. The result? The elimination of unplanned asset downtime, reduction of maintenance costs and mitigation of risks to people and the environment.

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