Discussion Points

• Background & Introduction
• Objective of Reliability Engineering
• Reliability Techniques & Tools Integration
• Values Proposition of Reliability Engineering
• The Reliability Rhythm
• Reliability Integration Activities
• Reliability Integration with Other Disciplines
• Summary
Background & Introduction

Reliability Engineering:

“A field aimed at studying systems or equipment to ensure that it performs as per requirements for a period of time.”

• Variety of tools / techniques – clear, workable knowledge is critical.

• Important to understand the inputs and outcomes to gain a holistic view of asset management.

• Should influence, lead and direct the various engineering disciplines to manage equipment health from a central point.

• To develop a single, optimised asset management plan:
  – Tools & Techniques to be integrated.
  – Roles & Responsibilities to be clear.
Objective of Reliability Engineering

• To assist in bringing about effective asset management.
• To improve stability, maintainability & predictability.
• To applying intelligence & a holistic view towards operations.
• To enable safe & cost effective utilisation of assets.
• To promote the utilisation of effective asset management practices.
Reliability Techniques & Resources

- GO's
- RAM
- Strategies
- WO History
- Reporting
- APT
- APT’s
- Integrity Studies
- Condition Monitoring
- Operating Parameters
- OEE
- Inspections
- BOM’s
- QCP’s
- Spares
- Data Analyses
- Audits
- Risk Ranking
- Check Sheets
- Metrics
- Criticality
- NCM
- RCA’s
- MTBF

... and many more...!
Integration – The Method in the Madness

Asset Base
Risk Based Inspections
Maintenance Strategies

Inherent Risk
Life Cycle Analysis
General Integrity Issues
Design Base
Spares Management
Project Identification

Reference Point

Supporting Activities
APT Studies
Non-Conformance Management
Root Cause Analyses
Coaching & Training

Data Analysis
Overall Equipment Efficiency (OEE)
Operations Within Agreed Parameters (OWAP)
Mean Time Between Failures (MTBF)
Work Order Analysis
All Other Metrics

Intelligence & Interpretation
Monthly Progress Reports
6 Monthly Status Reports
Integrity Studies
Values Proposition of Reliability Engineering

**Strategic**

Apply Asset Management Principles to enable Safe & Cost Effective Utilisation of Assets throughout the Asset Life.

- Promote utilisation of effective & efficient asset management practices by Operations.
- Ensure Operations competency in the relevant practices through training & facilitation.
- Monitoring, reporting, initiating & trending continuous improvement of the Reliability processes

**Tactical**

- Custodians of the Risk Based Inspections (RBI) Process to use risk to prioritise & optimising inspection programs.
- Custodians of the Equipment Maintenance Strategy Process (EMS) to identify technical feasible & cost efficient tasks to manage failure modes.
- Custodians of the Inherent Risk Ranking Process to ensure critical assets are identified, to enable prioritisation of projects & maintenance, to manage spares holding philosophies effectively.
- Involvement in the Asset Renewal Program to identify renewal items & integrity concerns in order to optimise efficiency & integrity.
- Monitoring, Tracking & Reporting on Reliability Metrics & Performing Analyses to create line of sight & to improve on efficiency & integrity.
- Custodians of the Non-Conformance Management (NCM) Process to manage and maintain control over incidents & deviations with the intent to share learning & eliminate failures.

**Operational**

- Train & coach operations personnel to be competent in Reliability Tools & Processes.
- Perform analysis of data & facilitate RBI sessions.
- Assist in identifying renewal projects and integrity concerns based on RBI input.
- Provide input by means of data analysis inputs & asset management principles in the EMS meetings.
- Facilitate Risk Ranking Sessions, communicate & document high risk items – including critical spares.
- Track reliability metrics and perform statistical analyses to optimise asset health & to identify bad actors & opportunities.
- Facilitate, track and drive RCA sessions to eliminate & understand failures.
- Perform APT Studies.
- Submit Reliability Reports.
- Conduct Integrity studies.
The Reliability Rhythm

Attend Daily Meeting ➔ Trend / Concerns ➔ No ➔ Attend Weekly Planning Meeting ➔ Elevate Finding & Recommendations ➔ Long Term Concerns

Yes ➔ Collect Data to Elevate at Weekly Meeting

Detailed Data Analyses ➔ Heat Maps / Bad Actor Identification ➔ Data Intelligence & Interpretation

Integrate Information from All Sources ➔ Detailed Reporting ➔ Develop Improvement Plans ➔ Reliability Reporting ➔ Elevate Findings & Concerns

Yes ➔ Liaise with Engineering ➔ Liaise with Operations

Review Daily Ops. Logs ➔ Review CBM Input (Vibration, OWAP)
Reliability Integration Activities

Reliability Metrics

Daily Assurance

Status & Progress Reporting in Monthly Reports

6 Monthly Reports elevating Bad Actors

Integrity Study

Execution by Disciplines

FIFTY FIVE - The way to integrated asset management
Reliability Integration with Other Disciplines

Strategic Support

Technical Landscape & Value Improvement Plans

Operations Support

Reliability Reporting

Reliability Daily Assurance

Engineering Support

Governs & Provides Multi-Disciplinary Engineering Support

Reliability Integration with Other Disciplines
Summary of Integrated Reliability Approach

Applying Asset Management principles to enable the safe & cost effective utilisation of assets through their life cycle.

Enabled, Empowered & Informed Plant Support.
“Almost all quality improvement comes via simplification of design, manufacturing... layout, processes and procedures.”

- Tom Peters, Author