

Building a Reliability Program

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Building a Reliability Program



Aspects of Reliability

- Develop and obtain buy-in on goals and objectives.
- Establish a “Reliability” function not a “Repair” function.
- Perform an annual review of the critical equipment list and perform a Failure Modes and Effects Analysis
- Implement a thorough inspection program

Aspects of Reliability

- Perform and respond to condition based maintenance
- Optimize skilled trades capabilities
- Optimize spare parts to what is needed
- Understand and control lubrication, contamination, and looseness
- Institutionalize root cause analysis

Aspects of Reliability

- Incorporate reliability into the capital program
- Maximize the benefits of shutdowns
- Establish a Quality Control program
- Total Team Effort

Goals & Objectives

98% Up

- Committed team is essential
- Both Management and Trades



“Reliability” not “Repair”

- Develop a strategy
- Communicate plans
- Consistently communicate about reliability

Reliability!



Key Performance Indicators

- Cost?
- Availability
 - Plant
 - Process Units
- Mean Time Between Failures
- Efficiency
- Response Time



Key Performance Indicators

What is the \$ Value of Plant Availability?

- 100 MGPY Plant
- 1% improvement in availability
- \$400,000 in tangible benefits
- Intangible benefits for yield, energy, quality, and customer satisfaction.

Review of Critical Equipment List & Failure Modes and Effects

- Develop a matrix for evaluating “critical”.
- Include expected frequency and consequence
- Prioritized – identify absolutely critical components
- Include back-up systems and equipment
- Review failure history
- Review and update the PM program based on criticality
- Consider planned life and replacement

Critical Equipment Example

	A	B	C	D	E	F	G
	Failure Probability	Loss of Production	Safety Risk of Failure	Environmental Risk of Failure	Quality Impact of Failure	Replacement Cost	Spare Parts
	4 = Possible in a day	4 = Immediate > day	4 = Critical injury possible	4 = Reportable	4 = Serious Quality Impact	4 > \$50,000	4 = Foreign/Long Lead
	3 = Possible in a week	3 = Immediate hours	3 = Potential for injury	3 = Cleanup likely	3 = Will impact customer	3 > \$15,000	3 = 1 day expedite
	2 = Possible in a month	2 = Immediate minutes			2 = May impact customer	2 > \$5,000	2 = locally available
	1 = Possible in a year	1 = Bypass/Buffer/Spared	1 = Injury not likely	1 = Minor or no cleanup	1 = Managable impact	1 < \$5,000	1 = at the plant

Criticality Rating (CR) = (A x B) + (C + D + E + F + G)

Description	CR							
Main Transfer Blower	23	3	3	3	3	1	4	3
Weigh Belt	17.5	2	4	1	1	1	3.5	3
Bin	15	1	3	4	3	1	3	1
Meal Bin	15	1	3	4	3	1	3	1
Mingler	15	2	3	1	3	1	2	2
Scalper	14	1	3	0	3	3	3	2
Hammermill A	13.5	3	1	3	1	1	3.5	2
Hammermill B	13.5	3	1	3	1	1	3.5	2
Diverter	13	1	3	0	1	2	4	3
Transfer Pipe 8"	13	1	3	3	3	1	2	1
Transfer Auger	12	1	3	1	3	1	2	2
Plenum Baghouse	12	1	3	1	3	1	2	2
Plenum Baghouse - Meal B	12	1	3	1	3	1	2	2
Meal Transfer Auger	12	1	3	1	3	1	2	2
Rotary Air Lock to Blow Line	10	1	3	1	1	1	2	2
Meal Leg	10	1	3	1	1	1	2	2
Scalper Transfer Auger	8	1	3	0	1	1	2	1
Rotary Valve A	8	1	1	1	1	1	2	2
Rotary Valve B	8	1	1	1	1	1	2	2

Thorough Inspections

- Utilize people with different perspectives
 - Tradesmen, Engineers, Managers, JHSC, etc.
- Defined responsibilities, routes, checklists

Condition Based Maintenance

- Which CBM techniques are applicable and feasible?
- Implement a CBM program

Optimize Skilled Trades Used

- Identify where it makes sense to establish maintenance contracts – proper scope.
- Establish high expectations from contractors, and then hold them to it.
- Define prioritized skill requirements.
- Identify training needs.
- Identify procedure needs.
- Implement a plan to address needs.
- Perform frequent communication sessions.

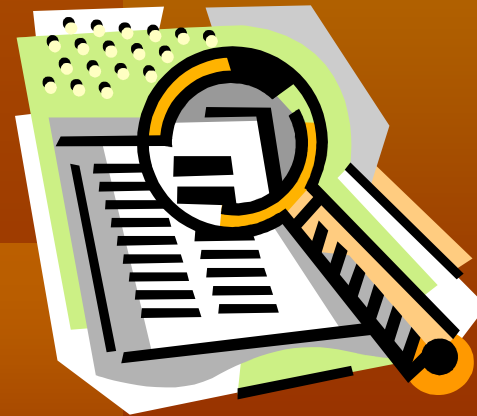
Optimize Spare Parts to Needs

- Develop a strategy that corresponds to critical equipment and business needs
- Regularly review strategy and needs
- Cost management
- Contract management
- Receive and QC parts appropriately
- Proper storage
- Inventory management
- Expediting capabilities
- Reporting

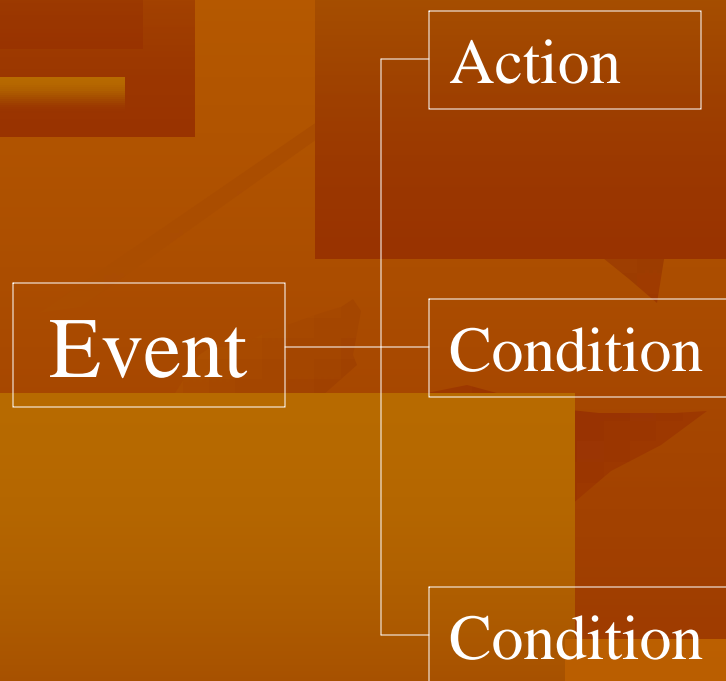
Understand and Control



- Lubrication
- Contamination
- Looseness (vibration)



Root Cause Analysis (RCA)



- Apply RCA to all significant unplanned events
- Analyze failures – implement effective solutions
- Train support teams
- Institutionalize

Incorporate Reliability Into Capital Program



- Capital equipment purchased with feedback from the reliability program.
- Implement redundancy where it is justified.

Maximize Benefit of Shutdowns

- Weekly, Monthly / 6 Week, and Yearly
- Well planned, organized, and executed
- Post shutdown review – action plans

Quality Control Program

- For PM procedures, repair procedures, materials, work performed

Team Effort



- Team established that is focused on success.
- Strong team members to match the challenge.
- A structured and detailed plan.
- Excellent communication!

What are Your Next Steps?

- Revisit or Define your Goals and Objectives
- Put together a Reliability Team
- Establish a Facilitator / Leader for the Team
- Communicate the importance of success
- Go forward – and have fun!

Building a Reliability Program

Questions and Feedback?

Thank-you!