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Estevan Seminar

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Structured Maintenance Management and Pipeline Integrity...or What is your Maintenance Strategy?

My Objective

- Introduce some concepts that you may not have worked with in a field maintenance setting
- Offer a few examples on how things might work
- Discuss a success story
- A few tips on getting started

Some common Maintenance Strategies

- Run to failure
- Shutdown overhaul
- Preventative
- Predictive

Often a mixture of strategies depending on criticality of asset.

Implementing a Field Maintenance Strategy

1. Set your Objective: What do you want to achieve?
2. Define your Strategy: How are you going to achieve the objective?

3. Implement: What do you need to do?

Objective: Cut maintenance costs and increase uptime and production?

- Your objective should be
  - Specific ,Measureable, Attainable, Realistic, Time-bound

"We will cut maintenance costs by 20 percent and increase production by 10 percent in 2010."

Decide on Strategy: Preventative

1) Inspection and observation

2) Intervention and Replacement
   - Use the information to make good investment decisions
   - Plan schedule and execute work more efficiently

If executed correctly, (PMs done on time and correctly) 90% of failures will be eliminated.

Strategy: Become more effective and productive

Systematically Plan and Schedule work

- Ensure operations are maintained safely
- Move from being reactive to preventative
  - Have more planned work versus unplanned work
- Establish and use KPIs to measure and improve processes

Prioritize assets based on risk to the business and equipment condition

Measuring Performance

- Leading KPI's and goals
  - 90% of all work is planned and scheduled
  - 85-90% Schedule Compliance
  - 100 % of maintenance personnel (or vendor's) time is covered by a work order
  - 100 % Preventative Maintenance work orders are written with procedures (safety) , task steps, specifications, tools, etc.
    - PMs are completed during scheduled time
  - Technician "Time on tools" > 50%
    - "The time spent on a prescribed task minus delays"

- Lagging KPIs
  - Production Output
  - Maintenance cost
  - Mean time between failures (critical equipment)

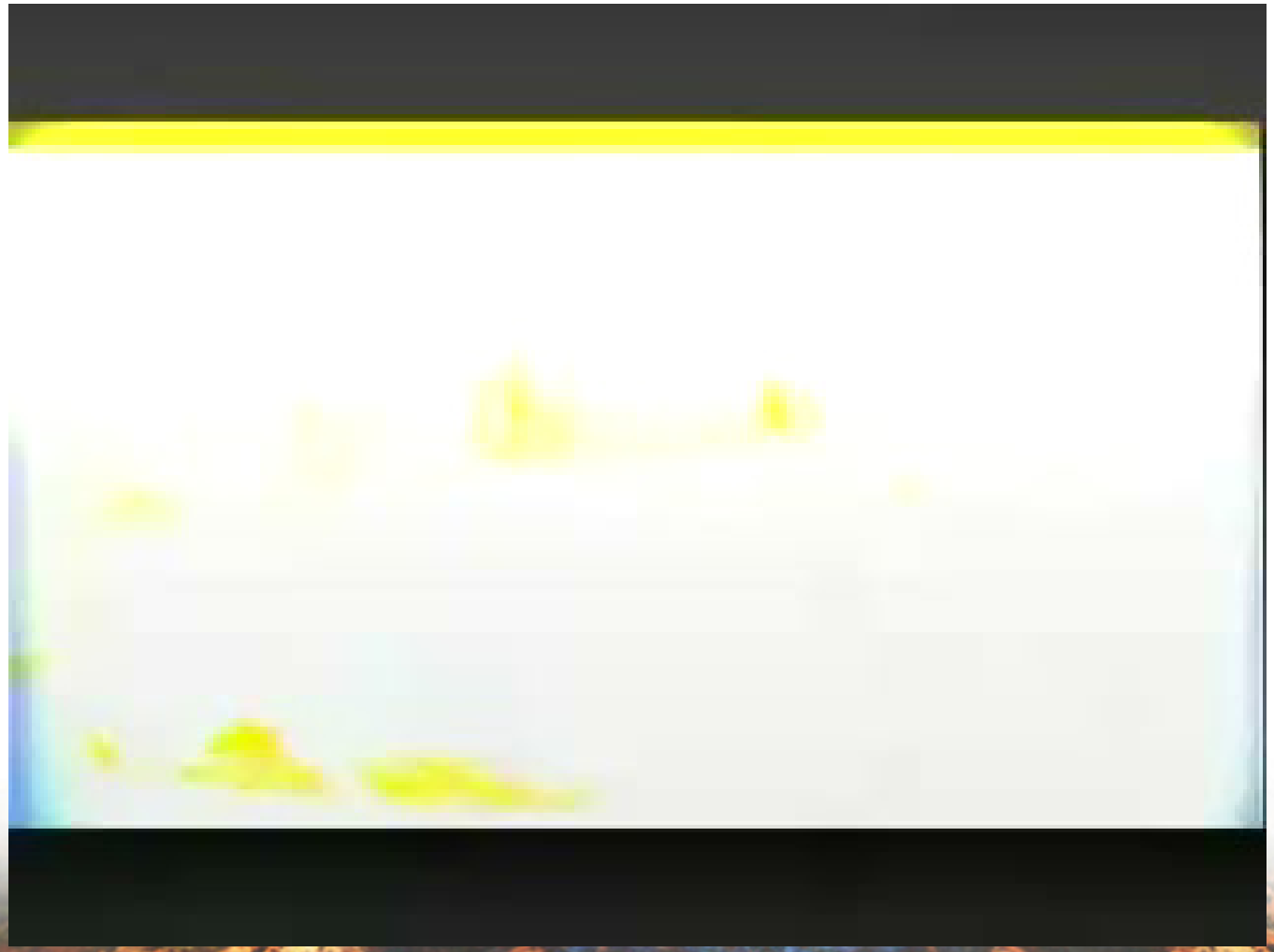
Just a minute.....

Sounds good in theory ...but....

- Might work in a plant but not in the field
- We don’t have the tools or people to do that
- That is a lot of work
- We have been successful with our current practices
- We’ve always done it this way
- By the way...this is getting boring

Planned work

Unplanned Work



“Planned Work”

Defined:

- All tools and equipment organized
- All parts on hand
- All trades/expertise required available
- All permits in place
- Required communication complete

Benefits of Planning and Scheduling: Resource Utilization

KPI: Time on tools > 50%

- Typical (in plant) is 30%
- Planning improvement is minimum 25%
- Three person crew; 10 hour days
  - 3X(.3X9) = 9 hours “wrench time”
  - 2X(.55x2) = 10.5 hours wrench time”

Conclusion: If you dedicate resources to planning you will be better off

What impacts “time on tools”?

“The time spent on a prescribed task minus delays”

1. Direct: Relates directly to the planning/organizing process
2. Indirect: (Scheduling) Impacted by others
3. Administrative (Burden)

What impacts “time on tools”?

1. Direct: Relates directly to the planning process
   - “Gathering of, or returning for, items used for the prescribed task.”
     - Troubleshooting, parts, procedures, drawings, specifications, tools (equipment, resources)
2. Indirect: (Scheduling) Impact by others
   - Deficient strategy, timing, and priority
   - Equipment not ready, permits, support resources
   - Poor coordination of expertise
3. Administrative: Burden
   - Waiting for instructions/permits, Meetings, Travel, breaks, weather, paperwork, skill level

An example of where it works:

Scope of Work:

- 2,400 SWB,
- 1,500 Shut in/suspended
- 400-600 new annually
- >30,000 pieces equipment
- 26,000 square KM

Objectives

- Reduce costs
  - Reduce downtime
  - Reduce overhead
  - Maximize “time on tools”
  - Extend asset life

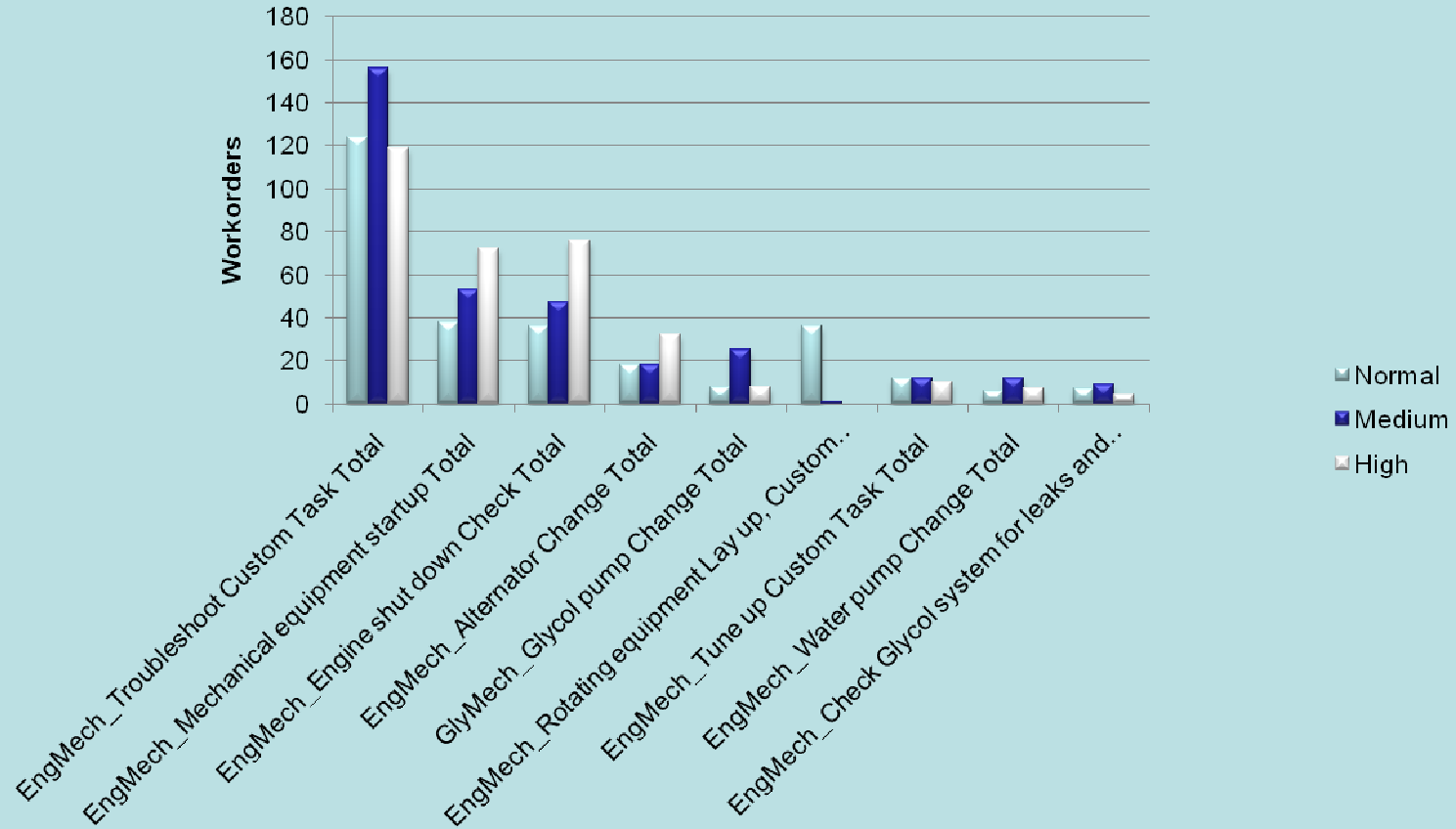
Solution

- Eight planners/schedulers
- 18 field mechanics on 10/4 shifts
- Computerized Maintenance Management System
- Integration: Planning and scheduling of all work from all vendors

Results

- Pilot showed decrease in costs of 30%
- Stability of technicians; planners on site
  - Enhanced communication
  - Team approach
  - Accountability
- Ability to manage information = Ability to measure results

Top Ten Mechanical Service Types and Importance



Getting Started: Some tips

Look at it like a project

- This is an information system project (CMMS)
- This is a culture change project
  - Put together a multifunctional team
  - Get a strong management sponsor
- Develop the business case
- Build the project plan
- Be prepared to train and coach for consistency of execution

CMMS Tool Choice

Some Key requirements for Field Maintenance success

1. Ease of use:
    1. Your technicians should be able to use to close work orders in the field
    2. Internet based: minimize server and administration costs (IT involvement)
    3. Low cost: Full featured alternatives < $30,000 with unlimited users

Summary

- Significant, sustainable, cost savings and uptime can be gained by adopting a systematic approach
- New technology allows “plant maintenance” concepts to be cost effectively executed in the field

Tartan Canada Corporation: Our Purpose

- “Low cost maintenance since 1953.”
- Brand Promise
  - Low rates
  - Safety Excellence
  - Quality workmanship
  - Effective processes