Maintenance Managers Working Group (MMWG)

Site Update

Dennis Vigil

May 23, 2019
MMWG Site Update

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• Timeline and Charter
• Organizational Structure and Subgroups
• Recent MMWG Meeting Update
• MMWG-03 Subgroup Example
• Questions??
The STRATEGY for maintenance improvement requires a clear understanding of current performance as compared to best maintenance practices and to then focus the entire organization on fully understanding and implementing excellence in maintenance management.

Mission
The MMWG goals are to improve maintenance effectiveness and equipment reliability by continuously improving the maintenance and work control departmental performance. This initiative will provide consistent strategic and tactical standards by developing best practices, operating experience, and by further defining and improving maintenance management.
Organizational Structure and Subgroups

USMMWG
Steering Committee
Ed Keith, LANL
Reed Sharp, LANL
Marc Stewart, AWE
Kris Olson, LLNL
Kevin Pace, INL

MMWG-01
Metrics
Mentor: Kevin Pace, INL
Lead: Chris Evans, SNL

MMWG-02
Predictive Maintenance
Mentor: Kris Olson, LLNL
Mentor: Shawn Hailey, LANL
Lead: Michelle Foster, ORNL

MMWG-03
Applied Delivery Technology
Mentor: Ed Keith, LANL
Mentor: Kris Olson, LLNL
Lead: Dennis Vigil, LANL

MMWG-04
Professional Development/ Training
Mentor: Donna Governor, LLNL
Lead: Michael Johnson, CNS

MMWG-05
Planning, Reliability & Maintainability
Mentor: Fred Berl, LANL
Lead: Joe Boudreaux, CNS
Lead: Kirsten Aylward, SRS

MMWG-06
Asset Management
Mentor: Reed Sharp, LANL
Mentor: Kris Olson, LLNL
Lead: Marc Stewart, AWE

New subgroup as a result of last weeks meetings at Fermi
Recent MMWG Meeting

- Fermi Labs, Chicago, IL
- 79 individuals in attendance
- NNSA HQ, NNSA, Office of Science, AWE (UK), Defense Nuclear Facility Safety Board
- New subgroup focused on Asset Management formed
- Successful collaborations discussed and captured

<table>
<thead>
<tr>
<th>Readiness Level</th>
<th>Description</th>
<th>Maturity</th>
<th>Notes</th>
<th>Proposed Funding</th>
<th>Engineering (Task 05)</th>
<th>Maintenance (Task 06)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Technology Identified</td>
<td>We Know It Exists</td>
<td>Awareness only – i.e. “on the radar”.</td>
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<tr>
<td>1</td>
<td>Capability Understood</td>
<td>We Know What It Can Do</td>
<td>Understand the extent and limit of its capabilities, both as described and future potential.</td>
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<tr>
<td>2</td>
<td>Potential Applications Identified</td>
<td>We Know Where We Could Use It</td>
<td>Have linked the known / potential capability with real applications. Have completed a cost / benefit analysis.</td>
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<tr>
<td>3</td>
<td>Technology Available for Demonstration</td>
<td>We Have It Available For Trial Use</td>
<td>Have technology available and people to operate it on a demonstration basis, for trials or experimentation.</td>
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<tr>
<td>4</td>
<td>Technology Developed for Application</td>
<td>We Have It Customised For A Specific Purpose</td>
<td>Have customised it for each specific intended application (either modified internally or specified requirements for procurement)</td>
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<td>5</td>
<td>Technology Deployed</td>
<td>We Are Using It</td>
<td>Using it for its intended purpose. Validating expected benefits against final actual cost.</td>
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Recent Progress (MMWG-03 Subgroup Example)

Maintenance Manager’s Working Group—03 Applied Delivery Technology
Mentor: Ed Keith, LANL
Mentor: Kris Olson, LLNL
Facilitator: Dennis Vigil, LANL

Summary Task Statement
Scope: Compare and contrast maintenance technologies (other than Predictive Maintenance) that are being used across the complex that can increase efficiencies and effectiveness or decrease costs. Initial focus is on:
- Drones/Remotely Piloted Vehicles for Maintenance Activities
- Motion Amplification
- Mobile Work Packages
- Augmented Reality

Tangible Benefits
- Improved safety — avoid having to put people at height or into hazardous situations/locations
- Better for the environment — can be used to inspect hazardous environments with reduced environmental impact
- Cost savings — significantly reduce the cost of operations
- Inspection efficiencies — significantly reduces set-up time of equipment (scaffolding/cranes etc.) and improves response times
- Multi-functional - Systems/Platforms can be automated such as mapping, remote monitoring, measuring, hazmat detection and thermal imagery
- Greater accessibility and safety controls for ‘difficult to reach’ areas
- Demonstrable commitment to embrace new technologies and explore better, safer ways of working

Recent Progress
- Telecon 2nd Thursday of every month (established)
- 15 LANL flights as of 3/19; Four (4) business cases & ROIs developed
- 1) LPS Inspections on LANL’s PIDAS 2) Environmentally contaminated facilities 3) HE contaminated facility 4) Bridge Assessment
- Submersibles for water tank inspections (LANL, LLNL) 07/18
- AWE multiple flights now flown
- LANL acquired maintenance dedicated drone 9/18
- LANL has four (4) FAA Part 107 certified pilots 2/19
- AWE has two (2) Civil Aviation Authority (CAA) approved pilots
- SRS drone for roof/structural inspections of L facility 9/18
- LANL benchmarked Sellafield ITC (12/18)
- LANL Engineering Institute drones w/ tools program funded
- LLNL is using drones for inspections (roofs, fences & construction)
- AWE has purchased an industrial/military specification drone that will carry multiple payloads
- AWE has received CAA, MoD and Nuclear Security Authority approval to fly UAV’s across its sites

Milestones/Future Collaborative Actions
- Business Case (BC) and Return on Investment (ROI) for submersible inspection by 7/1/18
- 5 Year BC for INL MWP by 7/1/18
- BC/ROI for Motion Amplification by 9/1/18
- 10 successful drone flights by 10/1/18
- Business Case (BC) and Return on Investment (ROI) for drone applications by 1/1/19
- AWE collaborating with the UK Nuclear Decommissioning Authority UAV Project
- LANL Maintenance Technology Center testing of developed prototype tools
- LANL to assess the interior of an HE contaminated facility (Full Scale)
- LANL flight for Peral Cow project using thermography camera
- LANL collaboration with MAGNIX (UK) on technologies
- Expand potential applications and use across the enterprises
- Establish new milestones for FY20 with ADT Group
Questions????