CURRENT ENHANCEMENTS
PG&E Facility Safety Program

October 10, 2013
Managing Risk at PG&E Beyond the ODSP

- Continuous improvement effort that goes beyond the existing ODSP.
- Purpose is to identify and mitigate the risks that PG&E’s generating assets pose to public safety, employee safety, environmental stewardship, electric reliability and regulatory compliance.
- Focus on reducing risks to acceptable levels, in accordance with the characteristics of the various assets.
- 7 Improvements identified, developed, and implemented.
Improvement 1 – Large Dam: Emergency Access
Improvement 2 – Large Dam: Document Normal & Emergency Procedure
Improvement 3 – Surveillance and Monitoring Issues
Improvement 3 – Surveillance / Monitoring Audits

- Current DSSMPs and DSSMRs were deemed generally not helpful to the O&M personnel in performing their dam safety surveillance and monitoring duties.
- Threshold and action values for the instruments at some dams were inconsistent with the existing definitions.
- Lack of clear actions to be taken if threshold/action levels are exceeded.
- For some dams, the alarms shown in the DSSMPs were not consistent with those set in the SCADA system.
- The information in some of the DSSMPs and DSSMRs was not consistent with current practices in the watersheds.
Improvement 3 – Implementation

• Prepare field job aids to simplify communication and reporting of monitoring data collected by O&M staff.

• Review and update DSSMPs, if needed, during the preparation of annual DSSMRs. Consolidate DSSMR / P into one volume for easier record keeping and review.

• Identify threshold and action levels for piezometers and leakage weirs on Instrument Data Recording Sheets. Any differences between the PG&E datum and the USGS datum will be documented on the data recording sheets.

• During preparation of annual DSSMRs, meet with generation supervisors and verify that EAPs and Part 12 reports are current and consistent.

• Prepare standards and procedures for setting SCADA alarm levels and performing periodic testing of the SCADA system. Establish a requirement for concurrence from the CDSE before alarm levels are changed.
Improvement 4 – Small Dam Documentation

[Diagram showing a pie chart and a map with annotations and labels, including elevation and horizontal distance, as well as various geographic markers and data points related to dam safety and failure.]
Improvement 4 - Small Dam Engineering Assessment

- Perform sensitivity analyses for material properties and embankment configurations (e.g., slope inclinations and dimensions).
- Refine inconclusive results with more advanced analyses.
- If the results are still inconclusive, conduct geotechnical investigation and testing to develop more representative material properties and perform surveys to determine actual slope configurations.
- Update dam break analyses and inundation maps for small dams.
- Perform risk-based dam failure analyses to evaluate whether capital improvements are needed.
Improvement 5 – Auxiliary Equipment

• Gates and Valves
• Gate and Valve Actuators
• Mobile Gate Operators (“Mules”)
• Low Level Outlets
• Back Up Generators
• Communication Buildings
Improvement 5 – Water Conveyance

Water Conveyance (Miles)

- High Consequence (13 Canals): 208 miles
- Medium Consequence (7 Canals): 34 miles
- Low Consequence (71 Canals): 126 miles

MITIGATION
(High Consequence, 126 Miles)

- No Mitigation Needed: 111.5 miles
- Mitigation Needed: 14.5 miles
Improvement 5 – Penstocks

1. Inspection
2. Condition Assessment
3. If Necessary, Operate with Restrictions or Shutdown
Improvement 6 – Documentation
## Improvement 7 – In-House Training

### Training Course Assignments by Priority

<table>
<thead>
<tr>
<th>Description</th>
<th>Guidance Documents</th>
<th>Training Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Original</td>
<td>Expanded</td>
</tr>
<tr>
<td>Dam Safety Program Governance</td>
<td>2</td>
<td>5</td>
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<tr>
<td>Dam Inspections</td>
<td>2</td>
<td>11</td>
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<tr>
<td>Surveillance and Monitoring</td>
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<tr>
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<tr>
<td>Testing/Exercising Gates and Valves</td>
<td></td>
<td></td>
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<tr>
<td>Incident Reporting and Review</td>
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<td></td>
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<tr>
<td>Work Management and Compliance Management Processes</td>
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<tr>
<td>Safety and Emergency Response</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Hydro Security Program</td>
<td>3</td>
<td></td>
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<td>Quality Assurance</td>
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<tr>
<td>Potential Failure Modes Analysis (PFMA)</td>
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<tr>
<td>Environmental Training</td>
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<tr>
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<tr>
<td><strong>Totals</strong></td>
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<td>46</td>
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### Basic Components of Most Dams

- Abutment
- Upstream Slope
- Crest
- Reservoir
- Outlet Intake
- Spillway Crest and Gates
- Spillway Channel
- Log Boom
- Low Level Outlet
- Spillway Groin
- Downstream Slope
- Spillway Gate