National Hydropower Association
Northeast Regional Meeting
September 17, 2009
Albany, NY

FERC DAM SAFETY PROGRAM
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Supervisor-Dam Safety Engineering
Division of Dam Safety and Inspections
New York Regional Office
Dams Under FERC Jurisdiction

FERC-Jurisdictional Dams (as of 5/2000)

Dam Hazard Distribution (by Region)

- **High HZ**
- **SG HZ**
- **Low HZ**
- **Total**

<table>
<thead>
<tr>
<th>Region</th>
<th>High HZ</th>
<th>SG HZ</th>
<th>Low HZ</th>
<th>Total</th>
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<tr>
<td>NYRO</td>
<td>813</td>
<td>835</td>
<td>419</td>
<td>575</td>
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<td>ARO</td>
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<td>CRO</td>
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<tr>
<td>PRO</td>
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<tr>
<td>SFRO</td>
<td></td>
<td></td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>2535</strong></td>
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</table>
Division of Dam Safety and Inspections
New York Regional Office
“Dam safety is a critical part of the Commission's hydropower program and receives top priority.”
Federal Energy Regulatory Commission

FERC Dam Safety Program

- Safety Inspection during Construction.
- Post-Construction Dam Safety Inspection by FERC Engineers
  - Annually for High and Significant Hazard Projects
  - Every Three Years for Low Hazard Projects
Components of Dam Safety Program

- Dam Safety Inspections
- Security Program
- Public Safety
- Part 12 of the Commissions Regulations
Part 12 of the Commission’s Regulations

- Subpart B – Reporting Safety Related Information
- Subpart C - Emergency Action Plans
- Subpart D – Independent Consultant Dam Safety Inspection
- Subpart E – Construction Quality Control Plans
- Subpart E – Instrumentation and Monitoring
- Subpart E – Warning and Safety devices
- Subpart E – Testing of Spillway gates
FERC UPDATE

- Security
- State Dam Safety Coordination
- Dam Safety Surveillance & Monitoring Plans
- Risk Assessment
- FERC Initiatives
Security

Changes to the Security Program

• Vulnerability Assessment
  – Updated Annually and Reprinted Every Five Years (Group 1 Dams only)
  – Reprint Due 12/31/2010
  – Must Consider Various Threats from Insider to Terrorist
• Security Assessment
  – Updated Annually (Group 1 & 2 Dams)
  – Reprint Due 12/31/2010
• Security Plan
  – Must Be Site-Specific
  – Updated Annually (Group 1 & 2 Dams)
  – Reprint Due 12/31/2010
  – Must Define Internal Emergency Response (Group 1 & 2 Dams), & Recovery (Group 1)
  – Tested Every Five Years (Group 1 Dams)
Federal Energy Regulatory Commission

Dam Assessment Matrix for Security and Vulnerability Risk (DAMSVR)

Revision of DAMSVR (Version 2)
DAMSVR Analysis Schedule

- New DAMSVR v2 Analysis for all Security Group 1 and 2 Dams for 2009

- Every Five Years Thereafter, or

- The First Year a New FERC Engineer is Assigned to the Project, or
• Following Changes To The Project Such As:

- Physical Security Changes
- Procedural Operations (Security, Personnel, Etc.)
- Cyber/SCADA Modifications
- Addition of New Project Features, Significant Project Modifications,
- Changes to Downstream Conditions
- Local/Regional/National Threat Level Changes that Could Affect the Project
- Dam Safety Inspection Indicates New Info is Warranted (e.g., New Owner, New PFMA, etc.)
Dam Owners Can Request Copies of the Updated DAMSVR on the FERC Website (www.FERC.gov)

Training

- Offered at the ASDSO Annual Conference (Hollywood, FL) 9/30/09

- Security Training (Winter 2010)

- To Be Attached to the Annual EAP Training Course as Day 3 (Spring 2010)
Development of New Security Groups

• The 2002 Security Grouping is Still Current, and has Never Officially Changed

• The 2009 V2 DAMSVR Analyses Will Create the New Groups

• Licensees/Exemptees to be Notified in December 2009 of New Groups
State Dam Safety Coordination

How is FERC Working With State Dam Safety Agencies?
Federal Energy Regulatory Commission
State Dam Safety Coordination

- FERC Has Been Working With the State Dam Safety Programs for Many Years
- States are Invited on Every FERC Dam Safety Inspection
- Most States Do Not Attend – Very Busy With Their Own Dams
• Several States Have State Laws Asserting Jurisdiction on FERC Dams

• Implementation Varies Across the United States

• Federal Power Act and State Laws
• The More Eyes on a Dam, The Better

• Our Policy is to Maintain a Close, Supportive and Productive Relationship With the State Dam Safety Offices

• Our Goal is to Minimize Licensee/Exemptee Having to Answer to 2 Regulators
Dam Safety Surveillance & Monitoring Plans
• Identifies the Necessary Instrumentation & Monitoring According to the PFMA and Part 12D

• Standard Outline Developed by a Group of Owners, Consultants and FERC

• Final Guidance is Posted on FERC Website

www.ferc.gov/industries/hydropower/safety/guidelines.asp
Reason for SMP Outline

• Design SMP to Address Potential Failure Modes

• Instrumentation Details Often Not Provided

• No Evaluation of Instrumentation
Risk Informed Decision Making

• FERC Recognizes the Value that Risk Informed Decision Making Brings to Dam Safety

• FERC is Exploring How Risk Assessment Techniques can be Best used in a Regulatory Environment

• Working with USBR and USACE
FERC Initiatives

• Ensuring the Effectiveness of EAPs - Time Sensitive EAPs

• Significant & Low Hazard PFMAs
Ensuring the Effectiveness of EAPs –
Time Sensitive EAPs

• Time of Sunny Day Dam Breach Flood Wave Arrival Compared to Time for Local EMA to Notify and Evacuate

• Focus on Development Immediately Below the Dam

• Does the EAP Provide for the Timely Notification or Evacuation if Necessary
Time Required for Activating EAP

• Varies for Specific Dams & Dam Types
• Detection
• Verification (Onsite or Travel to Dam?)
• Contacting Local EMAs
Time for EMAs to Contact Homeowners

• Travel to Neighborhood?

• Telephone Alert?

• Time for evacuation?
Ensuring the Effectiveness of EAPs – Time Sensitive EAPs

Flood Wave Arrival Time?

- Arrival Time: 10 Min
  - Time to Peak: 45 Min
- Arrival Time: 30 Min
  - Time to Peak: 1 Hour

1. Sunny Day
• Procedure to Assess Time Sensitive EAPs
<table>
<thead>
<tr>
<th>Step</th>
<th>Time Parameter</th>
<th>Time (min)</th>
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<tbody>
<tr>
<td>A</td>
<td>Flood Wave Arrival Time</td>
<td>30</td>
</tr>
<tr>
<td>B</td>
<td>Detection Time</td>
<td>10</td>
</tr>
<tr>
<td>C</td>
<td>Verification Time</td>
<td>20</td>
</tr>
<tr>
<td>D</td>
<td>Notification Time</td>
<td>5</td>
</tr>
<tr>
<td>E</td>
<td>Licensee Response Time ((B + C + D) = (10+20+5))</td>
<td>35</td>
</tr>
<tr>
<td>F</td>
<td>EMA Response Time</td>
<td>20</td>
</tr>
<tr>
<td>G</td>
<td>Excess Response Time ((A - (E + F)) = 30-35-20)</td>
<td>-25</td>
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</tbody>
</table>
Reduce Detection and Notification Time

- Adjust Trigger Points on Headwater/Tailwater Alarms to Activate Sooner.
- Install Internet-Accessible Cameras Pointed at Headwater and Tailwater Staff Gages.
- Install Sirens
- Use a Local Contact Who Can Verify Condition
Reduce Response Times

• Dam Owner should Work with Local EMA to Establish Necessary Alert Measures
• Letters to Licensees/Exemptees in September.

• Evaluate Times for Detection, Verification, and Notification.
  – Best Way is with a Test/Drill

• Discuss Response Times with EMAs

• Plan & Schedule to Reduce Detection, Verification, Notification, and Response Times.
Significant & Low Hazard PFMAs

- Significant Hazard Dams that do not Require Part 12D Inspections
- Low Hazard Potential Dams greater than 9 Feet High or that Impound more than 25 Acre-feet
Significant Hazard Dam PFMA

- Part of the FERC Dam Safety Inspection

- Dam Owners take the Lead and Follow the Guidance Provided in Chapter 14 of the FERC Engineering Guidelines

- Dam Owners Can Use their in-house Dam Safety Knowledge, Experience, And Expertise, or Retain a Consultant.
• The Facilitator should be a Civil Engineer with a Broad Background and Experience in Dam Safety.

• The FERC Engineer will Participate In The PFMA as Described In Chapter 14.
Low Hazard Potential Dam PFMAps

- Voluntary
- Part of the FERC Dam Safety Inspection
- Dam Owners Encouraged to take the Lead
- FERC Inspector may Serve as Facilitator if Requested by the Owner
- Report will be Part of Dam Safety Inspection Report
Questions?
Small Hydro Conference

- Small Hydro Conference at the FERC HQ in Washington, DC
- December 2, 2009
- Open to the Public
- Discussion on Expediting Small, Low-Impact Project Authorization
- Check www.FERC.gov for Information
The purpose of this conference is to explore issues related to licensing small non-federal hydropower projects in the United States. Specifically, the participants will discuss the Commission’s program for granting licenses and exemptions from licensing, including 5-megawatt and conduit exemptions. The conference will also provide an opportunity for industry, state and federal agencies, tribes, and other stakeholders to express their views and suggestions for processing applications for small hydropower projects. The agenda for this conference will be published at a later date.

A free webcast of this conference will be available through www.ferc.gov. Transcripts of the conference will also be made available. Instructions for viewing the webcast and for obtaining transcripts will be published at a later date.