

Thanks go out to Joel Galt, of Southern Company, for the following detailed notes from the San Francisco Workshop. Some notes from the security session have been removed as being not appropriate for internet distribution.

Frank Calcagno 2/20/04

The following notes were taken during the FERC Security, Emergency Action Plan, and Potential Failure Modes Analysis Workshop held at the Embassy Suites Hotel - South San Francisco, January 27-29, 2004. The notes are preceded by a reproduction of the agenda. These notes were intended for my own use and I make no claims regarding their accuracy or completeness. Use at your own risk.

Joel Galt

**FERC Security, Emergency Action Plan, and Potential Failure Modes Analysis Workshop**  
**The Embassy Suites Hotel - South San Francisco**  
**January 27-30, 2004**

**Tuesday - January 27, 2004      Security at Dams**

8:00 a.m. - 8:30 a.m.	Registration (Photo ID Required)	
8:30 a.m. - 8:45 a.m.	Welcome, Introduction, Objectives	Constantine (Gus) Tjoumas, Director - Dam Safety and Inspections, FERC
8:45 a.m. - 9:30 a.m.	Historical Overview Licensee Assessments - Lessons Learned	Frank Calcagno, Dam Safety and Inspections, FERC
9:30 a.m. - 10:15 a.m.	USBR Assessments - Lessons Learned	Martin Chavira, Security Specialist, USBR, TSC
10:15 a.m. - 10:45 a.m.	BREAK	
10:45 a.m. - 11:30 a.m.	AT Planner for Dams	Gordon (Will) McMahon, Research Civil Engineer, USACE - ERDC
11:30 a.m. - 12:15 p.m.	USACE Assessments - Lessons Learned	Bryan Cisar, Security Engineer, USACE - PDC
12:15 p.m. - 1:30 p.m.	LUNCH (on own)	
1:30 p.m. - 2:15 p.m.	Security Concerns in Dam Operations	Dan Wiese, Inspector General & Security Chief, NYPA
2:15 p.m. - 3:00 p.m.	Threats & Suspicious Incidents	Mark (Andy) Calkins, Intelligence Analyst, USACE
3:00 p.m. - 3:30 p.m.	BREAK	
3:30 p.m. - 5:00 p.m.	Panel Discussion	Open Forum Q&A
5:00 p.m. - 5:15 p.m.	Summarize Results & Recommendations	

**FERC Security, Emergency Action Plan, and Potential Failure Modes Analysis Workshop  
The Embassy Suites Hotel - South San Francisco  
January 27-30, 2004**

**Wednesday - January 28, 2004  
Dams**

**Communication and Emergency Planning at**

8:00 a.m. - 8:30 a.m.	Registration	
8:30 a.m. - 8:45 a.m.	Welcome, Introduction, Objectives	Constantine (Gus) Tjoumas, Director- Dam Safety and Inspections, FERC
8:45 a.m. - 9:30 a.m.	National Weather Service - Communicating Information When it Matters the Most	Kevin Lynott, Hydrologist, DOC/NOAA/NWS
9:30 a.m. - 10: 15 a.m.	Silver Lake Fuse Plug Failure - Emergency Response	Teresa Schwalbach, Emergency Management Coordinator Gary Johnson, Central Dispatch Coord., Marquette County, MI
10:15 a.m. - 10:45 a.m.	BREAK	
10:45 a.m. - 11:30 a.m.	Regulatory Coordination in an Emergency	Jim Pawloski, Dam Safety Engineer, Michigan Dept. of Environmental Quality
11:30 a.m. -12:15 p.m.	Emergency Action Plans - A Spanish Perspective	Liana Ardiles, Dam Inspection - Directorate General of Waterworks, Spanish Ministry of Environment
12:15 p.m. -1:45 p.m.	LUNCH (on own)	
1:45 p.m. - 2:30 p.m.	Security and EAPs: Threat Communication Information in EAP Documents Coordination with Law Enforcement Coordination with USGS (COTP)	Focused Interactive Discussion - Moderated by Frank Calcagno, Division of Dam Safety and Inspections, FERC
2:30 p.m. - 3:15 p.m.	Exercises and Planning: EAP Exercise Cycle Operation and Recovery Plans	Focused Interactive Discussion - Moderated by Frank Calcagno, Division of Dam Safety and Inspections, FERC
3:15 p.m. - 3:45 p.m.	BREAK	
3:45 p.m. - 5:00 p.m.	Panel Discussion	Open Forum Q&A
5:00 p.m. - 5:15 p.m.	Summarize Results & Recommendations	

**FERC Security, Emergency Action Plan, and Potential Failure Modes Analysis Workshop  
The Embassy Suites Hotel - South San Francisco  
January 27-30, 2004**

**Thursday - January 29, 2004      Dam Safety Performance Monitoring Program (DSPMP)**

8:00 a.m. - 8:30 a.m.	Registration	
8:30 a.m. - 8:45 a.m.	Welcome, Introduction, Objectives	Constantine (Gus) Tjoumas, Director- Dam Safety and Inspections, FERC
8:45 a.m. - 9:00 a.m.	Licensee Experience	Mark Stokes, Civil Engineer, Idaho Power Company
9:00 a.m. - 9:15 a.m.	Consultant Experience	Faiz Makdisi, Principal Engineer, Geomatrix
9:15 a.m. - 9:30 a.m.	FERC Experience	John Zygai , Division of Dam Safety and Inspections, FERC
9:30 a.m. - 9:45 a.m.	BC Hydro Experience using Risk Assessment	Des Hartford, Specialist Engineer, BC Hydro
9:45 a.m. - 10:00 a.m.	Break	Moderated by Patrick Regan, Division of Dam Safety and Inspections, FERC
10:00 a.m. - 11:45 a.m.	PFMA Process Open discussion on what worked and suggested improvements	Moderated by Patrick Regan, Division of Dam Safety and Inspections, FERC
11 :45 a.m. - 12:45 p.m.	Lunch (on own)	
12:45 p.m. - 2: 15 p.m.	Supporting Technical Information Open discussion on what worked and suggested improvements	Moderated by Patrick Regan, Division of Dam Safety and Inspections, FERC
2:15 p.m. - 2:30 p.m.	Break	
2:30 p.m. - 4:00 p.m.	Part 12 Report Open discussion on what worked and suggested improvements	Moderated by Patrick Regan, Division of Dam Safety and Inspections, FERC
4:00 p.m. - 4:30 p.m.	Summarize Results & Recommendations	

**Thursday - January 29, 2004      FERC Security Committee Meeting**

8:30 a.m. - 9:00 a.m.	Registration (Photo ID Required)	
9:00 a.m. - noon	FERC Security Committee Meeting	Moderated by Frank Calcagno, Division of Dam Safety and Inspections, FERC

**FERC Security, Emergency Action Plan, and Potential Failure Modes Analysis Workshop**  
**The Embassy Suites Hotel - South San Francisco**  
**January 27-30, 2004**

**Friday - January 30, 2004**

**DSPMP Working Group Meeting**

8:00 a.m. - 3:30 p.m.

DSPMP Working Group Meeting

Moderated by Patrick Regan, Division of  
Dam Safety and Inspections, FERC

**Friday - January 30, 2004**

**Orientation Training Session for DAMSVR**

7:30 a.m. - 8:00 a.m.

Registration (Photo 10 Required)

8:00 a.m. - noon

Orientation Training Session for the  
DAM ASSESSMENT MATRIX  
FOR SECURITY AND  
VULNERABILITY RISK  
(DAMSVR)

Frank Calcagno, Division of Dam Safety and  
Inspections, FERC

## **Security at Dams**

### **Introduction**

8:30 a.m.

Gus Tjoumas

Division of Dam Safety and Inspections

FERC

Pat Wood is taking dam security very seriously and dam safety very seriously. He communicates with Bush frequently. Wood recently asked Gus what licensees were doing in response to threat level changes. Gus says that he appreciates licensees replying to FERC notifications with general information as to what they are doing for new threat levels.

There is a need to work more closely with Canada to ensure dam security.

The next issue: We need to make sure that we have good operating plans. Operators need to have guidance on operations and on performance monitoring. We need to convey procedures and training to future generations of operators. The PFMA program has made this apparent by bringing operations into discussions. We need to do a good job developing operating plans.

Recovery plans are the next phase after security assessments and security improvements. We can't do 100% protection. What are the consequences of problems and what will it take to recover from an incident? The first responders do not have the resources for recovery. It is important to coordinate recovery with first responders.

We are ahead of the rest of the country on dam security. Two presidential directives, 7 & 8, deal with dam security, directing federal state and local governments in critical infrastructure identification and prioritization. Licensees have already done the things required by these directives.

There is a national focus on recovery plans. Homeland Security will have responsibility for assuring emergency action plans are developed and tested. HLS has deadlines to respond to the president.

We hope that none of this will be needed but we need to be prepared.

**Historical Overview**

**Licensee Assessments – Lessons Learned**

8:45 a.m. – 9:30 a.m.

Frank Calcagno  
Division of Dam Safety and Inspections  
FERC

(Frank handed out his PowerPoint notes)

**Q&A**

Frank Calcagno

Frank: FERC inspectors are to use DAMSVR analysis prior to annual filed inspections to generate items for discussion during the annual inspection.

Q: What has FERC done to increase their security to protect this data?

Frank: This material will be under lock and key and will not be made available to eLibrary. It will probably be destroyed annually. These materials will be made available to the licensee.

Q: Do you need the consultant available for the annual inspection:

Frank: Available by phone if licensee desires, but on site is better for the licensee's protection.

**AT Planner for Dams (USACE Research in Dam Security)**

10:00 a.m. – 12:30 p.m.

Will McMahon  
WES Vicksburg

Items to be covered

- Who is COE?
- What do we do?
- Critical project security

WES Security Functions

- Developed AT retrofits for buildings
- Vu assessments
- Wall, windows, and frames
- High explosive damages
- Safe stand-off distances
- Life Protection planning
- Design for building security
- AT planner for buildings

COE did retrofits to REMOVED prior to 9/11 – limited damage to the structure significantly compared to what it would have been prior to retrofit.

REMOVED

Civil Works Security and Protection Program

- COE has a wide variety of structures
- Protecting COE civil works projects critical infrastructure
- Requirement –
- Urgent need to protect COE critical assets
- REMOVED.
- Need for better assessment methods in order to
- Predict damage levels and consequences
- Determine hardening levels and consequences
- Design protection
- Design recovery

Research areas

- Threat definition
- Blast effects
- Regional monitoring
- Consequence assessment
- Deter-deter – protect

Caution: any resemblance between these notes and what the speaker actually said may be accidental.  
Notes by Joel Galt

- Integrated decision aid

WES does a lot of scale modeling

REMOVED

- REMOVED
  - REMOVED
  - REMOVED

– REMOVED

## **Vulnerability Assessments: Lessons Learned**

11:30 a.m. – 12:15 p.m.

Bryan Cisar  
COE – Omaha District

### Agenda

- Overview of COE roles and missions
- COE response after 9/11
- Vulnerability assessment process and lessons learned

As a result of the 9/11 attacks COE put together a program for asset protection.

### Intent and Objectives

- Improve security to basic protection standards
- Conduct 300+ physical security risk assessments using RAM-D
- Develop project risk management plan
- Recommend prioritized physical security improvements – effectively spend money

### Milestones

- Prescreened all COE projects Oct/Nov 2001
- Train 30+ districts on RAM-D Nov Dec 2001
- \RAM –D assessments Nov 2001 – April 2002
- 300+ RAM-D reports completed – 22 April 2002
- Re prioritized projects – may 2002 – 306 projects considered priority projects
- Initiate design on 83 projects June 2002
- Construction – complete by Dec 2003
- Reprioritized projects
- 83 projects to be complete by 2004 end of

### RAM-D

- RAM-D Risk Formula
- Ram- D flow diagram
- Structured systematic method for doing a vulnerability assessments
- Generic table of consequences – economic loss, deaths, operational impact
  - Loss of flood control
  - Loss of hydro generation
  - Loss of water supply
  - Loss of commercial navigation
  - Environmental/ecological loss
    - Water quality
    - Wildlife
  - Loss of symbol of us way of life
- Table of consequences should be agency specific

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Notes by Joel Galt

- REMOVED
- Undesired events – loss of:
  - Flood control, hydropower, water supply, navigation
  - Environmental/ecological – difficult to determine
- Thresholds for undesired events
  - \$1M, \$10M, \$100M, \$1B
  - Loss of life (deaths) - difficult to determine
  - Population at risk
- “System” versus “individual” dam failure scenario
- Electricity cost to consumer or supplier? – What figure to use?
- Gather available information – dated! – Old information

Threat assessment: aggressors

- Vandals
- Insider
- Ecological terrorists
- Paramilitary/militia group
- Visitors – accommodating “visitors” and securing facility is extremely costly. It is hard to bring folks in and protect the facility.

Threat assessment: aggressor tactics

- Ballistic
- Insider compromise
- Vehicle bomb – important for small freeboard
- Forced entry – dealt with most
  - REMOVED

Threat Assessment:” Critical Assets

- Experience and composition of assessment team very important.
- Major categories of Critical Assets – embankments, powerhouses, inlet/outlet works, spillway, navigation locks, and switchyards
- Tools –
  - Army Technical manual 5-853 Vols. 1-4 “Security Engineering” FOUO
  - RAM-D Fault Tree (Proprietary -FOUO)
  - DAMSVR- (Contains Energy CEII)

Vulnerability Assessments: Inspection Team

- Assessment Team
  - Limit number of teams – COE 38 districts (better to have smaller number)
  - Trained and experienced
  - 3 to 5 optimum – diversified background!
    - Security officer
    - Engineers
      - Structural
      - Electrical – how to take out generators, electrical other

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Notes by Joel Galt

- Dam safety – contributes to understanding of different ways to take out the project
- Other attendees
  - Operations personnel – “customer buy-in”
  - Local, state, and Federal law enforcement – you may be surprised at the results of questions about response time, etc.
  - Coordinate with other “stakeholders”

#### Vulnerability Assessments: When?

- Day and Night inspection
- Doors
- Lighting
- CCTV quality
- Routine of guards/personnel - predictability?
- Interview everybody and anybody – especially the person nobody wants you to take to!
- Visit the project the day/night before or after scheduled inspection date.
- (What you are told about the way things are and the way things are done may not necessarily be the way they really are.)

#### Vulnerability Assessments: Detection, Delay, Assessment and Response

- Detect – sensors, test existing systems
- Delay – doesn’t start until detection occurs
  - Tactics tools and weapons (play heavy role in delay achieved)
  - Delay  $\geq$  response time (ultimate question, if less than, battle is lost)
- Assess – cameras
  - May be backed up by other types of detection devices

#### Vulnerability Assessments: Response

##### Response

- REMOVED
- REMOVED

#### Vulnerability Assessments: Attack Scenarios

- Very time consuming
- “Sophisticated attack” – attack more than one asset, complicated attack (job easier if you define the aggressor up front)
- Use specific threat information
- Calculate all delay times
  - Success is predicated on delay being  $\geq$  response time
  - Failure is delay  $\leq$  response
  - REMOVED

#### Vulnerability Assessments: Security improvements

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- Guidance on design packages
  - Threat based – define design basis threat
  - Priority based
  - Consequence based
  - Other
  - Combination of the above
- Build on one another
  - Package A (vandals)
  - Package B (ecoterrorists)
  - Package C (OCO NUS terrorists) includes A and B
- Can't neglect or forget
  - Operations constrictions
  - Response plans
  - Operation and maintenance “tail” - costs of security improvements
- USACE Security improvements
  - Fences
  - Gates
  - Locks
  - Lights
  - Cameras
  - Sensors
  - Alarms
  - Structural hardening

Going to a regional monitoring concept. This will supplement the on-site guard force. Use one facility to be the core for security for a number of other facilities.

#### Vulnerability Assessments: Cost estimate

Parametric cost estimate – actual construction costs for “final design” security improvements are far surpassing “preliminary”

#### Vulnerability Assessments: final report

- Define report format requirements \_exec summary, TOC< list of drawings, forms, appendices, etc. (no initial format set > got 38 different formats)
- For Official Use Only (FOUO) – know how to protect your data from bad guys
  - Vulnerabilities
  - Attack scenarios
  - Security design
- Freedom of Information Act (FOIA)
- REMOVED

#### Vulnerability Assessments: Lessons Learned

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Document your lessons learned – After Action Report (AAR)

Closing Remarks

- REMOVED
- REMOVED
- REMOVED.
- Balance cost of security versus risk – what risk are you willing to accept? What risk can you afford?

402-221-4482

UASCE Omaha District

Attn: CENWO-ED-ST (B . Cisar)

12565 West Center Road

Omaha, Nebraska 68144-3896

**Security Concerns in Dam Operations**

1:30 p.m. – 2:15 p.m.

Dan Wiese

Inspector General and Security Chief, NYPA

REMOVED

## **Threats and Suspicious Incidents**

2:15 p.m. – 3:00 p.m.

Mark (Andy) Calkins

Intelligence Analyst, Intelligence and Security Countermeasures Branch, USACE

### Information Sharing

The COE has come a long way in sharing information on suspicious incidents. COE goal is to get this information out to the other dam owners.

- Our Branch, ISCB
- What we do overview
- Threat and Suspicious incidents ITS: input and output

### ISCB Supports Homeland Security and reconstruction in REMOVED

#### Areas of responsibility

- AOR's divided between east and west coast teams
- Criminal analysts and intelligence analysts teamed together
- Daily review of traffic and data feed unto unclassified and classified reporting systems
- Scheduled and as-hoc analysis
- Regular coordination with HLS community

#### What is a TSI?

- Any kind of suspicious incident that occurs on or near COE property.
- System created Oct 01 mod Oct 03.
- Module of USACE ENGLink, Emergency Management System and Incident Reporting System, or "IRS"
- TSI's are not uniquely reportable through the SIR system;
- TSI incident types are adopted from the TALON reporting system

The IRS reporting system resides on ENGLink – emergency management system within the COE. Open to those with related roles.

#### How TSI works

- REMOVED
- Report is released for view via email alert to HQ and District or Division
- HQ sends incident to HLS, and other national and local law enforcement agencies.
- TSI is plotted on a map (on internet available to HLS community) and
- Added to the TSI database (The TSI database is searchable)
- Incidents can be closed if they are explained.

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Notes by Joel Galt

REMOVED

Who is Listening?

- Over REMOVED TSI reports since October
- REMOVED reported to national levels
- REMOVED FBI cases opened
- Periodic briefings prepared for DHS
  - President briefed
  - Secretary Ridge briefed
  - Department of Interior briefed

TSI Dissemination: TSI mapper

- Available to HLS and intelligence community
- Can box and zoom in on photos
- Uses base maps with other critical infrastructure shown to show relation to other critical infrastructure
- Can project various incident types
- Can sort and produce reports and get info on specific incidents
- Trying to get feedback from users to improve the site

Our Objectives, Goals and Vision

- Awareness, Education, Policy and Procedure Campaign – trying to get the various leaders to encourage their people to participate
- PDA/Wireless input down to Ranger level
- Expand Base Maps, content and continue to modify
- Leverage existing USACE technology; make available for State and Local use.
- Mirror TSI system, Mapper on internet, behind website interface.... Perhaps as a DAM ISAC. Looking at how to take the TSI system to put it behind an interface that dam owner's can use. They think that they have a solution.

Occasionally share info with TVA, Burec, and FERC.

Q (Joe Kick): What about power company powerhouses on COE dams?

Answer: Does not know who they are dealing with on the ground.

Frank: Report information on incidents to FERC ASAP. FERC will pass on to COE.

Frank: FERC is continuing to pursue the NERC ISAC but also pursuing the use of the COE TSI database to see what may work out.

Andy Calkins

ISCB, US Army Corps of Engineers

HQ, Washington, DC

[mark.a.calkins@hq02.usace.army.mil](mailto:mark.a.calkins@hq02.usace.army.mil)

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Notes by Joel Galt

**Panel Discussion - Open Forum Q & A**

3:30 p.m. – 5:00 p.m.

See Pat Regan's notes for the remainder of the discussion.

Should we expect feedback from FERC inspectors on needed security upgrades?

Frank – more how did you do things, how did you evaluate threat, do you have concerns about how you came up with the threat,....

Gus: We are all going to work together on this. We are all still learning. We may suggest some additional things to be done. If you agree with this you may want to do it. If you disagree, let us know about it. Take your comments to the deputy regional engineer, who will pass them onto the regional engineer.

The FERC Security Committee will continue to meet. We will discuss items like this during these meetings. We would like to get some feedback from you.

ICODS will be discussing security of dams in the near future. It is good to have this feedback from the licensees.

REMOVED

Gus says that the next big push will be **Recovery Plans**. FERC is going to require that licensees have recovery plans for each facility. Do we have recovery plans in place for the hydros, APC or GPC? What will be the format for the recovery plans? Will FERC mandate a format or offer an outline?

Pete Scalici: NYPA has been contacted 3 times by an outfit called REMOVED asking for copies of vulnerability plans, REMOVED, claiming to be representing a government agency.

Gus: We need to hear about this sort of thing. FERC has been contacted by a person by REMOVED seeking information about dams for a government agency. It turned out to be DOD was the government agency. FERC set up a meeting with DOD about this. Be careful when you get phone calls like this. DOE has come out and done audits with some licensees. This situation is getting more and more muddled. If somebody calls you like this, you need to let FERC know. FERC does not want the licensees subject to lots of repetitive questions like this and would like to be in the position to provide information to DOE or DOD.

Pete: There are lots of government agencies asking for information about dams.

**National Weather Service – Communicating Information When it Matters the Most**

Kevin Lynott, Hydrologist, DOC/NOAA/NWS  
Hydrologic Services Division,  
Silver Spring, Maryland

NWS Dissemination Infrastructure

- Family of services
- NOAAPORT
- NOAA Weather Wire Service
- Emergency Managers Weather Information Network
- National and Local Web sites
- Disasterhelp.gov (Nov 2002)
- NOAA Weather Radio

EMWIN – intended for use by emergency managers and public safety officials who need timely weather information to make critical decisions

NWR – all hazards (weather, civil, amber alert, etc.) system on special receiver with up to 7 frequencies. - Voice of the NOAA -runs all of the time - interrupts normal broadcast for emergency info. Has tone alert for warnings.

They (EMWIN and NWR) complement one another

Support for Homeland Security via NOAA weather radio – Emergency notifications go out over Weather Radio to emergency agencies

<Diagram showing information flow>

NWR and HLS Security Limitations

- CEM collection is a manual process
- No authentications and security protocols exist now
- Some areas are not covered by NWR broadcasts
- Older NWR transmitters are not redundant and do not have back up power
- No backup transmitter locations exist

Advanced Hydrologic Prediction Service ([www.crh.noaa.gov/ahps/](http://www.crh.noaa.gov/ahps/))

- This is the next generation of hydrologic products – interactive graphics, what will happen on a particular river in the next week or month, or two months
- AHPS includes critical river information, including hydrographs, probabilistic and extended range forecasts
  - Flood Forecast Inundation Graphics – have prototypes for 3 or 4 river basins so far, this is in the works.- closer to real time

Implementation Status

Piecemeal implementation over about 1/10 of the country (750 forecast points), another ¼ set (478 new forecast points) for 2004 (not GA or AL). Within 5 to 10 years hope to have 95% of US covered. (Joe Kick comment: This is a valuable tool. Getting priority is dependent in part on local forecasters asking for it. “I highly recommend it.” AHPS also covers drought, water supply, etc.

NOAA is trying to present a consistent set of products to all their customers.

#### Weather Forecast Office Tools

- AWIPS – Advanced Weather Interactive Processing System – used by forecasters
- IFPS- Interactive Forecast Preparation System – used to prepare forecasts
- WHFS – WFO Hydrologic Forecast System - all river gage data and reservoir data stored here, plus a warning generator
- Doppler radar
- Satellite
- Dam Break Model

#### Dam Catalog (and Dam Break Model)

- used to make the decision of what will happen in the event of a dam failure at a given time.
  - Catalog of dams available to all NWS offices
  - Web Based application which includes dam architecture
  - Topographic maps aerial photos, soils, etc. are available for most dams on the web
  - Will eventually hold over 75,000 dams in national database – this is integrated with the national inventory of dams
  - Documentation for this is available on line, but the system is currently only for weather service use.

#### Primary Partners in Dam Safety

- FERC
- FEMA
- USBR
- COE
- State and Local Emergency Mgt
- Public

#### Communicating Dam Safety

- Participation in tabletop exercises
- Outreach efforts
  - EMS
  - Power/utility companies
- EAP Notification
  - Awareness of calling tree or flowchart
  - Needs to be well maintained so roles are understood (Dam procedures for each NWS office are different. NWS office should know their role in a dam emergency and have this documented.)
- AHPS web pages (where implemented)
- Frequent product updates when life or property may be threatened

- Dam Break templates in warning generation software –
- Flood Watch product formulated to include text info on dam status
- Dam Break Product for Flash Flood Warning
  - Includes notice of dam failures in the product.
  - (They are not modeling inundation mapping yet)

(Comments from the audience:

Joe Kick: concerns about crying wolf with flood warnings. Public becomes desensitized.

Gene Siezel: FEMA has a program that will give the inundated area for a given discharge. Requires training from FEMA.

Jerry Gotzmer: what type of info would you want from a licensee during a high flow situation?

Kevin: We need as much info as possible, whatever the licensee can provide. Let us know what is really going on at the dam.

John Zygaj: Does NWS check back with licensees to see what is going on over time?

Kevin: Yes, we do check back. Expectations are often set in the table-top exercises for specific projects and rivers.)

#### NWS Hydrologic products

- Hydrologic Outlook
- Flood Watch (for flash flooding)
- Flash Flood Warning (follows watch)
- Flash Flood Statement (follows warning)
- River statement (issued at bank-full conditions but not expected to get higher)
- Ready, Set, Go approach

#### Improvements to NWS Hydrologic Text products

- Flood watches are used to follow up or cancel previously issued flood watch products, instead of Flood Statement( FLS)
- Standardize the Flood Watch format
- Lat./Long polygon coordinated for all Flash Flood Warning

## **Silver Lake Fuse Plug Failure – Emergency Response**

Teresa Schwalbach, Emergency Management Coordinator  
Gary Johnson, Central Dispatch Coordinator, Marquette County, MI

Teresa Schwalbach

The four points of emergency mgt  
Planning

- Develop EAPs
- Train – stress that agencies learn incident command system training – how
- Exercise – do at least one exercise per year

Response

- Activate EOC
- Ensure plans are implemented
- Contact appropriate local, state and federal authorities
- Obtain resources requested by the incident commander
- Recovery
- Damage assessment
- Coordination with local/state/federal agencies
- Keep public informed on shelter, assistance, low interest loans
- Mitigation
- Determine what went wrong and what can be done to prevent a recurrence
- Involves money

How to plan for an emergency

- Coordinate update and test
- Get to know local EMA director
- Make sure that technical details are clear, especially how to read inundation maps
- Get to know each other
- Make sure all contact information is current.
- Meet often
- Do not let EAPs gather dust
- Update data on a regular basis
- Make sure everyone has a current EAP
- Make sure everyone knows what their role is
- Accurate inundation maps are crucial
- Issue updates in a timely fashion

When testing our EAP

Evaluation internal actions and external responses

- Ask the EMA managers how the exercise can help them (get their buy in)
- Schedule activities to accommodate the participants

Caution: any resemblance between these notes and what the speaker actually said may be accidental.  
Notes by Joel Galt

- Exercise should be realistic
- Functional exercise every 3 to 5 years
- Goal is to “learn so you improve”

#### Emergency Operations Center

- Site where – decision makers gather to
- Activate response and recovery operations
- It is the hub for getting necessary resources to emergency responders
- It is not a public information center.

#### Dead River Flood Event – Gary Johnson

May 14, 2003

- Central Dispatch notified at 16:30 hours that water was rising near Silver Lake area
- UPPCO contacted at 16:33
- At 16:46 UPPCO contacted Central Dispatch and advised to activate Silver Lake EAP.
- At 17:13 Central Dispatch initiates callout procedures.
- EOC activated at 2310 when reports from UPPCO were confirmed that flooding would occur with fuse plug washed out at Silver Lake
- EOC personnel contacted to report to EOC.

May 15

- 0130 County Board chair declares a local state of emergency
- 0220 evacuations begin
- 0900 highest water level at Hoist Dam (1348.94) Crest is at 1344.50.
- 1400 highest water level at McClure (1201.53) Crest is 1196.40. Pownell Township reports all electrical power and phone service out.
- 1525 4 feet of water in WE Energies plant (650 MW)
- 1830 Governor declares State of Emergency

#### Flood Impacts

- People evacuated and sheltered
- Several roads and bridges destroyed several parts of county isolated
- Dead River damage included fisheries, soils, trees and changed the water system in ways not yet fully understood.
- Utility facilities damaged or destroyed
- Primary and secondary/vacation homes damaged
- Businesses damaged
- Community economic impact was over \$84 million due to shut down of local mines, loss of WE Energies power plant (1500 employees laid off), and conservation of electric power throughout the region.

#### Lessons Learned

- The UPPCO EAP: was vital. We knew who to evacuate and when

Caution: any resemblance between these notes and what the speaker actually said may be accidental.  
Notes by Joel Galt

- Coordination was the key!
- Functional exercise in 1988 was beneficial. Emergency Personnel were ready when event occurred.
- Real time web site info and FAQs helped the public.
- No turf issued which made things run smoothly.
- MPSCS 800 MHZ radios were only means of communications to Powell Township when power, phones, and fiber optic communications were down.
- Having the right people in the EOC from both public and private sector (NWS, UPPCO, BLP)
- Too many people were in the EOC that did not need to be
- Cell phones did not work in the EOC. Antenna will be installed.
- Have incoming calls screened and transferred into the EOC
- Don not use EOC for daily briefings. Find separate meeting room away from EOC.
- Set up shift schedule in the EOC from the onset of the event.
- Good rapport with state EMD officials significantly enhanced our effectiveness in dealing with state/federal agencies.
- Town hall meeting with the public in the affected areas allowed residents to ask questions and receive direct information from the experts which dispelled many rumors.
- Realized for the first time how fragile the electrical power grid is.

#### In Conclusion

- The existing EAP program provided a means for effectively pre-plan torn the emergency.
- The emergency response was significantly improved because of the 1998 Hoist Functional Exercise.
- The dam owner and Emergency Management Coordinator were very proactive in communication prior needs and plans.
- Turf wars do not work in EOC or during an event. Work it out prior to the event!

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## **Dead River Flood, Marquette, MI**

Jim Pawloski

Dam Safety Engineer, Michigan Dept. of Environmental Quality

- Marquette County is located on the upper peninsula of Michigan,
- Has largest population of all counties in UP
- Dead River watershed – 5 inches of rainfall over the basin prior to flood, 50 year rainfall is 4.3, 100 is 5.3 inches.
- There was no snow left on the ground at the time of the flood.

5 hydropower dams in Dead River system

- Silver Lake
- Hoist
- McClure Dam
- Forestville Dam
- Dam #1 (abandoned)
- Tourist Park Dam

In Michigan FERC regulated dams are exempt from state regulation

Silver Lake Basin is a storage pond only, and is managed for storage for generation at Hoist. Surface area is about 1.500 acres.

May 14, 2003

- Silver Lake Basin earthen dike bursts at approximately 5:00 p.m.
- The fuse plug had two pilot channels located below the crest, but still several feet above the normal water level.
- Break unleashes an estimated 8 billion gallons of water downriver

May 15, 2003

- Marquette County board Chair Gerald Corkin declares state of emergency at 1:30 a.m.
- The torrent of water destroys roads in its path.
- Flood waters reached Dead River Basin – damaging camps and homes
- Floodwaters flow through the spillway of the Hoist Dam and flow further downriver – Hoist dam has a height of 85 feet max., 3, 700 feet long including embankments.
- Hoist Dam held up very well. Owner placed some extra fill on the left embankment. There was evidence of some increased seepage in the right embankment. Overall the dam performed very well.
- Water continues downstream – crossing CR510 (Steel Bridge) – traffic restricted on bridges
- McClure Dam (64 ft high, 100 acres) passed flood through spillway, some minor damage. There was a lot of debris.

Caution: any resemblance between these notes and what the speaker actually said may be accidental.  
Notes by Joel Galt

- Floodwaters reach Forestville Dam (62 feet high, 96 acres, diversion dam) only minor damage, dam performed well
- Evacuated a portion of the City of Marquette (total pop. 17,000)
- Evacuation area determined from inundation maps
- The evacuation was based on the Hoist Dam inundation maps (larger area) rather than the maps for the Silver Lake failure (used worst-case scenario)
- Comment: the Marquette county web site was a great resource for getting information out the public.
- Governor issued an edict restricting access to the area: trooper ticketed unauthorized personnel in the area.
- Tourist Park Dam reached by floodwaters – abutment overtops and fails. 3' diameter red pine pierces powerhouse. The dam is owned by the Marquette Board of Light and Power.
- County road CR550 bridge (recently upgraded) survived as did the old bridge just upstream.
- Presque Isle Power Plant – WE Energies – 650 MW – 4' of water on the main floor. The loss of this plant was a major economic impact in that it shut down the two last remaining iron mines in the UP. This put 1500 people out of work. All of the power companies worked together to put as much capacity on line as possible in order to provide as much energy to the UP as possible.
- At this point the DEQ began to get involved.
- Lakeshore Blvd bridge – both abutments washed out, downstream to upstream
- Flood took a lot of debris into Lake Superior, along with small hydrocarbon sheen. As late as 9/1 there was still a plume of suspended sediments in the lake.
- Evacuation of 2300 residents evacuated

#### Major employers impacted

- WE Energy
- Cleveland Cliffs Iron Co.
- N. Mich. U
- Marquette Board of Light and Power
- Others

#### Impact summary

- 3 dams damaged
- 2 dams failed
- 9 bridges damage or destroyed
- Damage to 2 public parks
- Major rive channel realignments
- Major soil and stream bank vegetation loss
- Significant sediment deposition, debris filed, and undetermined sheen discharged to Upper Lake Superior.

#### Lessons Learned from state perspective

Caution: any resemblance between these notes and what the speaker actually said may be accidental.  
Notes by Joel Galt

- 1) This emergency event was extremely well coordinated by the Marquette County officials. The functional exercise was very helpful in preparing the players.
- 2) Communications were a key factor. Figure out how you are going to communicate. Cell phones will not always work.
- 3) Instrumentation of dams is important. There was no instrumentation of the Silver Lake Basin.

**Q & A**

If there had been some form of instrumentation at Silver Lake the owner could have managed the flood without activating the fuse plug.

**Emergency Action Plans – A Spanish Perspective** 11:30 a.m.

Liana Ardiles

Dam Inspection – Directorate General of Waterworks, Spanish Ministry of Environment

(A paper copy of the PowerPoint show was handed out. JLG's notes do not give a complete coverage of the talk.)

Legal framework (slide showing org chart of environmental dept.)

Water mgt is handled by autonomous regions and by watershed authorities reporting to the minister of environment

Talk outline

- Dam Regulations in Spain
- Basic elements of and EAP
- Approval procedure
- Technical review
- Implementation

Spain has 1,200 dams in operation. More than half are in categories A or B.

Ministry of Environment and Ministry of Interior must both approve EAPs

So far 29 EAPs are approved. 110 have been presented for approval.

344 in preparation

Technical review of EAPS

- Dam safety analysis
  - Objective : study of the situations that might have a negative effect upon the safety conditions
  - Aspects to consider
  - List of situations of phenomena' indicators of each situation
  - Threshold
  - Relationship between thresholds and dam safety conditions.
- Zonification and potential damages
  - Objective: define the flood areas as a result of a dam failure and the potential damages
  - Aspects to consider
    - Define the failure hypotheses
    - Characterization of downstream area
    - Dam Break analysis and other (Danish) mathematical model
    - Inundation maps
      - Show travel time, max elevation, peak discharge at each town location on river.
      - Plans are set up for use on the web. You can zoom in on the map and get increasingly detailed information.
  - Estimation of potential damages
- Operational procedures

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Notes by Joel Galt

- Specific inspection activities
- Plan activities and resources for carrying them out
  
- Objective: define the operations procedure in emergency saturations
- Aspects to consider:
  - Emergent plan director
  - Establish human and material resources
  - Define the Communications Networks
  - Define the direct warning system within a period of 30 minutes
  - Emergency Operations Center – located near dam
  
- Emergency Communication Network
  - MMA Autonomous region civil protection population for the first 30 minutes,  
Resource telephone radio, system of alarms cellular
  - EOC located at the dam
  - Direct warning system: sirens located in the 30 minutes area, if there is a risk to the population.
  
  - Public Information Tools
    - Pamphlets posters video
    - Mobile Traveling programs - >school programs, web

Sirens systems are required for all dams, regardless of ownership.

The ministry defines the minimum requirements for the EAP plans.

**“The fear to communicate will result in communicating fear.”**

**Security and EAPs: Focused Interactive Discussion,** 1:45 pm. – 2:30 p.m.

- **Threat Communication,**
- **Information in EAP documents**
- **Coordination with Law Enforcement**
- **Coordination with USGS (COTP)**

Moderated by Frank Calcagno  
Division of Dam Safety and Inspections  
FERC

(Note that Pat Regan also took notes of this session)

**Advancing the Creation of a Dam Sector ISAC**

- White House study identified the need for an ISAC for the Dam Sector
- Coordinated effort of Federal Agencies and ASDSO
- Identified technical needs and logistics for creation
- Can be used by all dam owners to share intelligence information

FERC is still pursuing an ISAC with NERC and also with the COE to see about tying in with the TSI Database.

The idea is that lots of different dam owners send their incident reports to the ISAC, as do intelligence agencies. Analysts within the ISAC go over the data looking for trends. Then get the info back to the dam owners. This allows the dam owners to have a better idea of the threat to use in vulnerability analyses. There are other ISACS (10-12) for finance, etc. These ISACS can talk to each other and compare notes.

**How criminals/terrorists may collect information:**

- Open source information
- Public domain technical reports
- People
- Communications
- Photograph
- Trash

**What does your EAP document show?**

- Internal needs versus internal needs for the EAP information needed to do a specific job
- Internal folks may need information that outside agencies do not.
- Talk to the outside agencies to see what they really need. There may be extra baggage.
  - Contents
    - Notification charts
    - Emergency classifications
    - Emergency procedures

Caution: any resemblance between these notes and what the speaker actually said may be accidental.  
Notes by Joel Galt

- Inundated areas
- Dam weaknesses
- Technical dam information

What do the agencies need to get their job done?

Discuss with agencies who needs what data.

Explain prudent information management to the agencies.

#### Increased coordination with Emergency and Law Enforcement Agencies

- FERC continues to build bridges between dam owners and emergency response personnel
- Protect the public
- Protect downstream infrastructure
- Protect downstream environment
- Coordination between dam owners and local law enforcement agencies
- Dam owners must rely on local law enforcement for response
- Local and Federal law enforcement can provide threat data

#### Coordination with USCG

Nov 17 03 EEI requested Commission assistance:

- USCG a6a8 Fed Reg. 605 15-544 et al interpreted by some COTPs
- Hydro power projects must file security assessments/plans
- USCG accept FERC program as an Alternative Security Program

Dec 9, 03 Commission letter to Admiral Collins:

- Requested acknowledge met of FER program as an ASW
- Reinforced the need to establish coordination and communication

Jan5 04 Rear Admiral Hereth letter to Commission:

- 33 CFS Part 105 does not apply to hydropower facilities
- Area Maritime Security Plan participation - Admiral Hereth encourages hydropower plant owners to participate in the committees for the area Maritime Security Plans.
- Bottom Line: USCG accepts that hydro plants are not generally subject to Coast Guard jurisdiction and do not have to submit assessments or plans to the USCG.

This should put the issue of the Coast Guard asking to do inspections and to be given copies of security plans and security assessments to rest.

General discussion: see notes taken by Pat Regan

**EAP Exercises and Planning** 2:30 p.m. – 3:15 p.m.  
**EAP Exercise Cycle**  
**Operation and Recovery Plans**

Moderated by Frank Calcagno  
Division of Dam Safety and Inspections  
FERC

References:

- 18 CFR Part 12.25b
- Ch 6 Eng guidelines – once every five years

How many jurisdictions dams have EAPS? 1250

Who owns these dams?

How does ownership affect exercises?

- 300 licensees with dams with EAPS (1250 dams)
- Average number of dams with EAPs per licensee =4
- Median number of dams with EAPS per licensee = 1
- 2 licensees own 75 or more
- 6 own 30 or more
- 11 own 20 or more
- 31 own 10 or more
- 68 own 5 or more
- 134 own 1 to 5
- 166 own only 1

If you test one dam every five years, then how long does it take to go through the entire inventory? It could take 175 years for some.

Out of a random sample of functional and tabletop exercises, of 470 exercised, 255 were for individual unique dams, the remaining 215 were repeats. This can be expected when a licensee only owns one or two dams requiring testing.

Reasoning behind one test every five years was that the projects were in a general area. Now with widespread corporations are buying up projects, the information from a drill does not get disseminated within the licensee's people nor does it apply well from one location to another.

Owners of multiple dams with multiple FERC regions may need to test more often.

How can this be done equitably?

How can we ensure that proper testing is completed?

Multiple dams at the same reservoir and/or development may help (if tested together)

Dams owned by multiple licensees in the same drainage may be able to combine efforts.

Other ideas?

Gus: Other dams in a given basin need to be factored in also. This means coordination among licensees and among non-licensees. There is a national policy, not completely implemented. There are licensee projects located at COE dams and this needs to be factored in. The fact that there is often more than one EMA involved needs to be taken into account.

Frank: Increasing the number of tests may impact the resources of the EMAs also.

#### Increased emphasis on recovery and operation plans

In the event of a terrorist attack or a natural disaster a recovery plan will:

Reduce consequence to the nation

Reduce consequence to the dam owner

In the event of a terrorist attack, or natural disaster, an operation plan will:

Provide dam owners with best possible options.

**Discussion** (selected items. For general discussion, see Pat Regan's notes)

#### **Recovery plans**

Frank: recovery plans may be graduated depending on the impact of the loss of the generation.

Gus: The owner knows whether you need to replace a loss or not. A 5 MW ph would probably not be a need to be put back: uneconomical. There needs to be a plan for mitigation of the reservoir. Scope of the recovery plan would be dependent on the scale of the project. What are the alternatives that will need to be dealt with in the event that something happens at that project?

Frank: The plan is a recovery plan not just for dam failure but for continuity of operation.

**Panel Discussion** 3:45 p.m. – 5:00 p.m.  
**Open Forum Q & A**

(Selected items included in these notes. For general discussion, see Pat Regan's notes)

Have 911 operators attend drill.

Storage of contact info in electronic media – palm pilot, etc.?

Some agencies have put this on PDAs and it did work out pretty well.

Put into cell phones, etc.

Frank: Some EAPs are submitted as paper and CD copies for the agencies.

Some licensees have made a wallet size list of phone numbers to give out and carry.

Gus steered discussion to **“what should be in a recovery plan”** at this point:

Joe Kick: what type of scenario do you want to plan for? How bad? Are we talking about recovery of physical assets or of the product?

Answer from Frank: both

Robin Charlwood – The number of failure modes is fairly limited, so the number of scenarios to be dealt with in a recovery plan is also limited.

Gus: Everyone else (other industries) have these (recovery plans), so we are going to have them also. Most businesses already have these. What is it that you need to be ready to do in an emergency? Partial failure, failure, loss of powerhouse? What do you need to do to get back in operation? Emergency managers have recovery plans for what to do in certain situations: how are we to transport, house and feed (citizens) for the needed time. Go a step further and see what you need to handle the emergency and then get back into operation. One option could also be to not recover but to take an alternate route. List an inventory of materials needed, where are they, how to get them. Recovery plans may be different from project to project. Preplanned actions, what to do if something happens, is what we are talking about.

Ernie Brockman: System recovery plans are in place and what we need for hydro emergencies is in the EAP.

Gus wants a list of concepts to be covered in a recovery plan.

Teresa Schwalbach – emergency managers will have a list of resources: contractors, etc. that may be of help in putting your recovery plan together.

Ernie: we should have lists of contractors and materials suppliers maintained as part of the EAP process.

Gus: I am hearing that you guys think that you have it covered, that you have plans in place that will take care of this issue. I guess it is our job to make sure that you have them up to date.

## **Physical Modeling of Dam Failure Consequences in Virtual Reality** **The life scale model approach**

Des Hartford  
BC Hydro

The idea of this process is to give the emergency planners the best representation of what the emergency scenarios are going to be like and to give people an idea of the kind of scenarios that they are going to be responding to.

Inundation animation slide – shows accelerated inundation of a town over time

Plan slide - showing population location at a given time showing inundation – slide shows population as aware, evacuating or unaware.

This model can simulate what needs to be done to get everyone out for a given scenario, to what is the doomsday scenario. It will be able to define what areas need to be evacuated and in what order.

Virtual approach - Create a virtual dam mass emergency that is a temporal integrated representation of a flood propagation and human community response.

- Can view and be used to recreate a flexible and intuitive model
- Can be assembled automatically based on available census and GIS data

Allows the situation to be viewed from two perspectives:

- A static view
- A dynamic view showing locations of people during the day

Life Safety Model inputs:

- Census data
- Life safety parameter
- GIS data
- Hydrodynamic simulations for dam breach
- Dam breach probability
- Emergency Mgt parameters

Produces:

- Real time Inundation maps
- Flow charts

Simulation of warning systems

- Can do sensitivity analysis
- Ability to impose events
- Stability of PARUs

Testing

Caution: any resemblance between these notes and what the speaker actually said may be accidental.  
Notes by Joel Galt

Simulations of Malpasset Dam Failure, France 1959 modeled the behavior of the flood and the people – program model produced was close to what really happened

The computer model will allow us to consider things that our minds do not want to consider. We tend to reject some things that can really happen.

**Dam Safety Performance Monitoring Program (DSPMP)**

Pat Regan

We are seeking feedback on the process. The results will be used by the committee to tweak the process.

Objective

Solicit comments on:

- PFMA process
- STID
- Part 12D

**Welcome, Introduction, Objectives**

8:30 a.m. – 8:45 a.m.

Gus Tjoumas

Division of Dam Safety

FERC

We have had a lot of good comments coming back and a lot of positive comments. We have been hearing that this is a good thing and there are some good things coming out of this, some wakeup calls. This is making some folks think some more about their projects about some things that they did not know about their projects. This is good for having an understanding of the history of your projects. We recognize that this is a major effort initially; once it is done it is available for future generations working on your project. This is important to the protection of human life and property. Many folks are very enthusiastic about this once you get into it. We want to tweak our process to improve it. This is similar to our EAP program, in that it is evolving. We are working on this together, we will continue to learn. We will continue to talk to our neighbors to the north and south and share experiences. We thank you for the efforts that you have put into this and seriousness with which you have approached the subject.

**Licensee Experience****Hells Canyon Complex - Brownlee, Oxbow, and Hells Canyon Dams**

8:45 a.m. – 9:00 a.m.

Mark Stokes  
Idaho Power

These dams are close together, so we were able to do them together.

The schedule was not too different from the Part 12 process – Jan to November – start to submittal.

- 1/1 – initial letter
- 2.14 issue RFP
- 3.1 STI prep
- 4/4 contract awarded
- 4/5 determine PFMA core team members
- 5/29 mailed last of the STIs to team members
- 6/9-11 conducted PFMA – held exercise on site, living in crew quarters – one day per dam
- 6/12-13 Part 12 and annual FERC inspections
- 7/11 draft PFMA reports to core team for comments
- 9/1 finalize PFMA reports and incorporate into STIs
- 10/24 draft Part 12 reports to Idaho Power
- 11/29 Part 12s and STIs submitted to FERC

**Lessons Learned - STI**

- Allow adequate time for preparation
- STIs are a great referenced document if prepared well
- Putting historical data on C\D worked well – ended up with 3 CDs per dam included everything that we could find: photos, drawings, etc.
- Send to core team in advance of PFMA
- Start Early!

**Lessons Learned – PFMA**

- Traded facilitators services with Steve Fry of Avista
- Conduct PFMAs as or near the project site if possible – it works well to be able to go back and look at the project as you go along. Every evening we went back over the project to make sure that we were comfortable with what we were doing.
- Go over category definitions with the team before starting – make sure all understand the definitions and categories.
- Laptop and projector worked well for notes and viewing photos, drawings, and historical documents (less emphasis on flipcharts.) – Took notes while

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Notes by Joel Galt

discussion was going on – used an Excel spreadsheet to collect the information and provided this to the team members for individual review.

- Tables setup in a “u” shape. All brought laptops to use the STI CDs.
- Had facilitator take notes on the flip charts.
- Spent some time the first day laying down the ground rules that the process would be run under.
- Would recommend having two projectors available: have Excel program up on one, and pictures and drawings up on another.
- Stress importance of historical photos – you can get a ton of information from these.

#### General lessons learned

- Expensive the first time through, but should make future Part 12s cheaper
- Prepare STIs in house if possible
- Performed Part 12 and Annual FERC inspections while at the project site
- Part 12 and STI bound together in a 3 ring binder
- How many PFMAs in a week? – This made for a comfortable week due to close proximity of the three projects.
  
- Documented 24 failure modes for one dam. Some are not very likely but we recorded them in order to document that we had looked at it.

(At this point Joel had to bug out for the FERC Security Committee Meeting, so he has no notes for the rest of the morning.)

**Supporting Technical Information****Open discussion on what worked and suggested improvements**

1:00 p.m. – 2:15 p.m.

Moderated by Pat Regan  
Division of Dam Safety and Inspections  
FERC

See Pat Regan/Dan Mahoney's notes

**Comments**

DamBreak analysis should be included in the STI

Construction history for older projects can get complicated due to modifications over the years.

Pat: These modifications may have to do with several different failure modes. A dam with a complex history will probably have a more complex STI and PFMA. We want to see an honest effort to collect the information available.

Clarify what we are looking for in operation information/procedures

Pat: the STI is generally summaries; we do not intend to include whole documents

STI updates

Update when things change on the plant site or in your procedures. Routine changes may be held off until the 5 year update.

Joe Kick: the cycle for total reprints is 15 years. Will FERC give us timely notice?

Q We have to describe the project twice in chapter 1 and chapter 2, then a third time in the part 12 report.

Answer: The description is to be more complete, the other two are to be more concise.

Q Joe Kick: QA/QC of the STI. I am not sure what a good STI really looks like. There are format issues: page numbers, revision dates for each page, revision log, etc.

Pat Regan: we will deal with this tomorrow.

Richard Harlan: If your appendix D is in good shape, the STID will not be a problem. The STID came out of the Part 12 workshops that we had 3 years ago. The App Ds were all over the map. The team put a lot of work into what info should go into the STID. This material is listed in chapter 14.

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Notes by Joel Galt

One licensee: we are paying \$30k for Part 12 and an additional \$30k for the PFMA. This excludes in-house labor.

2<sup>nd</sup> licensee: doubling the cost of the part 12 is about what we are paying for the PFMA/part 12.

Charlie Alhgren: we spent almost \$400K on part 12 follow-up items. Now it looks like I need to add \$60k - \$70K for updates to the STI. We run almost \$2M a year on our Part 12 program for 60 dams. There are 30 others that are state jurisdiction.

Larry von Thun: is it better to do the STID before or after the PFMA?

Terry Hampton: It is easier to do the STID first, but you may stand to miss some things that are important. It is better to do the STID afterward. One approach is to make the initial STID as a draft, then revise it later.

Pat Regan: PFMA and STI are one shot deals and updates as necessary

Joe Kick: IN the STI I have included the whole item for significant computations, not just summaries. This is better for the licensee in preserving the information. Cost \$80K for outside costs. The Part 12 reports are now about half as big as they used to be. Appendix F has a lot of this information already included. Suggested that Exhibit F be turned over to D2SI, so that the STI/Exhibit F would be the same.

Gus: do the STI and submit it as the Exhibit F.

Charlie Ahlgren: urge FERC to let licensees submit STIs as PDF files on CDs. This way we could update them by burning a few new CDs rather than redoing lots of binders.

Pat Regan: I don't know where we stand right now. Dan Mahoney: the govt is under a lot of pressure to accept electronic filings. We should be in a position to accept these on CD in the near future.

Zygaj: There was some discussions on the signatures on the PFMA.

Larry von Thun: You are only signing as a participant,

Pat Regan: Is there some liability associated with this? This was the concern. There is not a specific requirement to have that document signed.

Robin Charlwood: we have strived to achieve consensus on issues, but ....

Larry von Thun: we are not trying to reach consensus, we are trying to reach understandings. We can have disagreements and have these recorded in the PFMA. The process allows for differing opinions.

Pat Regan: The court will not care whether you signed it or not.

Larry von Thun: I see not signing it as a consequence of the idea that we are trying to reach an understanding.

Robin Charlwood: when someone reviews the document, he is basically agreeing with it.

Larry von Thun: no, he is making sure that his point of view was adequately covered.

You are trying to capture the ideas of the whole group.

Caution: any resemblance between these notes and what the speaker actually said may be accidental.

Notes by Joel Galt

Larry von Thun: The STI should be substantive. Summaries are ok for their purpose, but this document should be substantive. The owner should put together a document that is useful for them.

Doug Fessler, PacifiCorp: Make sure that the facilitators and have copies of the STI. This contains sensitive documents. How to secure?

Dick Rudolph: There is no requirement to send the STI out ahead of time.

Larry von Thun: I have not gotten STIs before the PFMA or after.

Mahoney: you are sending CEII out to consultants. This is the same as the owner hiring an independent consultant for a Part 12. This should not be a big problem. After the process there is no requirement to supply a copy of the STI to the consultant.

Mahoney: the Commission's CEII rules do not put restrictions on what the owner can send to anyone. It is intended to keep the Commission from sending out sensitive information.

Bob Knowlton, NYPA: After the PFMA we extracted the critical information and made it part of the STI. I would advocate putting the STID together afterward.

Charlie Ahlgren: all our STID have been put together by the independent consultant. This allows him to get a thorough understanding of the project. The IC goes through all the files. This is a manpower issue.

**Part 12D Report****Open discussion on what worked and suggested improvements**

2:30 p.m. – 4:00 p.m.

See Dan Mahoney's notes

**Summarize Results and Recommendations**

4:00 p.m. – 4:30 p.m.

(See Dan Mahoney's notes)

Gus: Looking at the situation where the FERC licensee has a powerhouse on a COE dam. If the powerhouse is integral with the COE dam we want you to coordinate with the COE. I will be talking to the COE to help get coordination going on with these reviews. In some cases the COE factored your facility into their process but did not tell you. Make sure that you are coordinating with the COE, and that they understand that FERC is asking you to do this.

The use of the COE inspection in lieu of a part 12 is dependent on the COE inspection being equivalent to or better than the Part 12. The PFMA is a new thing and therefore means that the COE inspection is not equivalent. Therefore folks in this situation will still have to do a PFMA.

Several licensees with powerhouses on COE dams commented that the COE was not all helpful when approached for information or cooperation in efforts like Part 12 inspections.

Joel asked if qualified licensee personnel could serve as facilitators on their own projects. Gus answered that they could serve as facilitators for other licensees but not on their own plants yet. He said that they may consider this in the future.

Dan Mahoney and Frank Calcagno said that they would have the notes from the workshop up on the website within a week. They hope to have the presentations up there also, but it probably will be later.

Joe Kick: Sitting through a PFMA helped his boss to better understand the dams and what Joe had to deal with. It made it easier to get him (the boss) to approve funding.