Ronald B. Robie (Thermalito) Pumping Generating Plant Fire on November 22, 2012
- No Serious Injuries -

California Water Commission

December 12, 2012
David Roose
Presentation Highlights

- High-Level Overview of Plant
  - Flow Characteristics in relation to Hyatt
  - Plant Characteristics

- Plant Fire on November 22, 2012: Emergency Response
  - Sequence of Events
  - Incident Command
  - Photos
  - No Serious Injuries

- Current Status: Incident Command—30 days???
  - Communication Plan
  - Structural Analysis
  - Safety/Air Sampling/Hazmat
  - Secure Plant to ensure fire evidence is protected

- Root Cause Analysis during Incident Command
  - Investigative analysis of what happened: Lead--Tio Zasso
  - Forensic Analysis (Fire expert & Relay expert analysis): Lead—Tio Zasso/David Roose
  - Lessons Learned—Apply lessons learned to all SWP plants

- Impacts
  - Water Impacts
  - Generation Impacts

- Phased Approach to Plant Restoration
Lake Oroville: Hyatt – Thermalito Complex
Oroville Complex Water Movement

Releases from Lake Oroville (Hyatt or spill)

Water to Thermalito Afterbay

Low Flow Channel - 600 cfs minimum

Feather River

Service Area diversions

Ronald B. Robie
Thermalito Pumping-Generating Plant

Lake Oroville Visitors Center

Oroville Dam

Fish Bearing Ponds

To Yuba City

Hamilton Road

Thermalito Afterbay Dam

Thermalito Forebay Dam

Fish Barrier Dam

Oroville Dam and Hyatt Powerplant

Thermalito Diversion Dam and Powerplant

Fish River

Feather River

To Chico

To Marysville

To Oroville

To Paradise

To Oroville Municipal Airport

To Olive Blvd

SCALE IN MILES

0 1/2 1 2
Ronald B. Robie (Thermalito) Pumping/Generating Plant

Plant Characteristics

• **Generation:**
  - Number of Units: 4 (1 g, 3 p/g)
  - Unit Size: 1 Kaplan type @ 36 MW (4800 cfs), 3 Francis type @ 27 MW (4200 cfs)

• **Pumping:**
  - Number of Units: 3 p/g
  - Unit Size: 3 @ 28 MW (3040 cfs)
Ronald B. Robie (Thermalito) Pumping/Generating Plant Fire

November 22, 2012

Plant Sequence of Events
Emergency Response
Incident Command
Plant/Unit Sequence of Events – 11/22/2012

• 0600: Thermalito Unit 1 placed in parallel by OFD Area Control Center by SCADA.
• 0604: Thermalito Unit 2 placed in parallel by OFD Area Control Center by SCADA.
• 0650: Thermalito Unit 2 tripped, forced out of service.
• 0654: Thermalito Unit 3 placed in parallel by OFD Area Control Center by SCADA.
• 0658: Thermalito Unit 3 tripped, forced out of service.
• 0658: Thermalito Unit 1 tripped, forced out of service.
• 0658: SCADA reports multiple failures at Thermalito including smoke detectors, DC ground/low voltage, unit temperature alarms, loss of essential A/C.
Ronald B. Robie (Thermalito) Pumping Generating Plant Fire

Emergency Response – 11/22/2012

- **0720**: Op-App directed to site at 07:00 and reports heavy smoke on second floor and indication that CO2 systems had discharged.
- **0733**: Cal Fire/BCFD ECC dispatches full alarm:
  - 2 Chief Officers, 1 Safety Officer, 2 Ladder Trucks,
  - 4 Engines, 2 Water Tenders
- **0820**: PCB 662 and 562, all load interrupters open, entry made by CalFire fire fighters into THPP; pressurized smoke in control indicating active fire in progress.
- **1300**: Operator reports CalFire has decided to stand down at THPP due to several unsuccessful attempts to extinguish the fire. Fire crew deploy “unmanned” cellar nozzle below control room on Level 136 to fight the fire.
Ronald B. Robie (Thermalito) Pumping Generating Plant Fire

Emergency Response – 11/22/2012
Ronald B. Robie (Thermalito) Pump/Generation Plant Fire

Fire extinguished – 11/23/2012

- 0950: Operator reports CDF are gearing up to make entry into THP.
- 1323: Fire IC reports fire controlled at 1323.

Incident Command – 11/24/2012

- 0835: THP Bypass Flow at 400 cfs from 0 cfs – moving water into Thermalito Afterbay.
- 1030: OFD Operations Superintendent reports CalFire has turned over THP to DWR. DWR Incident Command center set up with OFD Operations Superintendent as the commander. No one is to enter THP without authorization from OFD Operations Superintendent.
Photo Sequence of Fire (CalFire After Action Review Presentation) 11/22/2012

0808 hrs

0918 hrs
Photo Sequence of Fire (CalFire After Action Review Presentation) 11/22/2012

0921 hrs

0930 hrs
Photo Sequence of Fire (CalFire After Action Review Presentation) 11/22/2012

1025 hrs

1034 hrs
Photo Sequence of Fire (CalFire After Action Review Presentation) 11/22/2012

1053 hrs

1104 hrs
Photo Sequence of Fire (CalFire After Action Review Presentation) 11/22/2012

1216 hrs

1502 hrs
Current status – Incident Command (30+ Days)

- Communication Plan: 11/24/2012
  - Incident Command: On-site communication trailer
  - Stand down mode: No entry into plant-hazmat, structural, safety
  - Secure plant to ensure safety and protect fire evidence

- Emergency Contract:
  - Syblon Reid
    - Air Sampling/Hazmat
    - Structural Analysis
    - Safety
  - Three step root-cause analysis
    - Investigative analysis of what happened
    - Forensic Analysis (Fire expert & Relay expert analysis)
    - Lessons Learned: Apply lessons learned to all SWP Plants

- Clean-up & Assessment Phase
Impacts – water and generation

• Flows are being bypassed around the plant utilizing the plant bypass gate (capacity 10,000 cfs).

• Anticipated that regulatory releases will be maintained.

• Do not anticipate any water supply curtailments.

• Estimated lost generation is valued between $6.5 Million (90% hydrology) to $10.6 Million (50% hydrology) if plant is out of service during 2013.
Oroville Complex Water Movement

**Releases from Lake Oroville (Hyatt or spill)**

- **Low Flow Channel** - 600 cfs minimum

**Water to Thermalito Afterbay**

- Feather River
- Service Area diversions

**Ronald B. Robie Thermalito Pumping-Generating Plant**

**Lake Oroville Visitors Center**
Ronald B. Robie (Thermalito) Pumping Generating Plant Fire

Phased Approach to Plant Restoration

- Plant Fire Emergency: 11/22/2012 through 11/24/2012
- Incident Command: 11/24/2022 - ??? (30+ days)
  - Hazmat/Air Stabilization (on-going)
  - Structural Analysis (on-going)
  - Safety (on-going)
  - Root Cause Analysis (begins 12/13/2012)
- Clean-up & Assessment: TBD
- Restoration: TBD