RECLAMATION

*Managing Water in the West*

**TR-2012-04**

# Travel for installation and maintenance of test equipment for various projects at Davis Dam, Lake Mead, and Hoover Dam

**Dates of Travel: March 4-11, 2012**

**U.S. Department of the Interior**
**Bureau of Reclamation**
**Technical Service Center**
**Hydraulic Investigations and Laboratory Services Group**
**Denver, Colorado**

BUREAU OF RECLAMATION
Technical Service Center
Denver, Colorado

TRAVEL REPORT

Code: 86-68460 Date: March 19, 2012

To: Manager, Hydraulic Investigations and Laboratory Services Group

From: Josh Mortensen & Jimmy Hastings (86-68460)

Subject: Travel for installation and maintenance of test equipment for various projects at Davis Dam, Lake Mead, and Hoover Dam

Travel period: 4 March 2012 – 11 March 2012

2. Places or offices visited: Davis Dam, Lake Mead Marina, and Hoover Dam

3. Purpose of trip: Install bypass piping system and equipment for mussel turbulence field study, monitor mussel research boat and fish screen operation, and install strain gage instrumentation on penstock tie rods at Hoover Dam.

4. Synopsis of trip:

**Davis Dam**: Josh Mortensen and Jimmy Hastings arrived at Bullhead City, AZ the night of March 4th and reported at Davis Dam Monday morning the 5th. Work on Monday and Tuesday included fulfilling safety and emergency requirements, staging equipment and materials, and installing the upper inlet to the bypass pipe system off the existing 12-inch cooling discharge line (Figure 1a). Due to high water elevations in the tailbay, water was present in the cooling discharge where connections needed to be made. This delayed all other work on the bypass installation until early Wednesday morning when the water schedule allowed only one unit to be running, lowering the tailbay as a result.

Josh and Jimmy began work on the mid and lower sections of the pipe Wednesday at 3:00 am when no water was in the pipe. Pipe connections and valves were installed and fitted for welding (Figure 1a). At about 6:30 am a welding contractor from ICORP-AZ arrived onsite to weld the necessary connections. By noon welding was complete and the pipe could now be shut off from rising tailbay water which allowed the rest of the bypass system to be installed. The majority of the installation was completed about 9:00 Wednesday night (Figure 1b). Thursday morning the 8th Josh and Jimmy returned to Davis Dam to finish job site cleanup and to check out of the dam. Jimmy returned to the Las Vegas airport to fly back to Denver and Josh went to Hoover Dam to help with another project.

(a) (b)

**Figure 1 Upper and lower pipe connections and butterfly valve flanges ready to be welded (a) and completed test bypass system connected to cooling water discharge pipe (b)**

**Lake Mead**: On Tuesday March 6th Josh and Jimmy travelled to the Lake Mead boat marina as part of a separate research project during the delay at Davis Dam. Efforts were made to restart operation of the fish screens on the mussel research boat and reduce the noise of screen operation. Upon arrival we found that the power loss to the boat was likely caused by broken ropes that had been rubbing on a sharp piece of channel iron which allowed the boat to drift in the wind and pull the power plugs out of the outlets. Plugs and outlets were repaired and reconnected and the boat was secured with additional ropes placed to avoid contact with any sharp edges.

Figures 2 - 4 show initial settlement on screens and equipment but no significant colonization was apparent on moving and cleaned screens. Insulated boxes were placed over both screens and motors to reduce noise. Controllers were reset to reduce the number of cleaning cycles to 3 per day (drum screen) and to automatically restart after a power failure (Hydrolox traveling screen). Several cleaning and traveling cycles were observed to verify correct operation before returning to Davis Dam that afternoon.

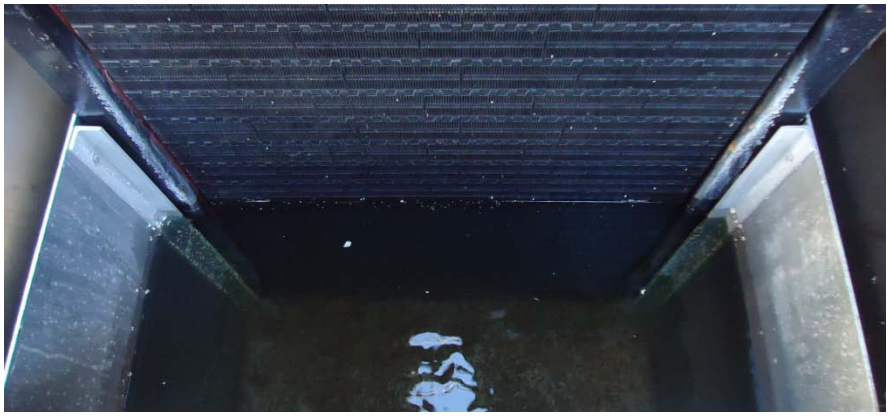

**Figure 2 Photograph of Hydrolox traveling screen, no visible mussel settlement.**

**Figure 3 ISI drum screen; initial mussel settlement apparent only on the top portion of the screen not cleaned by brush.**

**Figure 4 Sample section of Hydrolox screen that hangs stationary off boat; mussel settlement starting to become significant.**

**Hoover Dam**: On Thursday March 8th at about 1:00 pm Josh reported to Hoover Dam to assist Warren Frizell install strain gage equipment on the N3 penstock tie rods. Strain gages and wiring were sealed and protected to operate under submerged conditions when refilling the penstock (Figure 5). Figure 6 shows wiring secured and sealed in the pass-thru fitting that takes the wiring to the outside of the penstock to be connected to the data acquisition equipment and computers. Testing of gages and soldered connections (inside and outside of penstock) showed good connectivity and all instrumentation inside the penstock was prepared to be coated over. Installation was completed by about 5:00 pm on Friday the 9th. On Saturday morning March 10th Warren flew back to Denver and Josh returned to Denver in a government pickup arriving Sunday afternoon March 11th.


**Figure 5 Strain gage and wiring installed on tie rod.**

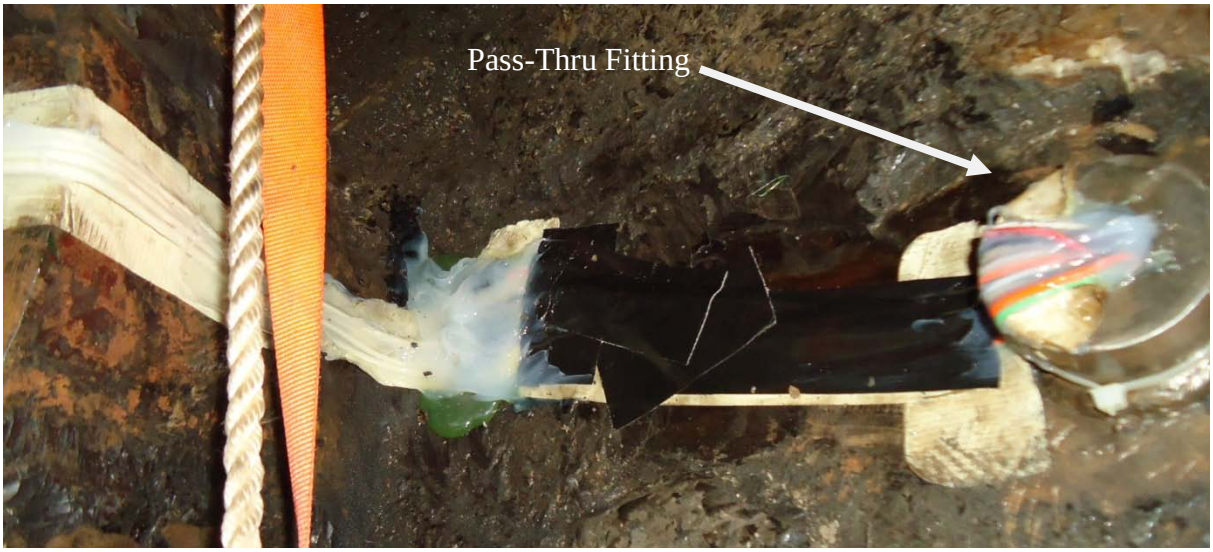


**Figure 6 Strain gage wiring protected and sealed in pass-thru fitting to the outside of the penstock.**

5. Conclusions:

**Davis Dam**: All installation and test equipment are in place to begin turbulence research. Josh and a mussel biologist will return to Davis to begin testing when the outage on unit #4 ends.

**Lake Mead**: Fish screens and equipment on quagga research boat were restarted and operating correctly as of March 6th. No immediate plans have been made for another site visit.

**Hoover Dam**: All instrumentation was installed and tested for connectivity. Josh and Warren will return to Hoover for data collection at the end of the outage when the penstock is refilled.

cc: 86-68290 (Karp), 86-68460 (Kubitschek), 86-69000 (Rocha)
LCD-D11 (Lammers), LCD-8200 (Willett)

**SIGNATURES AND SURNAMES FOR:**

**Travel to:** Davis Dam, Lake Mead, and Hoover Dam

**Date or Dates of Travel:** 4 March 2012 – 11 March 2012

**Names and Codes of Travelers:** Joshua D. Mortensen & Jimmy Hastings – 86-68460

**Travelers**

Joshua D Mortensen
Signature

3/19/2012
Date

Signature

3/19/2012
Date

**Noted and Dated by:**

Signature

Acting GM
~~3/19/12~~
Title

3/19/12
Date