Re: Page B-23, Salmon Spillway Stoplog Handling System, $140,600

Q. Are there available from Hydro's Occupational Health and Safety Committee reports outlining the safety issues involved in using conventional boom trucks to undertake this work? If so, please provide a copy.

A. See attached documentation:

1. Email from Cyril Penton dated 2003/07/10
2. A/I Report No. 97609

Cyril Penton
07/10/2003 02:54 PM

To: Darren Moore/NLHydro@NLHydro
cc: Leveson Kearley/NLHydro@NLHydro
Subject: Salmon River Spillway -Stop log storage system

Darren,

As per request, Leveson and I visited Salmon River Spillway on 2003-07-09 to witness removal of one stoplog section and review the arrangement for storage.

The workers have raised several legitimate safety concerns with respect to the method of removal and storage of these logs.

The logs, once installed in the guides, are removed one section at a time with the structures mono rail crane. The top section is positoned and dogged in an adjacent gate guide. The next five sections are stored on the storage system, while the last section is positioned and dogged in the gate guide. The five logs that are stored on the system are travelled to the end of the monorail and are placed on the system. The boom truck is then used to lift the log, via two eyebolts and steel slings, to the final storage position on the rack.

To summarize:

1. The storage rack is uneven and is not level. Therefore one end of the stoplog is in contact with the storage rack when the other end is free. This means little when storing, but is potential dangerous upon removal from storage, as the load can swing quickly.

2. There is not enough room to properly handle the logs while placing in the rack. I have attached a few pictures here that indicates the amount of room between the truck, the mono rail support and the log on one end, as well as between the ladder, the gabion and the log on the other end. Because these areas are very small, workers must work partially under the suspended stoplog while positioning the log at the final point of travel.

3. The logs are stacked two on top of three. The second tier of two logs is supported by two independent beams that rest on the top of the three bottom logs. Once the logs are in place, there is no real concern with stability but workers have to stand on the loose beams while positioning the second tier. Because the whole system is not level, and because the beams are not fixed, and because the logs are not perfectly even, this can present a fall hazard.

4. The bottom three logs, and the top two logs are stored very close to each other. In order to remove the eye bolts workers must climb onto the log and reach between to remove the nuts.

5. The limits on the boom truck are overridden during the operation.

6. The cable on the boom truck is in contact with the monorail beam when the log is first lifted.

With all this noted there are two main points:

1. There are two many pinch points for the workers. They should not have to work while under the suspended load.

2. The boom truck can not be used properly in this application.

In short we should address these issues by having Generation Engineering review the existing design and present a new conceptual design for budget submission. The concept of a trolley system (not unlike the draft tube stoplog system at BDE Ph #2) should be examined to determine it's feasibility in this circumstance. It would also be better if all logs could be stored on the same elevation.

Cyril

Picture # 1: Workers Guiding Log

Picture # 2: Area between Log and Ladder

Picture # 3: Available Space at Monorail Support and Outrigger

Picture # 4: Available Space between Truck and Storage System

Picture # 5: Boom Truck Cable in Contact with Monorail

Picture # 6: Boom Truck Cable

Picture # 7: Stop Logs Stored

Picture # 8: Stop Log Transfer to Boom Truck

Picture # 9: Truck Outrigger – Available Space

HYDRO THE POWER OF COMMITMENT

ACCIDENT/INCIDENT INVESTIGATION SUMMARY REPORT

ACCIDENT/INCIDENT NO. 97609

DESCRIPTION

1. LOCATION OF ACCIDENT/ INCIDENT	2. DATE OF OCCURRENCE	3. TIME	4. DATE OF REPORT
SALMON RIVER SPILLWAY	04/05/13	1500 HOURS	04/05/17

5. DEPARTMENT	6. SAFETY CENTER	7. IMMEDIATE SUPV. (NAME & EMP #)
ELECTRICAL/MECHANICAL	BAY D'ESPOIR	R. PRIDDLE (10641)

8. EMPLOYEE (NAME & EMP #)

11. NATURE OF A/I: MOVING STOP LOGS

12. A/I TYPE: (CIRCLE ALL THAT APPLY)
PEOPLE EQUIPMENT (PROCESS) ENVIRONMENT

9. OCCUPATION | 10. EXPERIENCE

13. A/I CATEGORY: (CIRCLE ALL THAT APPLY)
INJURY/ILLNESS (INCIDENT) C'TRL. SUBSTANCE SPILL
PROPERTY DAMAGE/THEFT OTHER ACTUAL LOSS EMS NON-CONFORM.
DAMAGE/INJURY THIRD PARTY COMPLAINT REG. NON-CONFORM
PROCESS NON-CONFORM

14. FIRST AID MEDICAL AID DISABLING (CIRCLE ONE)

15. NATURE OF INJURY OR ILLNESS

17. COST ESTIMATED: N/A ACTUAL: N/A

18. ASSET #

19. NATURE OF DAMAGE: REFUSAL TO WORK

20. NATURE OF LOSS: N/A

16. TYPE OF CONTACT/NEAR CONTACT

21. OBJECT/EQUIPMENT INVOLVED IN DAMAGE: NONE

22. VEHICLE ACCIDENT YES NO

23. PERSON IN CONTROL OF ACTIVITY (NAME & EMP #)

24. DESCRIPTION: USE BACK FOR ADDITIONAL COMMENTS

AS PER ATTACHED

RISK

EVALUATION OF LOSS POTENTIAL IF NOT CORRECTED

25. LOSS SEVERITY POTENTIAL
(MAJOR) MODERATE MINOR (CIRCLE ONE)

26. PROBABILITY OF OCCURRENCE
FREQUENT OCCASIONAL (RARE) (CIRCLE ONE)

ANALYSIS

27. IMMEDIATE FACTORS: WHAT SUBSTANDARD PRACTICES AND CONDITIONS CONTRIBUTED TO OR COULD CONTRIBUTE TO THE INCIDENT?

1. (A) RESTRICTED WORK AREA - UNSAFE FOR EMPLOYEES TO SAFELY HANDLE AND STORE STOP LOGS.

28. BASIC FACTORS: WHAT SPECIFIC PERSONAL OR JOB FACTOR CONTRIBUTED TO OR COULD CONTRIBUTE TO THIS INCIDENT?

1. (12.4) INADEQUATE AVAILABILITY OF EQUIPMENT TO SAFELY HANDLE AND STORE STOP LOGS.
2. 9.8 INADEQUATE EVALUATION OF CHANGES. WHEN THE DAMS WERE RAISED AND A NEW BOOM TRUCK WAS PURCHASED THIS UNSAFE CONDITION WAS THE END RESULT

ACTION PLAN

29. REMEDIAL ACTIONS: WHAT HAS AND/OR SHOULD BE DONE TO PREVENT REOCCURRENCE? (CONTROL FACTORS)	RESPONSIBILITY	WORK ORDER
1. DESIGN A NEW SYSTEM FOR SAFE HANDLING AND STORAGE OF STOP LOGS.	ENGINEERING	GERARD PIERCEY
2. USE ALTERNATE METHOD TO STORE AND HANDLE LOGS	CYRIL PENTON	

SIGNATURE OF INVESTIGATOR | DATE / /

SIGNATURE OF INVESTIGATOR | DATE / /

30. ACTION ITEM TARGET DATES; X OUT FOR COMPLETED ACTIONS
1. 07-10-31 X 05-10-31 3. ____
4. ____ 5. ____ 6. ____

REV

31. LEADER'S REVIEW OF THE INVESTIGATOR'S ANALYSIS OF THE CONTRIBUTING FACTORS TO THIS ACCIDENT AND THE REMEDIAL ACTIONS DIRECTED AT THE PREVENTION OF REOCCURRENCE AND IMPROVEMENTS TO THE WORK PROCESS.

SIGNATURE: Trevor Arnold TITLE: Manager DATE: 06-03-09

SIGNATURE: ____ TITLE: ____ DATE: ____

FORM NO. 30-0200 Rev 03/Aug

Original given to ~~Trevor~~ Cyril

Submitted to Trevor for approval on Apr. 21/06.
Approved.

A/I 97609

STARTED REMOVAL OF STOPLOGS AT APPROX. 1330 HRS ON MAY 13TH, 2004 WEATHER CONDITIONS, SUNNY WITH MODERATE TO HIGH WINDS FROM WEST. REMOVED FIRST SECTION AND LODGED IN GATE # 2. REMOVED SECOND SECTION AND LODGED IN CRADLE WITHOUT INCIDENT. REMOVED MASTER LOG AND ATTACHED SLINGS FROM CRANE AND PROCEEDED TO MOVE SECTION TO D/S POSITION IN CRADLE FOR STORAGE. WIND CONDITIONS CAUSED SOME SWINGING OF SECTION MOVING CRANE CABLES IN WARD ONTO MONORAIL BEAM ALSO WHEN EXTENDING BOOM & CABLE WIND MOVEMENT CAUSED CRANE CABLES TO SHIFT TOWARDS OVERHEAD POWER LINE, HOWEVER SECTION WAS STORED WITHOUT INCIDENT. A THIRD SECTION WAS REMOVED AND PLACED IN CRADLE AND THEN ATTACHED TO CRANE FOR STORAGE IN CENTRE SECTION OF CRADLE. AT THIS POINT, WIND CONDITIONS HAD INCREASED, SWINGING WAS MORE EVIDENT, ALSO STOPLOG SECTION WAS UNSTABLE WHEN DROPPED (TIPPED SEVERAL TIMES). QUESTIONS WERE ALSO RAISED ABOUT FALL ARREST WHEN RELEASING MASTER LOG HOOK. WORKERS FELT IT UNSAFE TO CONTINUE FURTHER AND A "REFUSAL TO WORK" WAS INITIATED.