Teck Highland Valley Copper Partnership
P.O. Box 1500
Logan Lake, BC Canada V0K 1W0

+1 250 523 2443 Tel
+1 250 523 3242 Fax
www.teck.com

Teck

FUNCTIONAL TEST OF EMERGENCY RESPONSE PLAN FOR HIGHLAND L-L DAM

SUMMARY OF NOTES AND FINDINGS (Prepared for November 20 debrief meeting)

Date: 2012-Nov-15

Time: 9:00 – 11:10am (approximate)

Subject: Summary of notes and findings for functional test (performed November 15, 2012) of Emergency Response Plan for Highland Tailings Storage Facility. Content provided by personnel that observed/facilitated the scenario.

Locations of activity: Highland L-L Dam (Cyclone House, Highway/North Muster Area and Hillside/South Muster Area), Crisis Room (Admin Boardroom), Gatehouse, ERT Training Trailer. Crisis Management Team corresponded with Teck Corporate, but feedback from Teck Corporate has not been included here.

Scenario summary: Catastrophic dam failure of Highland L-L Dam due to piping from internal erosion. One heavy equipment operator and machine engulfed by flow of tailings and water, treated as a fatality.

Purpose: This emergency/crisis simulation was designed to test: 1) the effectiveness of the L-L Dam Evacuation Procedure and the response of HVC personnel and contractors under mandatory evacuation, 2) the response of the Emergency Response Team (ERT), 3) the response of the Crisis Management Team (CMT) and Gatehouse (GH), 4) the overall effectiveness of the updated Emergency Response Plan (ERP) for the Highland L-L Dam, and 5) how well the ERP feeds into HVC's Crisis Management Program.

Teck Highland Valley Copper Partnership
P.O. Box 1500
Logan Lake, BC Canada V0K 1W0

+1 250 523 2443 Tel
+1 250 523 3242 Fax
www.teck.com

Facilitators and participants with duties to respond (does not include HVC personnel and contractors):

Role Title (Involvement in Test)	Location During Test
General Manager (Responder, Crisis Management Team)	Crisis Room
Supt. Tailings & Water Management (Observer and Facilitator)	Crisis Room
Senior Civil Technologist (Overall Scenario Facilitator)	Cyclone House
Coop Student (Observer)	Cyclone House
Senior Env. Coordinator (Observer)	Crisis Room, Gatehouse, ERT Training Room
Dam Construction Supervisor (Tailings & Water Mgmt. Dept. Person in Charge)	L-L Dam
Senior Design Draftsperson (Observer)	L-L Dam (with Dam Construction Supervisor)
Superintendent Safety and Loss Control (Responder, Crisis Management Team)	Crisis Room
Senior Safety Coordinator (Facilitator)	Gatehouse
Security/Protective Services Personnel	Gatehouse
Senior Safety Coordinator (Facilitator)	ERT Training Trailer
ERT Member (Responder – ERT Incident Commander)	ERT Training Trailer
ERT Members (Responders)	ERT Training Trailer
Consultant, OASIS/ERM (Observer)	Emergency Response Team Training Trailer
CMT Members (Responders)	Crisis Room
Teck Crisis Team Members (Responders)	Teck Corporate

Teck Highland Valley Copper Partnership
P.O. Box 1500
Logan Lake, BC Canada V0K 1W0

+1 250 523 2443 Tel
+1 250 523 3242 Fax
www.teck.com

Timeline of events*:

Time	Events or Actions Taken
	PHASE I – Emergency Response Plan Activation Evacuation of L-L Dam
0857	Senior Civil Technologist calls for Radio Silence on Ch. 7 and introduces test of Emergency Response Plan and Evacuation Procedure for the L-L Dam
0900	Cyclone House Operator(CHO) calls Dam Construction Supervisor and designated alternate for Tailings and Water Mgmt. to inform him of increased seepage coming from the toe of the L-L Dam
0902	Dam Construction Supervisor announced after his investigation of dam that it is a Level 2 Emergency and that evacuation of the L-L Dam area is mandatory
0903	Dam Construction Supervisor informs security of situation and announces mandatory evacuation again on Ch. 7
0909	ERT rescuers en route to muster areas at each end of dam
0916	Security acting as incident command until ERT IC arrives
0921	ERT calls security to request road closures, ERT unable to make radio contact with Spatsum Pumphouse
0924	ERT assumes IC of Highway/North side muster area
0925	ERT assumes IC of Hillside/South side muster area
0931	ERT IC reports full breach of Highland L-L Dam
0936	Senior Safety Coordinator gets called on radio directly from Dam Construction Supervisor who reports that a cat operator is missing
0943	Dam Construction Supervisor reports that it is a yellow cat, #485, a Cantex owned machine that is missing
0945	Dam Construction Supervisor announces that all personnel are accounted for at muster areas (except for missing cat operator)
0947	ERT IC requests for a helicopter to assist with search for cat operator
0950	Call for bus to be sent to Highway side muster
0952	Senior Civil Technologist announces that test is complete (end of Phase I)
	PHASE II – Ongoing Crisis Management Activities
0955	IC calls for crew change request
0958	Call from Teck Corporate, transferred to Crisis Management
1000	Call from media
1003	Incident Commander calls to discontinue search for missing cat operator
1007	“Face-to-face” between IC and Ambulance driver describing cat operator as unresponsive
1012	Incident Commander steps out of room (to contact coroner)
1023	Incident Commander calls for taxis to relieve ERT members, calls for guard at Calling lake road
1048	New Incident Commander (on B crew) takes over
1110	Phase II complete

Teck Highland Valley Copper Partnership
P.O. Box 1500
Logan Lake, BC Canada V0K 1W0

+1 250 523 2443 Tel
+1 250 523 3242 Fax
www.teck.com

Teck

*For more detailed timelines see notes provided by observers/participants in the Appendices. Minor discrepancies may exist between times listed above and the notes in the Appendices due to differences between the observers.

Summary of issues for consideration that may require corrective action (duplicate and/or related findings have been grouped together):

Signage, Muster Areas and Accountability

- Proper standard signage at muster areas
- Knowledge of muster area locations by HVC personnel
    - 2 HVC electricians didn't know where muster areas were – *they had not taken the Dam Training Course!*
- Signage for entire tailings line (highway standards)
- Develop plans to divide ERT evenly between two sides of the dam
- Names? Hillside/Highway side doesn't work & ERT does not want North/South
    - Once SS Tailings line is operational → Tailings/Highway Side
- Needed at muster areas: emergency equipment, lights, delineators, road closed signs, etc.
- Better system for accountability for non-ERT HVC personnel (needs to be an HVC employee checklist)
    - Sign-in/sign-out at North & South
    - Assign one HVC foreman to keep track of personnel at L-L & Spatsum (sign-in at morning meetings or on a board in Mill Shops)
    - Plan for accountability needs to be more systematic
    - List from Security worked very well for contractors

Contractors

- Cantex gathered at meeting places before evacuating (took them AT LEAST 22 minutes to get to the muster area)
    - People in Cantex office were told to go outside and wait → start walking!
- Cantex had full accountability of their employees in only two minutes once at the muster areas
- Other contractors also had full accountability of their staff completed efficiently

Radio

- Surface Water pumphouse had no radio contact, gland water did not either
- Very difficult to monitor all 3 radio channels (7, 12, 16)
- Surface Water pumphouse had no radio contact, gland water did not either

Teck Highland Valley Copper Partnership
P.O. Box 1500
Logan Lake, BC Canada V0K 1W0
+1 250 523 2443 Tel
+1 250 523 3242 Fax
www.teck.com

- Repeater issues – most radios cut out around 9:20 for a few minutes
- Spatsum did not hear evacuation announcements
    - Spatsum was not accounted for when evacuation was complete – miscommunication because ERT thought Spatsum was accounted for
    - "Spatsum Package" from security in the future (Cell phone, keys, etc.)
- Require another base station for CH12 (already has one for CH7 and CH16)
- Require multiple base stations in truck too
- Assigned portable radios – have 1 or 2 assigned to CHO instead of individual people

Communication

- Very difficult to hear participants in Vancouver CMT room – multiple voicing making it difficult to understand the questions being asked
- Would be good for each person to identify themselves prior to speaking
- Difficult in CMT room to hear with the radios and other communication going on in the background - a separate room for conversations with the Vancouver CMT may be the solution
- Use military time in our references
- Should have shared desktop with Vancouver so that CMT could have presented a map of the Spence's Bridge area
- International callers unable to reach CMT direct line at HVC
- Take time on radio communication
    - Wait a moment after pressing button
    - Talk slow and clearly

Emergency Contact

- Phone list for Vancouver office difficult to find in Crisis Manual
- L-L evacuation phone list was correct but HVC-wide phone list was outdated or numbers were hard to find
- Larger print

Other

- Somebody with technical knowledge should be called to the CMT to assist with equipment
- Consider doing scenario simulations during Tailings Management Workshops as a training activity
    - Include CMT in Dam Training Course or develop streamlined course for them

Teck Highland Valley Copper Partnership
P.O. Box 1500
Logan Lake, BC Canada V0K 1W0

+1 250 523 2443 Tel
+1 250 523 3242 Fax
www.teck.com

- Crucial to have Tailings and Water Management person with CMT to explain the technical side of dam failure

Scenario-related Issues (for consideration when planning future test scenarios)

- Consider a timeline chart on the wall or computer screen so that all had the same information/references
- Would have been useful to have ERT IC at the L-L Dam
- Protective Services personnel at each muster area were never informed to change from "observers" to "responders"

Notes/findings compiled by: Consultant, OASIS/ERM