Appendix T: Leaking Chiller Communications Summary

Signs of a potential curling chiller leak were first recorded in the maintenance log book on April 13, 2017 as a *strong ammonia smell in the curling rink [brine] filter*. The presence of ammonia in the brine was later confirmed through two separate brine analysis samples taken May 11, 2017 and August 4, 2017 indicating the chiller was leaking ammonia into the brine.

Technical Safety BC examined email communications involving the City of Fernie employees relating to the arena during the period from April 13, 2017 through October 17, 2017 and conducted interviews with those in communication regarding the associated brine analysis tests.

The email and communication evidence reviewed indicates that:

- Communication regarding the leaking chiller remained between the maintenance contractor employees dealing directly with the City of Fernie, the Director of Leisure Services and the Refrigeration Operator
- other City of Fernie employees or persons interviewed due to involvement with the Fernie Memorial Arena / Curling Rink were not informed of a leak in the chiller or a potential loss of service at the curling rink for the upcoming season
- no communications regarding the leaking chiller is evident to have occurred between September 1 and October 16, 2017
- interview statement from Cimco of a recommendation to *keep monitoring* was provided following the communicated results of the second brine test on August 30, 2017.
- no communications expressed an awareness of a safety hazard associated with the leaking chiller or ammonia leaking into the brine

From:			
Sent:	August-01-17 11:57 AM		
To:			
Subject:	Fernie		
Attachments:	Fernie Mem Arena - Cold Brine May-2017.doc; Fernie Curling Club - Cold Brine		
	May-2017.doc		

Figure T-1: email within Cimco – transmission of first brine analysis results from sample of May 11 to be sent to City of Fernie.

On Aug 1, 2017, at 12:47 PM,	<,	@TOROMONT.com> wrote:
Gentlemen:		
suspended reading HIGH –	brine needs	filters to 5 microns, I believe we've been on 10 microns thus far, iron & to be strengthened, S.G. needs to be 1.20 minimum – pH Is OK – monitor – take another sample & advise -

Figure T-2: Email from Cimco to City of Fernie dated August 1, 2017 in response to Brine Analysis Report of June 6, 2017.



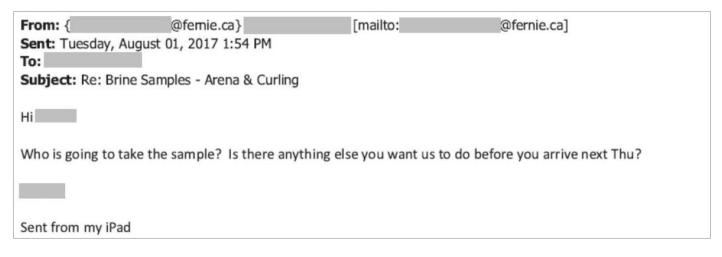


Figure T-3: Email from Cimco to City of Fernie coordinating second brine sample



Figure T-4: email from Cimco to City of Fernie in relation to second brine sample to be taken

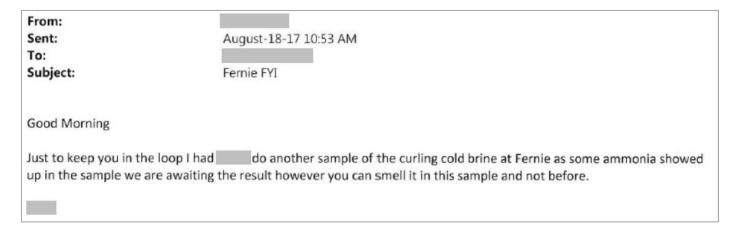


Figure T-5: Email between Cimco employees regarding second brine sample and analysis for the curling system.



Figure T-6: Email from Cimco to City of Fernie – attachment reference to result of second brine sample analysis report for the curling system dated August 29, 2017.

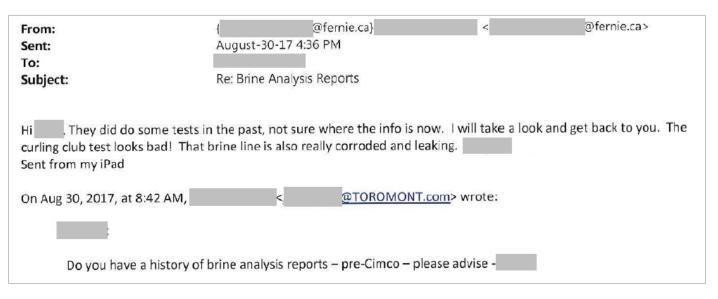


Figure T-7: Email from City of Fernie operator to Cimco dated August 30, 2017 in response to Brine Analysis Report of August 29, 2017.



Figure T-8: Message taken by the Cimco call center from the Director of Leisure Services at 4:33AM on October 17, 2017 in relation to the ammonia alarm.



Documents requested under order – Technical Safety BC letter dated November 6, 2017

Item #7 – Instructions or recommendations provided by CIMCO to Fernie associated with the Brine Analysis.

- Brine test results emailed by Cimco to City and on August 1/2017. Brine tests were dated June 6/2017 (sampled May 11/2017)
- Telephone call between Cimco and City in early August

 Cimco recalls City asking "will the chiller make it for the season?" in which Cimco responded "I don't know if it will last 5 minutes or 5 months"
- Proposal emailed from to on August 24/2017 for a single chiller to replace the existing curling and arena chillers
- Brine test results emailed by to on August 30/2017. Brine tests were dated August 29/2017 (sampled August 4/2017).

Figure T-9: Cimco response to Technical Safety BC regarding instructions or recommendations to City of Fernie associated with the brine analysis.



Documents requested under order – Technical Safety BC letter dated November 6, 2017

Item #11 – CIMCO policies and procedure for responding to brine analysis reports with results that are outside of recommended ranges.

CIMCO does not have a written policy and procedure document that identifies how we respond to brine analysis reports with results that are outside of recommended ranges. However, we do have a process we follow:

- · Advise end-user / owner of equipment of the brine results
- · Recommend a solution repair or replace

Figure T-10: Cimco response to Technical Safety BC regarding policies and procedures for responding to brine analysis reports that are outside of recommended ranges.

