

Introduction

This report has been prepared to fulfill the requirements of the City's Purchasing By-law 2014-1 which requires a written report to Council to advise it of the circumstances of an emergency purchase if the total acquisition Cost is \$100,000 or more. The Purchasing By-law defines an emergency as a situation which may affect the safety, health and/or welfare of the public. This report outlines the emergency work undertaken by City staff, and CIMCO Refrigeration (the contractor) in September 2018. Upon confirmation of the final cost, the preparation of this report was completed for inclusion in the earliest available Council meeting.

Background

While conducting scheduled preseason ice plant maintenance at Carmichael Arena on September 14, 2018, the contractor found foreign materials in the system's compressors. Oil was found in the glycol expansion tank which indicated cross contamination between the glycol and oil. Ammonia was also present in the brine system, indicating potential issues with the plant's chiller.

The ammonia and glycol was removed from the ice plant system due to safety concerns. The chiller, condenser and oil coolers were pressure tested for potential leaks. Results indicated that the chiller and oil coolers were leaking and required replacement. The condenser was found to be in good working order.

Repairs were scheduled immediately with the following repairs completed:

- Two (2) new oil coolers installed
- Two (2) new oil separators with relief valves and dedicated stack installed
- Two (2) new isolation and check valves installed
- Crankshafts on both compressors were refinished and major overhauls conducted on both compressors
- New Shell and Tube Chiller with insulation installed
- New 3 way valves with two (2) chiller relief valves installed
- Liquid lines were removed and new lines installed with the proper slope
- New discharge line installed
- Removed and disposed of the contaminated ammonia
- Removed and disposed of the contaminated glycol
- Installed 400 lbs of new ammonia
- Installed new propylene glycol as required

An annual preventative maintenance program exists for all arena refrigeration plants. The programs are developed in conjunction with the contractor hired to maintain the ammonia plants at all arenas. Preventative maintenance and inspections are scheduled annually in the summer prior to ice in based on plant hours. It was during the Carmichael Arena inspection and the scheduled maintenance of the compressors and the chiller when the issues above were identified. The chiller was 12 years old. Chillers typically have a lifecycle of 18 to 25 years, however many can fail earlier. Repairs to

the existing chiller were explored however the cost to repair the pin hole would have exceeded the cost of a new chiller. The warranty on a new chiller is only one (1) year. The oil coolers that failed were beyond their expected lifecycle. Oil coolers are inspected on an annual basis. Going forward, preventative maintenance plans will be updated to include oil coolers. Additionally, as part of the 2019 capital budget, funds have been allocated to have each arena ammonia plant audited. Based on the results of the audits preventative maintenance programs will be updated accordingly.

Work was completed by September 21, 2018. The opening of the ice season at Carmichael Arena was delayed by one (1) week. The final cost for the contractor's work was submitted to the City on January 11, 2019 with a total value of \$102,011.86 + HST. The cost of the emergency Chiller repair (\$102,012) at Carmichael Arena was funded by canceling Capreol Arena Building Shell project - remaining balance was \$66,690, surplus from Chelmsford FHT \$29,777 and contingency \$5,545. Capreol Arena building shell repair project will be part of future capital request.