PHMC Lessons Learned Fluor Hanford Inc.

Caution Bulletin

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Title: Compressed Air Fitting Failure

Date: May 22, 2006

Identifier: 2006-RL-HNF-0017

Lessons Learned Summary: A compressed air fitting failed as a result of misapplication of materials.

Discussion of Activities: On March 13, 2006, a fitting on the C-200 compressed air distribution system failed. The fitting was a barbed body with a crimped ferrule attached to a textile-reinforced rubber-lined 1½ inch diameter hose. The fitting failed when the air hose was pressurized (100 psig operating pressure). No one was in the vicinity of the air line when it parted and there were no injuries.

Analysis: The fitting failed after approximately two years of service when the hose slipped off the barbed body fitting. The hose was able to slip off because the fitting did not have the requisite shoulder to retain the locking ring built into the ferrule. Also, the crimped ferrule was not able to develop sufficient compression of the hose into the barbs because the locking ring limited the deformation of the ferrule.

A review of the failed fitting revealed three incorrect applications of the fitting type.

1. The ferrule used was not matched to the body type.
2. The fitting type (body with crimped ferrule) is not recommended by the fitting manufacturer for the type of hose used.
3. The fitting type was intended for use in high pressure hydraulic systems rather than the 100 psig compressed air application.

Recommendations: Maintenance and Engineering should review compressed air hoses to ensure proper application of fittings.

Cost Savings/Avoidance: Not evaluated

Work Function: Maintenance - Mechanical

Hazards: Pressurized Systems

Keywords: compressed air fittings, air hose, pressurized hose, ferrule

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References: PER 2006-0583

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