

Stored energy: injury caused by failure of expansion joint in fire-fighting equipment

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During a trial of fire-fighting equipment, a hose expansion joint or bellows failed.

What happened?

The release of pressurized water hit a crewman who was standing nearby, slamming him backward and knocking him unconscious. The fire pump was shut down and help was sought. CPR was administered; subsequently the injured person was medevaced.

This incident was considered by our member to be a potential fatality. The injured person was in hospital for some weeks.

IOGP Life Saving Rules:




Energy isolation



What went wrong? What were the causes?

Some identified issues were:

- There was inadequate management of significant risk.
- There was no understanding of the life time of the expansion joint or bellows.
- There was no installation procedure provided for this bellows by the manufacturer.
- There was no preventive maintenance or inspection/testing of the failed equipment.



Simulation of the position where IP
fell after pressure impact

What actions were taken? What lessons were learned?

Our member drew the following lessons:

- There had been a similar rupture of a bellows some years previously; this earlier incident was not investigated. Had it been investigated, it might have helped in preventing reoccurrence.
- Engineering and design of critical equipment during new building should take into consideration personnel safety as well as equipment protection.
- There needs to be a better design review of pressurised equipment, particularly where different components are in use.

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