

Failure of hydraulic fitting at pressure

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A member reports an incident in which a hydraulic fitting failed under pressure.

What happened?

The hydraulic fitting was part of an hydraulic intensifier panel used during live testing of a guillotine cutter and intensifier. (Hydraulic intensifiers are used to boost ROV pressure up to around 690 bar for various tooling requirements like cutters and linear override tools.)

The fitting that failed connected a pressure gauge to the high pressure (output side) side of the intensifier and was an integral and permanent component of the equipment. The gauge was being used to monitor output pressure on the circuit while the cutter test was performed. This connection failure resulted in the high velocity ejection of the gauge under very high pressure. There were no injuries. The intensifier in question was removed.

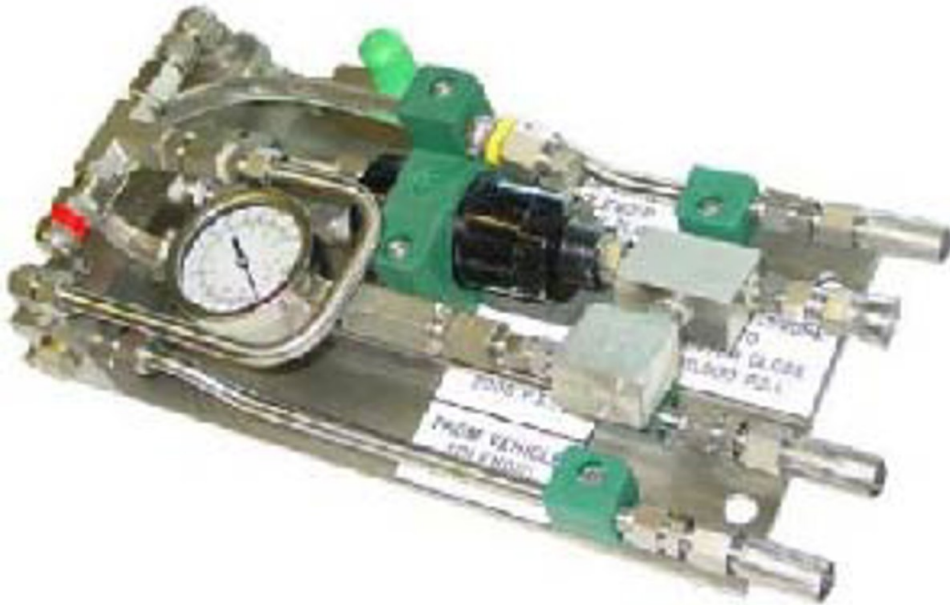


fig. 1: typical intensifier panel



fig. 2: open fitting that held the gauge

What were the causes?

Preliminary findings from our member's investigations were:

- The hydraulic fittings that connected the gauge to the intensifier were not 690 bar rated.
- The other hydraulic fittings in this part of the circuit were not 690 bar rated.
- Urgent checks revealed that there were several intensifier panels with non-rated fittings in service elsewhere.

Actions

Our member took the following actions:

- All on-deck testing involving high pressure intensifiers was stopped immediately and any required testing was conducted in the water with a wire sample, until confirmation of correct fitting was made.
- All worksites checked intensifiers and verified the specification with tooling department(s) and arranged for replacement or upgrade as necessary.
- Steps were taken to upgrade affected units held onshore and these were systematically changed out with affected units offshore until all panels had the correct fittings.

It should be noted that this specification shortfall may not be limited to ROV intensifiers and therefore vigilance is recommended with all high pressure hydraulic equipment.

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