

**Adventure Activities Licensing Service
InfoLog: May 2016**

Jacob's Ladder spar failure

The issue.

In April 2016 the horizontal spar of a Jacob's Ladder on a high ropes course broke under the weight of a child. Fortunately there were no injuries.



The ropes course was subject to an inspection regime including:

- Visual check pre-use
- Weekly visual inspection
- Close inspection every 4 months (last recorded January 2016)
- Annual inspection by an ERCA-certified inspector (last recorded September 2015)

None of these inspections had reported any concern with the spar.

After the incident, both the manufacturer and the ERCA inspector examined the broken spar, which was a natural tree spar. Neither of them had had previous experience of such a failure. They identified three contributory factors:

- Rot
- Wide growth rings, indicating that fast-growing wood had been used
- A ring of knots in the wood at the break point

The ropes course was constructed in 2008. In June 2004 there had been a change in the law to prevent the use of arsenic in wood preservatives. It has been suggested that the substitutes used at the time **MAY NOT** have been as effective in preventing rot.

The manufacturer replaced all similar spars on the ropes course with laminated spars, made from treated planks glued together. These are stronger than natural tree spars and more easily subject to quality control.

The Outcome:

It is recommended that providers should ensure that anyone inspecting their challenge course, ropes course or similar structures are aware of this incident and arrange for natural tree spars to be inspected closely for any evidence of rot, knots or wide growth rings.

At least as an interim, load testing spars could be considered. Any testing should be carried out **assuming that the spar may fail**. This will enable those carrying out the tests to do so in such a way that protects themselves and others from injury.