



Service Bulletin (2008-31): Load Cell / Supporting Link Inspection

17 March 2008 – Matthew Sekulic, Asst. Service Manager, Cranesmart Systems

Issue:

A recent preventative maintenance inspection by one of our customers has found surface cracks in a set of supporting links and the load cell itself. Another, related cell, has suffered a mechanical failure. Both units are operating in offshore conditions.

Our technical staffs are actively working with the customer involved and independent experts to isolate the cause(s) of these issues.

As a precaution, we are **strongly recommending** all of our customers with Load Cell equipped systems inspect the Load Cell and supporting hardware as soon as practical. This applies to all Cranesmart / Load and A2B Company Load Cells and Links, regardless of load rating or age

In addition, we **strongly recommend** frequent visual inspection at least monthly in addition to your governing Safety Body guidelines. Load measuring components and hardware are in the “critical path” and they should be tested with the same care given to wire rope, becketts, hooks and other hardware in the same class.

If any issues are found, please report them to our main office along with the affected Cranesmart unit serial number. We can be reached at (780) 437-2986, Monday through Friday, 08h00 – 16h30 MST (with limited after-hours support).

History:

We have shipped over 15 000 Load Cells with less than 10 cases regarding reduced mechanical integrity of a load related component. Generally, the causes fell into a category of “unexpected stress on the components”, such as:

- Side loading
- Two-blocking the crane
- Welding or torch cutting on or near the links and/or cells.

Individual cells and links have between a 5:1 to 7:1 safety factor engineered beyond the weight rating. Exact rating is dependent on cell size, composition, heat treatment, etc.

Appendix: Inspection Guidelines (API, ASME, and OSHA)

API 2D - Recommended Practice for Operation and Installation of Offshore Cranes
Inspection Frequency is detailed in Section 4: Inspection, Testing and Maintenance.

The minimum recommended inspection categories, for heavy Usage Category cranes, fall under Pre-Use, Monthly, Quarterly, and Annual Inspections. Quarterly and Annual Inspections must be conducted by a Qualified Inspector, Pre-Use and Monthly Inspections can be conducted by a Qualified Operator. If crane usage is not documented as per Section C.4.1.1, the usage category defaults to heavy.

Appendix C - Commentary on Usage, Inspection, Testing, and Maintenance describes the minimum recommended guidelines.

Section C.4.1.2a covers Pre-Use Inspections. These are typically daily. Relevant sections state that **all loose parts** must be visually inspected for damage, deterioration and corrosion. This inspection must be recorded in the Pre-Use Inspection Log, as per Sections 3.1.5o and C.3.1.3o.

Section C.4.1.2b covers monthly inspections. This includes all inspections performed for the Pre-Use Inspection, as well as "Further check all control mechanisms for proper adjustment, excessive wear of components, and contamination by foreign matter." This inspection must be recorded in the Inspection Reports, as per Section 4.2.

Quarterly and Annual Inspections are covered in Sections C.4.1.2c and C.4.1.2d. A Qualified Inspector must conduct these inspections.

ASME B30.26-2004 - Rigging Hardware

This specification is not as applicable as the API listed above, but it does have some relevant sections. This section refers to shackles, but as can be seen in the API, shackles **are considered "loose" parts, a category that can include our load cells.**

In Section 26-1.8.4 (b), it states that shackles showing "excessive pitting or corrosion" are to be removed from service. This is applicable to the load cells. Any cells showing visible corrosion should be removed from service as stated here.

OSHA §1926.753 Hoisting and Rigging

This specification states how Safety Devices must be included in the inspections that occur for the rest of the crane.

(c) General

1. Pre-shift visual inspection of cranes

(i) Cranes being used in steel erection activities shall be visually inspected prior to each shift by a competent person; the inspection shall include observation for deficiencies during operation. At a minimum this inspection shall include the following:

(C) Safety devices, including but not limited to boom angle indicators, boom stops, boom kick out devices, anti-two block devices, and load moment indicators where required.

OSHA 1910.179 - Overhead and Gantry Cranes

1910.179(j)(1)(ii)

Inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as "frequent" and "periodic" with respective intervals between inspections as defined below:

1910.179(j)(1)(ii)(a)

Frequent inspection - Daily to monthly intervals.

1910.179(j)(3)

Periodic inspection. Complete inspections of the crane shall be performed at intervals as generally defined in paragraph (j)(1)(ii)(b) of this section, depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of paragraph (j)(2) of this section and in addition, the following items. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

1910.179(j)(3)(i)

Deformed, cracked, or corroded members.