A bulk carrier loaded with coal was on a passage from Asia to South America. The vessel arrived at the anchorage off the discharging port, and, in preparation for the discharging in three days’ time, an AB did a quick inspection of the ship’s cranes and cargo gears in accordance with the on board procedures. All was found to be satisfactory and the cranes were secured in sailing condition. The AB had been with the company for 7 years, but had just signed on this particular vessel for the first time the previous week.

Three days later, the vessel was alongside the berth and the discharging operation commenced that same evening. The ship’s cranes with grab attachments were used for the cargo operation. Well into the discharging operation, a very loud noise was suddenly heard accompanied by a bright spark. The jib of the ship’s crane no 3. fell down and the grab full of cargo dropped to the quay side as the hoisting wire broke. An AB and a stevedore, both involved in the discharging operation and located within the safety zone, were seriously injured.

The left beam of the jib struck the no. 4 hatch cover, which was open at the time. Due to the impact, the hatch cover was substantially deformed and the jib steel structure was damaged beyond repair. The luffing wire end had slipped off the luffing drum, and the securing fitting of the wire end (drum side) was broken. The electro-hydraulic grab tug wire was also broken and the monitoring cable missing. The stevedores’ crane operator alleged that there was a sudden loss of control of the no 3 crane jib and it fell down when the grab was filled with cargo from the hold and came over the quay side. Although there were no signs or sounds of anything abnormal prior to the incident, the crane operator had noticed that the crane’s load cell seemed to be malfunctioning.

During a visual inspection of the crane, the crane pedestal/ column, hand rails, ladders and walkways appeared to be heavily corroded. The machinery space including the machineries and crane hoisting wall was heavily fouled by oily dust and dry and missing grease and the pieces of the grab appeared to be poorly maintained and heavily rusted.

A running hours meter fitted to the crane control panel, indicated 6,105 running hours up to the date of the incident. The maintenance record on board revealed that the luffing wire had been renewed 7 years ago while the hoisting wire was renewed less than two years ago and that the last inspection and maintenance to the crane had been carried out 11 months earlier with the remark “OK” noted in the records and signed by the Chief Engineer. According to the cargo gear booklet, a Class surveyor had carried out the last annual survey of the deck crane no. 3 also some 11 months earlier. The statutory renewal survey including a load test was last carried out in conjunction with Class Renewal about two years previously, with satisfactory results.

According to the Chief Engineer, there were no routines for oil sampling and analysis of the deck crane’s hydraulic oil, and during his 18 months onboard he could not recall that any overhauls had been done to the luffing, hoisting, slewing motors and gears. He was unaware of any records or service reports on board of crane overhauls prior to his time on board.

The investigations concluded that the damage must have been caused either by the hydraulic disc brake on the luffing gear malfunctioning, or that the hydraulic luffing motor/gear was unable to hold the hydraulic pressure due to wear and tear when the grab was picking up the cargo.

Following the incident, total repair time to the vessel was scheduled to 50 days due to the long delivery time of parts and the repair costs estimated to USD 420.000.

If you have any questions or comments please contact Gard’s Loss Prevention team at lp@gard.no
Based on the case and the keywords, you should now perform an onboard risk assessment of the incident and the factors which led to it. Bear in mind our vessel’s procedures.

**Officers, crew and shore management**
- If you had served on this vessel in your current position, is there anything you believe you could have done to prevent the incident from happening?
- Should anything have been done differently during the pre-arrival inspection in the case described above, and what are the routines/checklist for this on board your vessel?
- What procedures do you have on board for routine inspections, maintenance and operation of lifting appliances?
- What routines do you have on board for maintenance and exchange of wire ropes, and what are the requirements?
- What crane equipment /lifting appliances have prescribed overhaul routines in your planned maintenance system?
- How often does load tests have to be carried out, and what are the load requirements? What regulatory body set the regulations for lifting appliances?
- What are the survey requirements on your vessel, and what is meant with a competent person?
- How often do you believe hydraulic oil analysis should be carried out on cranes? Are routines in place for oil sampling and analysis of the hydraulic oil on your vessel’s cranes?
- Are the responsibilities for (1) training and safe use of lifting appliances, and (2) the condition and maintenance of lifting appliances and winches, clear onboard your vessels?
- Do we have routines in place for regular examination and inspection of the cranes by an internal or external crane specialist/expert?

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1. **What factors contributed to the incident in the above case?**

2. **Risk Assessment: Could some of the factors identified be present on board your ship?**
   (How frequent could they be present? How severe could it be if they are present?)

3. **In the risk transfer zone (yellow and red), what would you suggest as measures to control the risk? Any additional barriers that could be introduced?**