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Subject: Red Alert- Hoist Clamp Failure

**Title: Red Alert- Near Miss When Sheet Plate Hoist Clamp Fails.**

Date, November 16, 1999 Identifier 1999 OAK LBNL - 0003

**Lessons Learned Statement-** The load bearing capacity of screw type hoist clamps were found to degrade after a few years service. The screw threads inside the clamp body were found (through recent load tests) to wear down to the point where the clamp failed at 88% of maximum rated capacity. Lifting sheet plate to a vertical position from a horizontal starting point could create the stresses necessary for the screw threads that tighten the jaws of the clamp to degrade. Periodic load testing is a must when using this type of clamp.

**Discussion of Activities-** A welding crew in the engineering shop at LBNL was attempting to lift a two inch plate of sheet steel using a crane with a clamp rated for 10,000 lbs. The plate of sheet steel was to be transferred to a burn table for cutting out shapes from the steel plate. As the piece of sheet steel was being transferred to the burn table, it slipped out of the clamp and fell, striking the edge of the burn table. No one was injured.

**Analysis-** After the clamp failure, all clamps in the shop were submitted to an independent facility for load testing. In every case, the clamps failed the load test as the load approached the rated capacity of the clamp. The testing official stated that these types of clamps need to be load tested at least annually to ensure the safety of the operating personnel. Integrated Safety Management stresses the importance of engineering and administrative controls to prevent and mitigate hazards. Testing is one way to ensure that equipment can be used safely.

**Recommended Actions-** Annual load testing of clamps is recommend. Tags should be applied to the clamps stating the date of the test. In addition, anyone working with a plate clamp must ensure that the piece of plate to be picked has had the cutting slag removed from the edges of the plate. If the clamp is placed over an area where the slag has not been removed, the slag could crumble during the pick, allowing loss of positive pressure and thereby losing the load.

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Functional Category(ies) (User Defined) NA  
Originator Bill Birbeck, LBNL (510) 486-2914  
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