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Packing & Moving (#2) to SLAC

UMS-Checklist_2006_21May-004-1

Checklist: Moving an LCLS Undulator Segment

This checklist is to be used whenever an LCLS undulator is being moved, either in its shipping crate or as a bare undulator.

Date/Time of use: June 9th 06

Purpose of move: SHIP TO SLACE (UNIT SER NO II)

Person(s) filling out this checklist Ged RR

The LCLS Undulator weighs one ton, and moving or lifting it, due to its value and complexity, are critical operations.

- Verify that all slings, spreader bars, shackles, and other rigging equipment listed in the caption of Figure 1 are assembled and ready for the job at hand. All riggers and other personnel involved in these operations are to wear PPE appropriate to the task.
- If the undulator is in its shipping crate, verify that the crate appears undamaged, safely and stably positioned, and otherwise able to be moved.
- Verify that the undulator is bolted to the floor of the crate. It may be necessary to open the box, in which case a responsible person from the APS-LCLS-Undulator team must be present.
- Lift the shipping crate using a forklift, ensuring that the forks are centered with respect to the crate, and that they are resting on the wood and not on the load-cushioning donuts. The forks should be advanced far enough under the crate that about 6" protrudes thru the other side.
- Place the crate down on two dollies, each of rated capacity 3200 lbs or greater, ensuring that the dollies are contacting the wood of the crate and are not under the load-cushioning donuts.
- Securely strap the shipping crate to the dollies, and then back the forklift away.
- When the dollies and crate or bare undulator are securely fastened together, position a forklift, with the forks all the way together, under and between the wheels of the dolly. Strap the dollies and crate securely to the forks. Use the forklift to push the load to its destination. Unstrap the forklift and remove the forks.
- If the undulator is not to be moved in its shipping crate, it must be rigged [see Fig. 1] and safely lifted high enough so as to be positioned over the two dollies at either end [see Fig. 2]. Securely strap the undulator to each of the dollies.

ADDED SHOCK WATCHES

N/A

M WHITE HAS NUMEROUS PICTURES (WILL BE SENT TO R. POFF)

- If the undulator does not have feet, they need to be mounted at this time as shown in Fig. 3. If the undulator's feet are to the side or otherwise not directly under it, two come-alongs, each with 1000 lbs capacity, are used to rotate the undulator so that it rests on its feet [see Figs. 4 and 5].

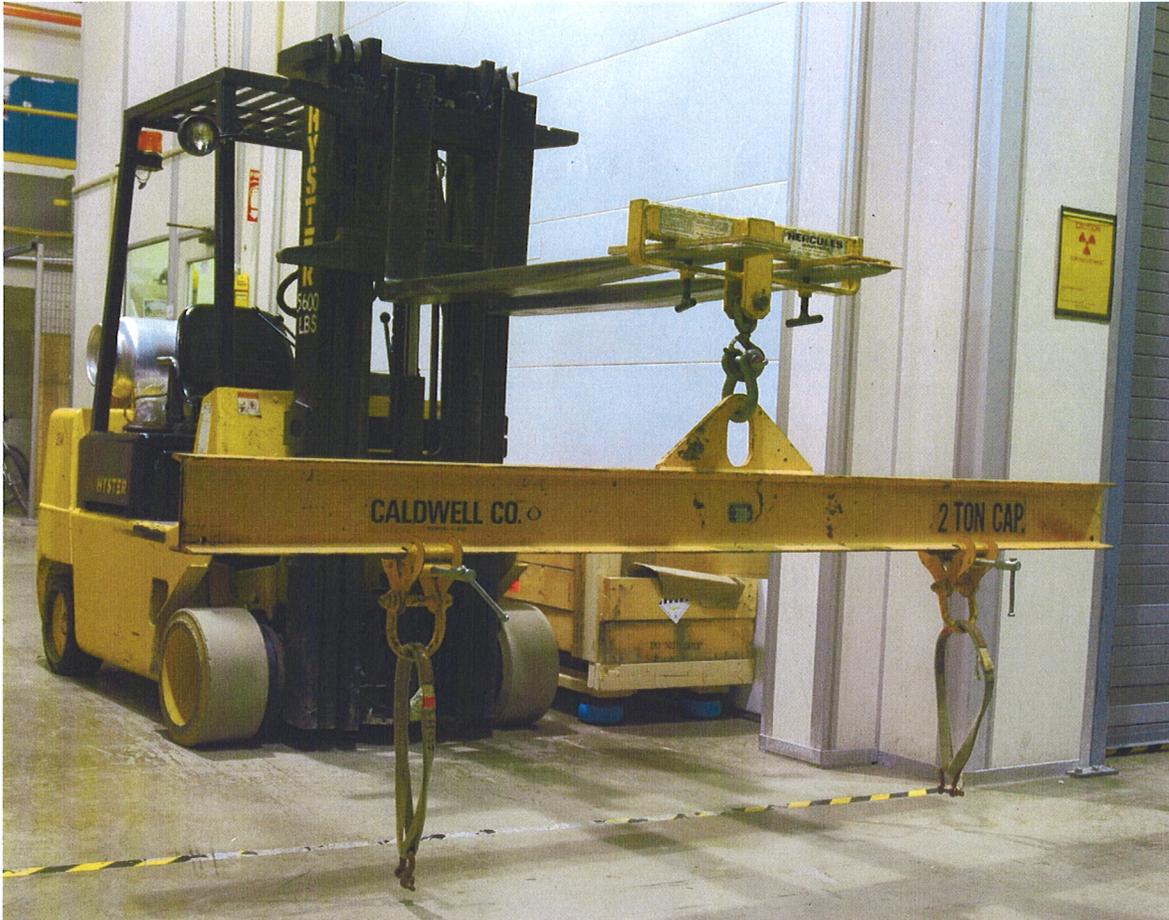


Figure 1: This is the rigging setup when the undulator needs to be lifted. The self-weight of all rigging equipment shown in the figure is 200 lbs. Detailed equipment list and capacities follow:

1. Forklift, minimum capacity 5600 lbs @ 24" on center;
2. Dual forklift attachment, 6000-lbs capacity, self-weight 51 lbs
3. Shackle, 1", 17,000-lbs capacity, self-weight 5 lbs
4. Spreader bar 4" X 8", 2-T capacity, self-weight 125 lbs
5. 2 I-Beam Clamps, 2-T capacity each self-weight 8 lbs each
6. 2 Slings, 1" X 3", capacity 6200 lbs each when in basket mode
7. 2 Shackles, 1/2" - 4000-lbs capacity, self-weight 0.25-lbs each

All slings are to be inspected monthly and pre-use.

All riggers and other personnel involved in these operations are to wear PPE appropriate to the task.



Figure 2: Undulator must be securely strapped to both dollies.



Figure 3: Securely bolt on the undulator feet.



Figure 4: Use two 1000-lb capacity come-alongs to get the undulator rotated such that the feet are on the bottom.



Figure 5: Undulator, rotated with feet in the "down" position.