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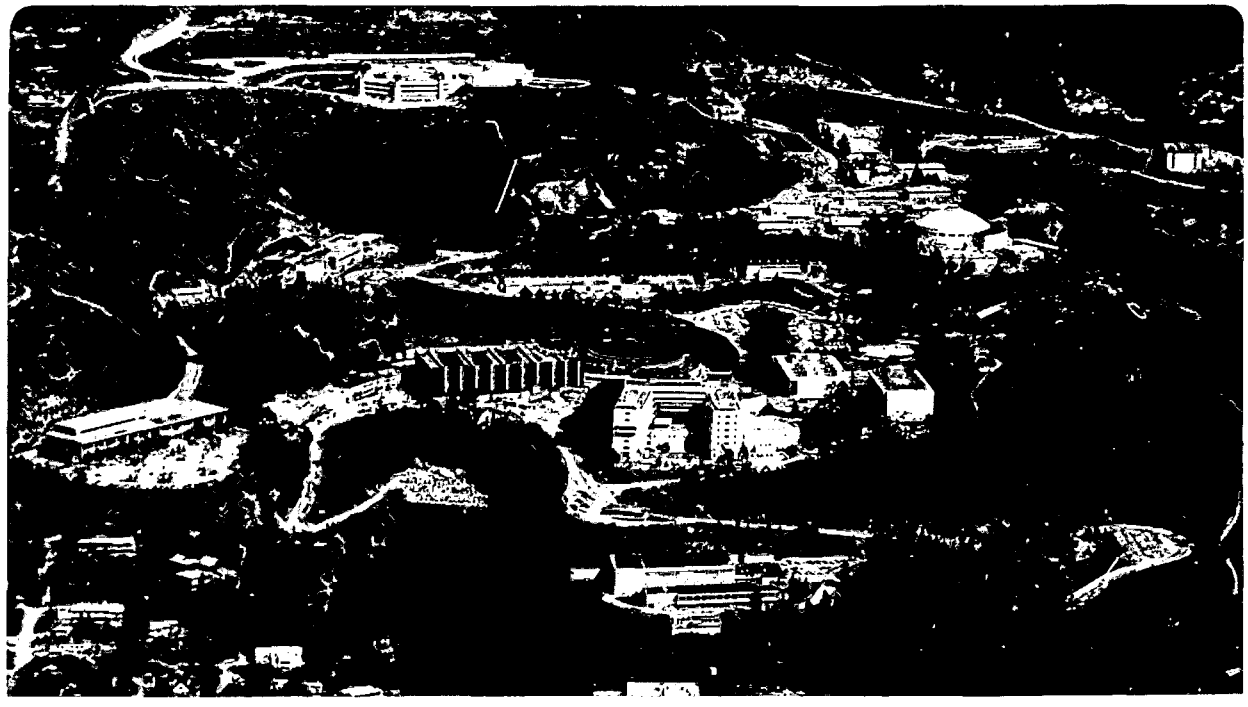

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ENGINEERING NOTE

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P40601	M5877	1 OF 4

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PROGRAM — PROJECT — JOB

PEP-4 EXPERIMENT

HEXAGONAL CALORIMETER

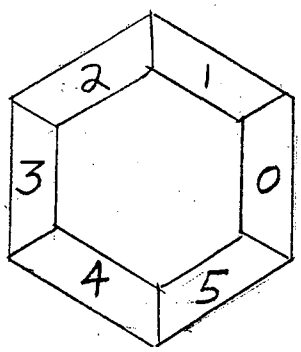
TITLE

MODULE INSERTION PROCEDURE - POSITIONS 1 & 2 (DONNA & FLORENCE)

This note describes the insertion procedure for inserting modules Donna and Florence into positons 2 and 1 respectively.

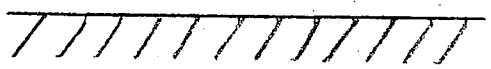
INSERTION IS FROM SOUTH TO NORTH

DONNA FLORENCE



VIEW IS FROM SOUTH, LOOKING NORTH

FLOOR



In general, the insertion scheme is the same for all modules ---. The plane of the T-rails on the transport frame is supported and adjusted to be co-planer with that of the T-rails in the magnet. Then the module is pulled into the magnet, sliding on the greased rails. All differences in procedure reflect either variations in local geometry or the necessities of on site rigging into the different positions. However, the principles are the same in all positions.

At this point it would be wise to study carefully Engineering Note M5853 since much of the detail there is omitted in this note. This permits emphasizing those things which are <u>different</u>.

Installation Procedure, Step by Step

1. Schedule <u>adequate</u> time. These are the two most difficult positions. Also, they have not been done before. Consequently, it is estimated that four consecutive working days of one shift work should be scheduled per module.

2. Remove Pep 4 from beam and remove both magnet poles. Note that the South pole must be completely out of the way, while the North pole need only provide man access. North pole is an anchor point for insertion forces. It must be able to resist a 1 ton horizontal force to the south. Use a horizontal column to the yellow insertion beams.

3. Locate the necessary rigging hardware and transport it to SLAC. See Jack Borde of LBL, Building 25, Metrology Lab. for alignment services and target fixtures.

4. Be sure that appropriate expansion bolts are placed in the I.R. 2 floor to tie down the support column base and provide anchor points for the "come along". Adequate shims will be needed. Set up and bolt down the support column base. This must be shimmed over entire area of the base to prevent unacceptable deflection under changing loads during insertion.

5. Use counterweighted insertion fixture 19Q9656 to pre-attach the appropriate adapter plate (AKA "Boomerang") to the magnet yoke. Note that the adapter plates are similar but not identical.

6. Transport the module to I.R. 2 using ONLY LBL's air-ride spring-equipped truck, back into South end.

7. Unload module from truck and set on floor. Use plywood softener beneath transport frame to minimize shock when load contacts floor.

7.1 Replace and reposition magnet coil support strut assemblies as declared appropriate by the magnet people. See 19Q9566 and 19Q9576.

8. With module suspended from crane with a 4-way sling, attach short transport legs 19Q9676, 19Q9844, and long transport legs 19Q6784 plus rolling plate 19Q9514 to the transport table. See 19Q9903. Note that Donna & Florence require right and left handed assembly.

9. Set the module, table, and leg assembly back on the floor when step 8 is accomplished.

10. Attach 2 way sling to the two lifting points in the plane of the center of gravity. Drawing Numbers 19Q9424, 9434, 9443, 9453.

11. Kick blocks (or come alongs) may be used on rolling plates for (redundant) safety if desired. This prevents "kicking" sidewards in the event of crane hoist brake failure.

12. Follow the process shown on 19Q9903 to roll the module over to an upside down 30 degree position. It is important to reposition the hoist frequently so as to keep the lift vertical.

13 Remove the 2 way sling.

14. Change rigging to unequal 4-way sling with spreaders and turnbuckles. See drawing 19Q8972. Adjust turn buckles so that module hangs at 30 degrees tilt. Use hoist adapter plate 19Q9663 for attachment.

15. Remove old grease and regrease T-rails in the magnet. Use Shell MP grease. Be careful not to get grease into electrical connections. It raises hell. A temporary staging may be erected in the magnet gap to make greasing easier if desired.

16. Use crane to lift module approximately (within 1/2 inch) into place and attach to adapter plate 19Q8296 with 1-3/4" diameter bolts.

17. Use a mason's level and plane alignment bar 19Q7912 to adjust XYZ adjustments to within about 0.125 inch.

18. Install column and screw jack at South end and transfer load to column. Note that column is ball-ended and cannot "kick out" if module is firmly attached to magnet. Not to worry; just keep the column reasonably vertical.

19. Rig into place and attach North end columns and jacks for XYZ adjustment. Drawing 19Q9974.

20. Fine adjust XYZ to plus or minus .005" using optical alignment equipment. Tighten XYZ firmly and bolt to yoke. Recheck alignment.

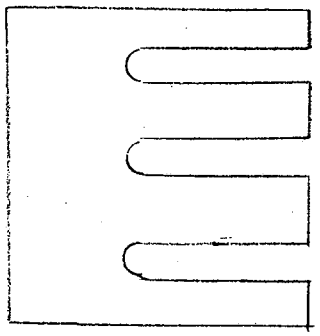
21. Install, shim, and grease (Shell MP grease) transition rails. Use special alignment cart mounted with dial indicators (see Jack Borde of Bldg. 25) and laminated shimstock horseshoe shaped washers 19Q9232. Be careful not to use Northern-most holes in transition rails. They are beneath the module when it is in position.

22. Attach tail-roller assemblies for come alongs 19Q9183, module stopper 19Q9684 (at North end) and cable attachment hitch 19Q8523. Module transport table extenders should be attached to South end of table.

23. Use hydraulic jack (Portapower) to overcome static friction and to start the module sliding. Then use "come along" to finish insertion.

24. CAUTION - Any unusually high resistance to sliding indicates trouble. Normal force range is 1300 to 1800 lbs. If this is exceeded, stop, think and solve the problem. It probably is misaligned. Galling may result from local high pressure and cannot be tolerated. Note that there will be deflections as load is transferred from transport table to magnet during insertion. Recheck alignment from time to time.

25. Bolt module in place. Use fork-shaped ground shims and special round washers to shim between aluminum module baseplate and magnet steel.



Be sure the gap is completely filled with shims.

26. Remove insertion hardware. Carefully inventory and preserve it for subsequent insertions. PLEASE DO NOT LEAVE IT OUT IN THE RAIN.

NOTES:

A. Similar parts are just that -- only similar, but not interchangeable. Major parts have their positions stenciled on them. Check carefully.

B. There are 5 adapter plates

C. There are 4 transport frames

} For 6 modules

D. Insertions are only feasible from South to North. Extensive (and expensive) engineering and shop modifications would be required for North to South insertion.

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