

Cryomodule Assembly Facility (CAF) Setup Status

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Work Flow at CAF-MP9

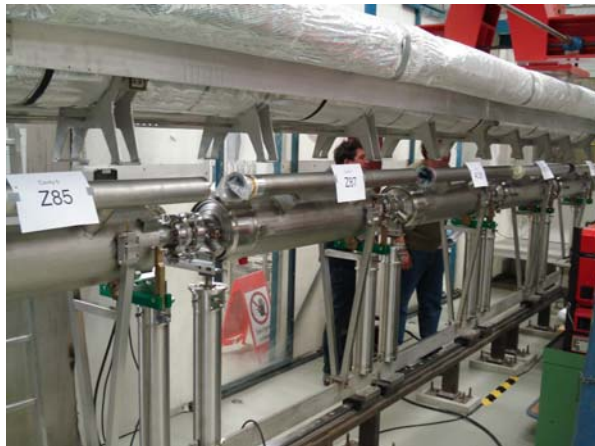
Receive dressed Cavities



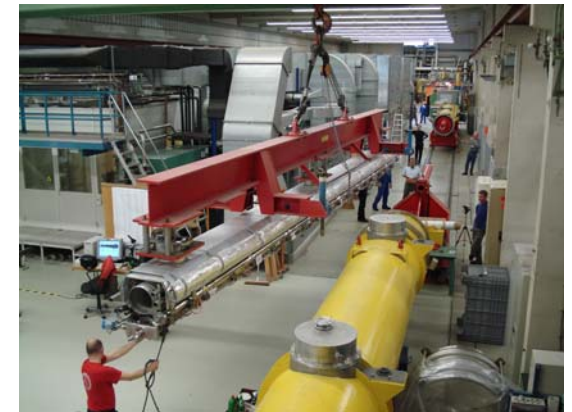
Receive peripheral (vacuum vessel, cryogenic pipes, super-insulation etc.) Cryomodule Parts



Assemble dressed Cavities to form a String in the **Cavity String Assembly Area** (Clean Room)



Install String Assembly to Cold Mass in the **Cold Mass Assembly Area**



Transport the Cold Mass from **CAF-MP9** to **CAF-ICB**

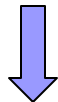
Work Flow at CAF-ICB



Install the Cold Mass back to the Cold Mass Assembly Fixture in **Cold Mass Assembly Area at CAF-ICB**



Align Cavity String to the Cold Mass Support



Install the String assembly with the cold mass into the Vacuum vessel in the **Vacuum Vessel Assembly area**

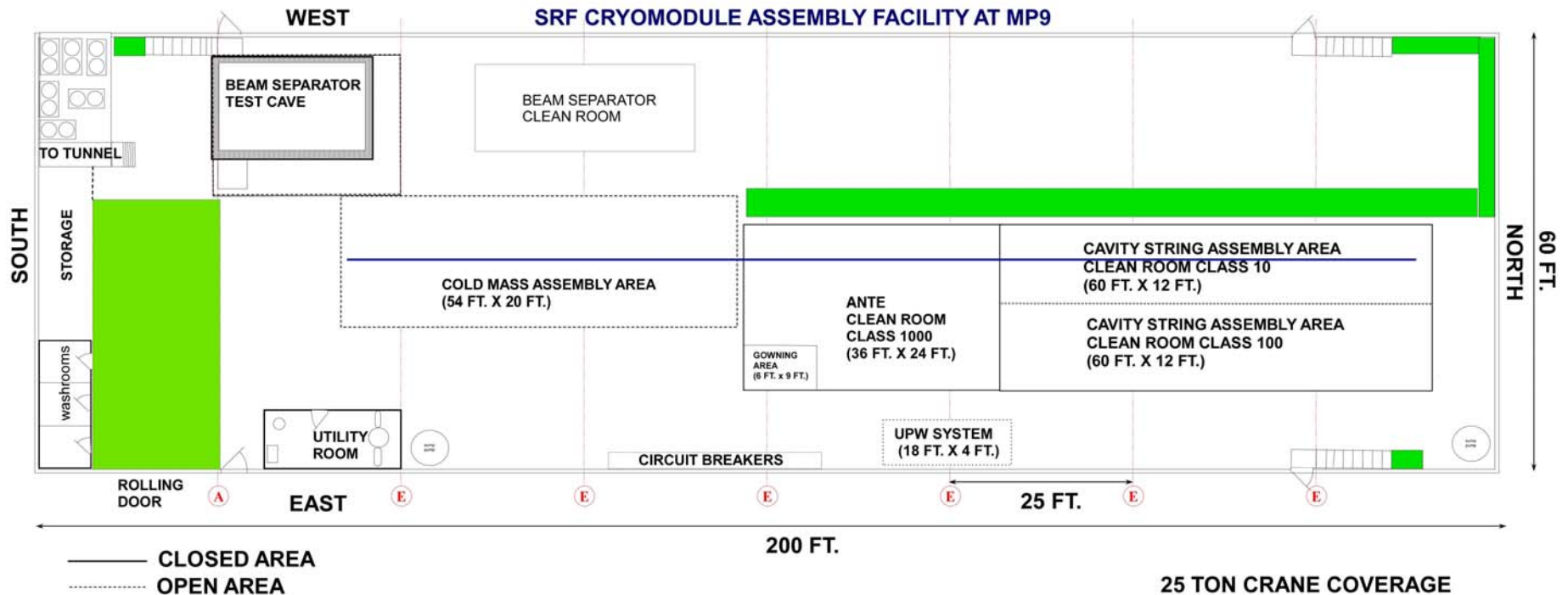


Ship Completed Cryomodule



CAF-MP9 Infrastructure

1.3 GHz Elliptical Cryomodules Assembly Facility (CAF) Infrastructure at MP9



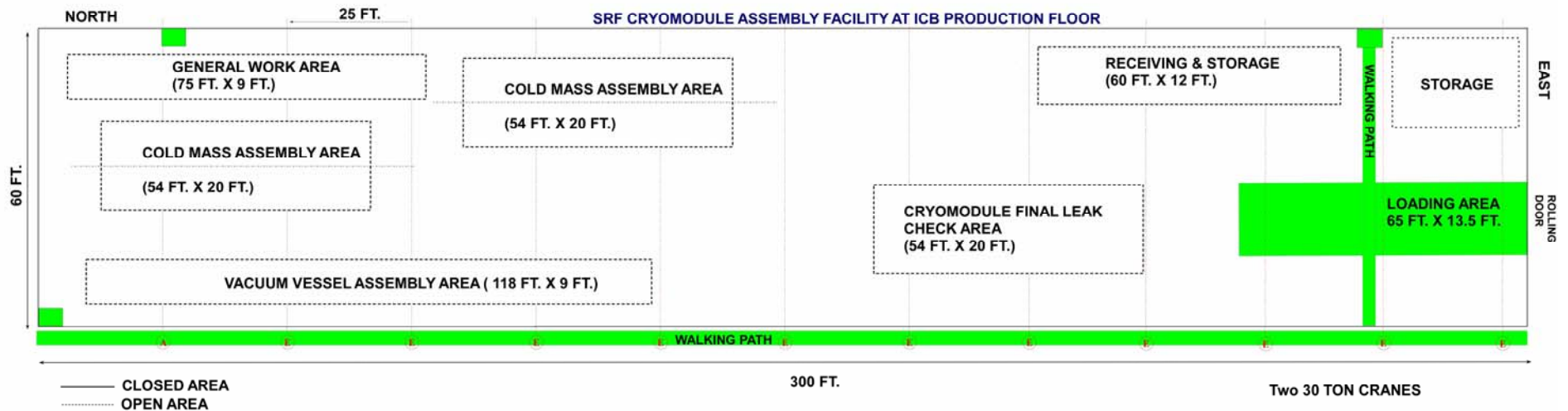




Fixtures Installation Plans & Schedule

- Cold Mass Assembly Fixture is being currently installed. Expected completion in 2 weeks.
- Vacuum Vessel Assembly Fixture (Big Bertha) will be installed at CAF-ICB. [October 2006]
- Cavity String Assembly Fixtures are being currently procured / installed at CAF-MP9 Cavity String Assembly Clean Room.

CAF-ICB Infrastructure Plans



Clean up of the LHC tooling will start by the middle of September 2006. Big Bertha will be installed at ICB before all the LHC tooling are moved to IB3.



Remaining FY06 Procurement Needs for CAF-MP9

Cavity String Assembly Clean Room

- Argon / nitrogen dewar and gas rental (annual contract) (**\$18K**)
- Argon / nitrogen delivery system installation
 - All the tubes and fittings are in house
 - Orbital welding machine rental (**\$3.5K**)
 - Organize with Mike Reynolds for the welding of the tubes in the clean room (SWF)
 - Ask the Swagelok representative to give consultant support during installation (no M&S)
- Vacuum system installation
 - Procure Vacuum Hardware (**\$15K**)
- Ultrasonic cleaner Installation
 - Uncrate – Stage at CAF-MP9
 - Hook up water lines and control lines
 - 408 3-phase power tie-in by T&M (**\$4K**)
 - Wait for the soft-sided clean room, gantry system and clean room cart procurement until October 2006
- Stainless steel sink and tabletop ultrasonic cleaner in the Class 1000 clean room
 - We need to procure a stainless steel sink (most probably in October 2006)
 - Plumb feed and drain DI water lines for the table top ultrasonic cleaner inside the ante Class 1000 clean room (\$0.5K)
- Janitorial
 - 4 hrs 2 times a week = 8 hours per week with ~\$25 per hour



Remaining FY06 Procurement Needs for CAF-MP9 (cont.)

Cold Mass Assembly

- Install Cold Mass Assembly Fixture
 - Screw jacks are in house
 - Coupling shafts needs to be cut to length in the machine shop (estimated 3 hours machine shop + 2 hours weld shop M&S) (**\$0.5K**)
 - Do we have all the other hardware to complete installation? -Yes
 - Any other M&S spending required for this fixture installation? -No

- **Total needed until October 1, 2006: \$42K**

1st Cryomodule Assembly Plans

- Cavity String Assembly Procedures & Fixtures Learning at DESY (February 20 –March 3, 06) [Completed]
- CAF-MP9 Clean Rooms operational: [Completed]
- Install Cold Mass Assembly Fixture at CAF-MP9: **August 2006**
- Cryomodule #6 Assembly Procedures Learning at DESY [Completed]
- CAF-MP9 Infrastructure ready & operational: **Summer 2006**
- Install Vacuum Vessel Assembly Fixture (Big Bertha) at CAF-ICB (**October 2006**)
- Practice assembly procedures (learned at DESY during Module #6 assembly) with mockups and new installed infrastructure at CAF-MP9 (**Fall 2006**)
- Assemble 1st Cryomodule (4 months): Start date depends when we receive the kit from DESY (**~ November 2006**):
 - 3 mockup cavities will be sent to FNAL for assembly procedures practice in the clean room:
 - These cavities, which have too low gradients for FLASH application (C22–20 MV/m, C24–19.7 MV/m, C26–17.2 MV/m) are nevertheless potential spares for TTF/FLASH which may have to be sent back to DESY upon request.
 - 2 main couplers will be sent to FNAL:
 - D3C5 (cold part) and D3H5 (warm part)
 - D3C17 (cold part) and D3H18 (warm part)