

SMTF Plans & Progress

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Outline

- **A Description of SMTF and Its Goals**
- **SMTF Plan**
 - General Design Philosophy
 - Schedule Requirements
 - The SMTF Plan A
 - Major Risk
 - Conclusions

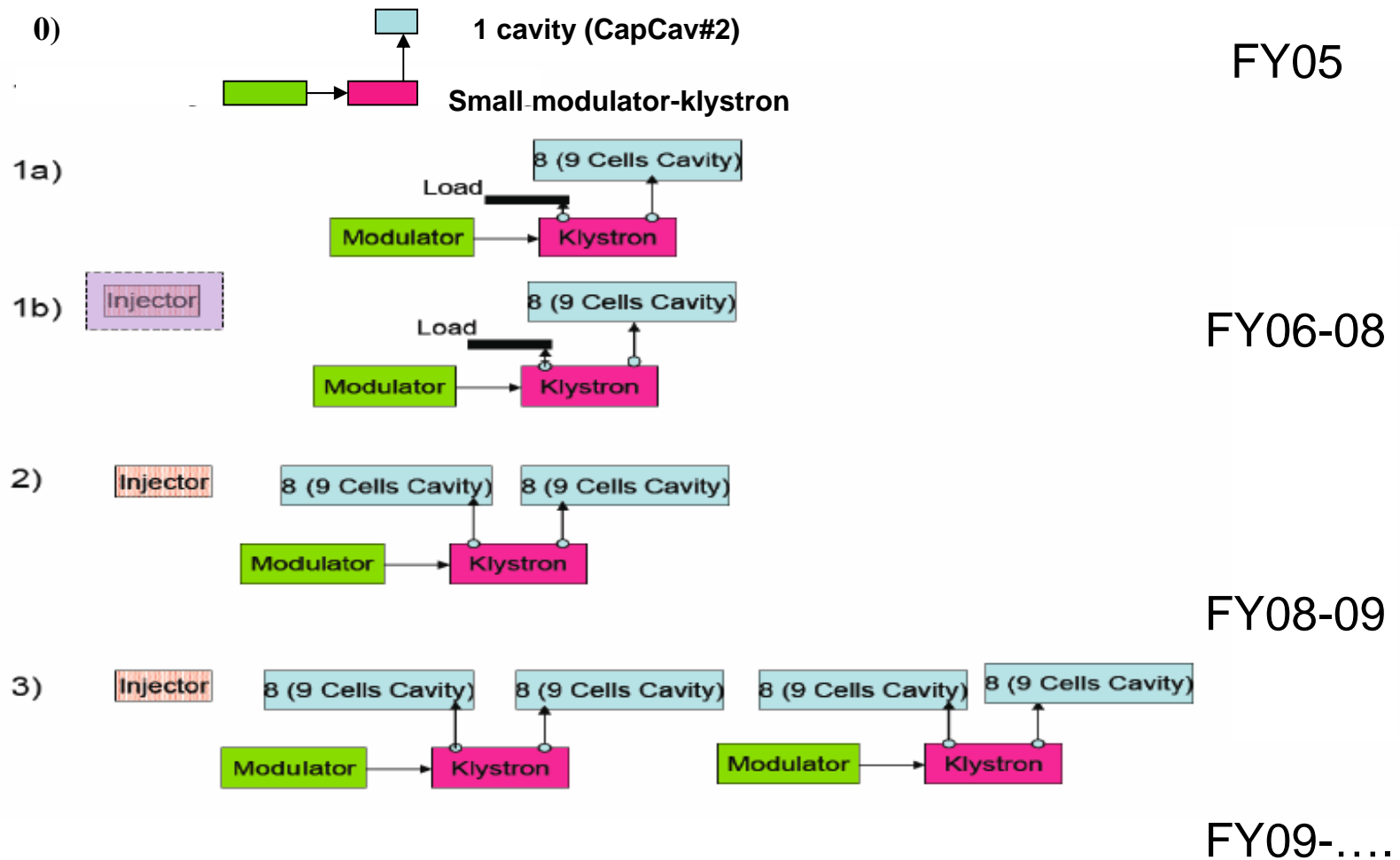
What Is SMTF?

- **SMTF will be a national facility located at Fermilab for the fabrication & testing of superconducting modules.**
 - This presentation addresses only the test facilities.
- **SMTF supplies infrastructure including space, cryogenics, power and other utilities, controls, radiation shielding, etc., for complete high-power tests.**

SMTF Goals

- **Guiding Principles**
 - SMTF will be inclusive of many different types of modules, $\beta < 1$, $\beta = 1$, and CW
 - SMTF should not be the cause of delay in the initial testing program. Be ready when modules are available to test.
- **The tests are expected to include:**
 - Bare cavity tests
 - High-power pulsed and CW RF tests of modules
 - High-power pulsed and CW tests with beam

Schedule Requirements (PI & ILC)



Start in the Meson Lab

- **Available Cryogenics**
 - Equivalent of 60 W capability at 2 K with the addition of vacuum pumps.
 - Additional capability at 4 K for shields
- **Available Space**
 - There is a potential for a long beam line.
 - The building is at grade, so a lot of shielding is needed.
 - The space is very tight to put the whole operation in Meson Lab.
- **Will Require a New Refrigerator in ~2009**
 - Looking at using all or part of old SSC refrigerator
 - Need ~ 300 W @ 2 K + 300 W @ 4.5 K + 5 kW @ 40 K

Meson Lab



Meson Refrigerator



Meson East, September 2004



Meson East, February 2004



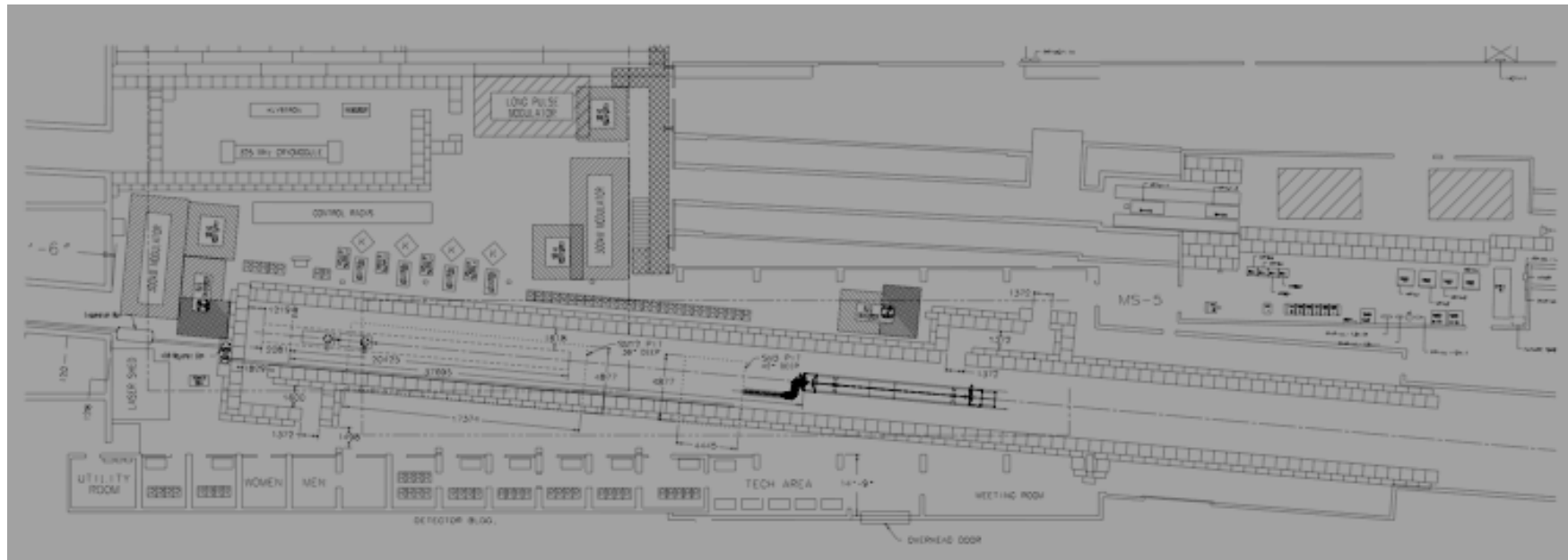
Meson Polarized, September 2004



Meson Polarized, February 2004



All of SMTF @ Meson Lab



SMTF Plan A

- **Distribute SMTF to More Locations**
 - Start module testing at Meson Lab
 - Assemble the Proton Driver front end at Meson Lab
 - Install the photo-injector (as it exists at A0) at Meson Lab and perform the first ILC module beam tests using dewar-supplied helium and a temporary recovery system in Lab B.
- **Meanwhile, build the new refrigerator at New Muon**
 - Also, build a tunnel extension at New Muon. (Remove CCM?)
 - Leave the Proton Driver and Single-Module tests at Meson Lab
 - Set up the CW tests at New Muon with an independent beam line and at the end of the photo-injector.
- **Under study -- Performing bare-cavity tests at MTF**
 - Use existing excess space and 2K refrigeration

New Muon & Vicinity



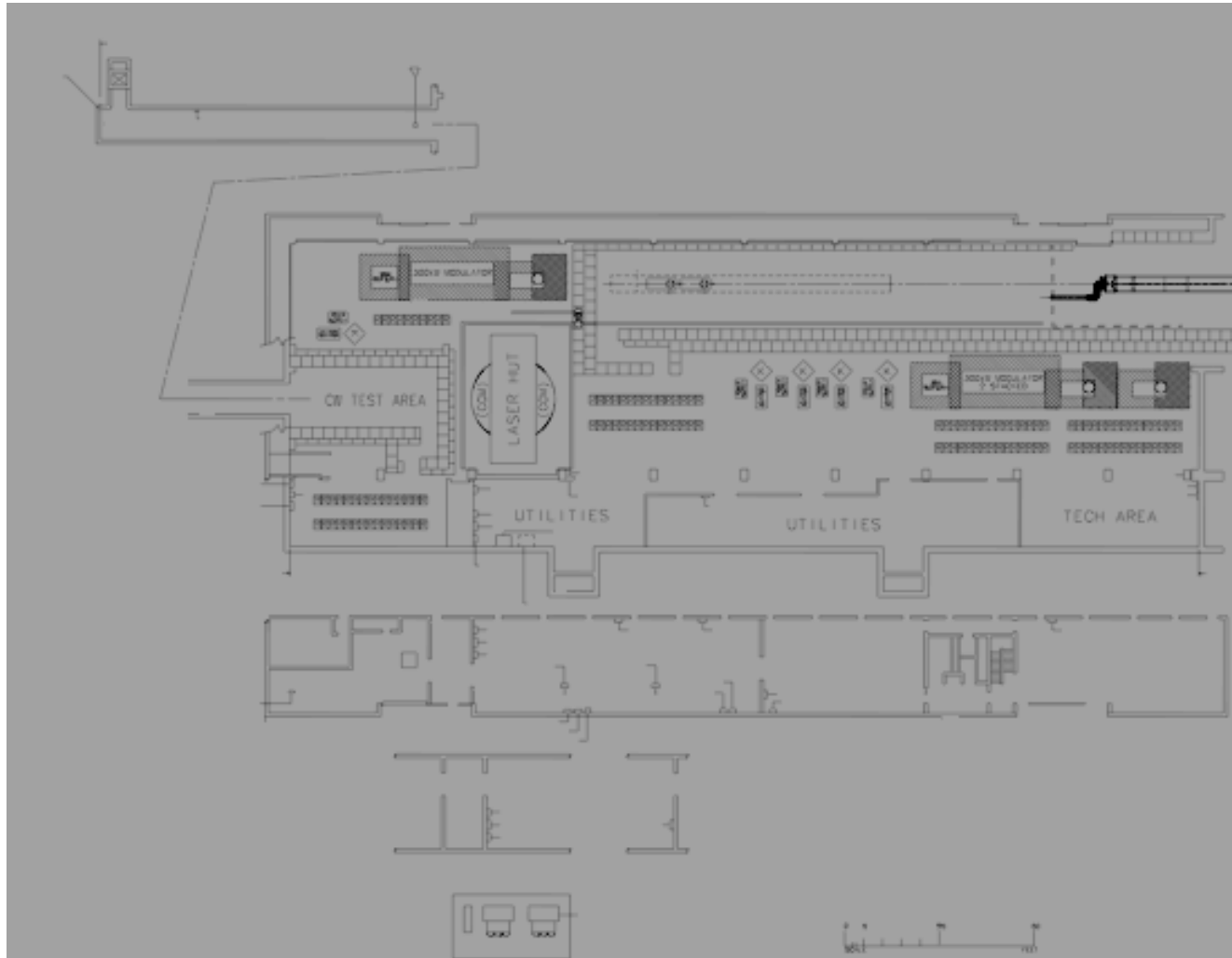
New Muon Facing South



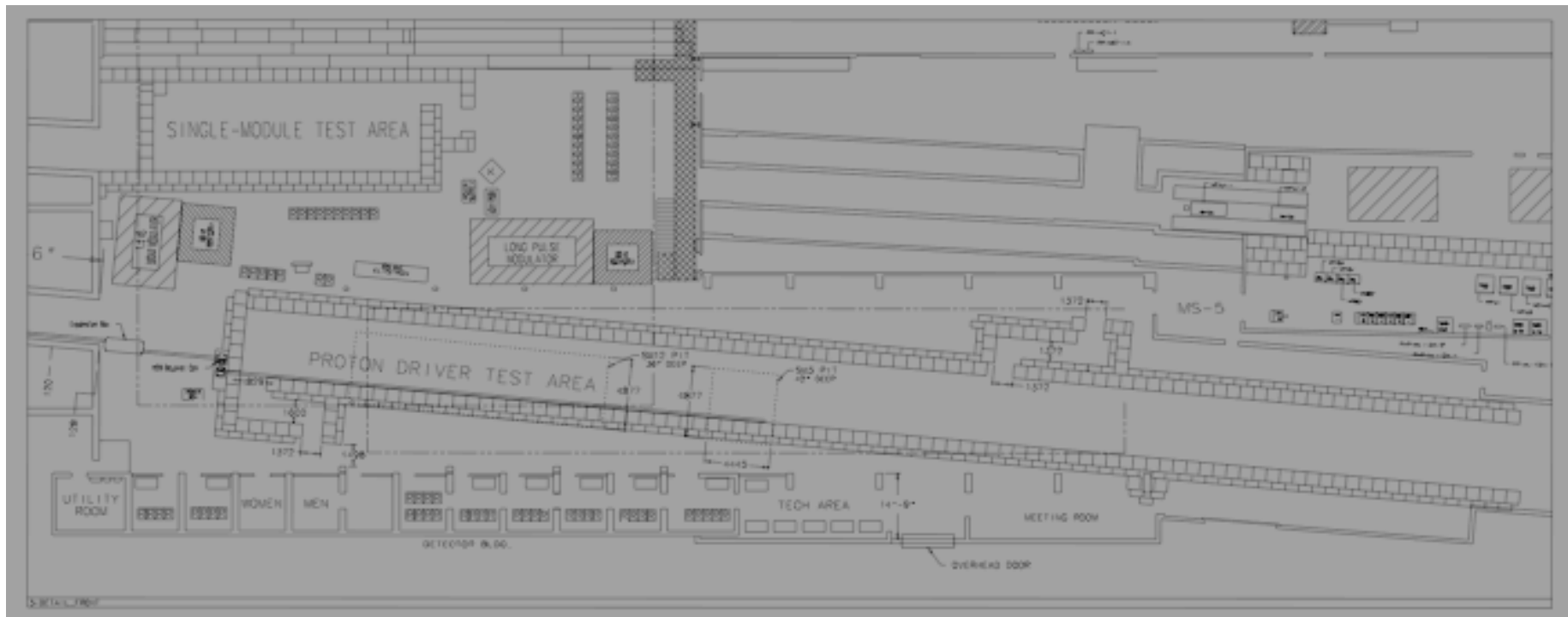
New Muon Facing North



SMTF Plan A @ New Muon



SMTF Plan A @ Meson Lab



SMTF Plan A

- **Advantages**

- Great Space at New Muon
- This is a feasible plan for early operation at New Muon
- Expandable (> 1km to site boundary)
- New refrigerator will supply plenty of cryogenics
- Below grade, no radiation problems
- Relieves space and cryogenic requirements at Meson
- We retain early test capability at Meson Lab

- **Risks**

- Need to build a new refrigerator and building at New Muon

CONCLUSIONS

- **We are on track for an early start of cryogenic and RF tests in the Meson Lab**
- **Plan A is feasible and satisfies all requirements**
 - There is no delay in the startup of operations at New Muon Lab.
- **The modifications to New Muon are slight**
- **The Risks are Understood**
 - The major risk is possible inability to get a new refrigerator