

E161 / E159

Target Support

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SLAC / EFD will support the target system in the following areas:

1. Cryogenic Fluids

- **LHe for the s/c magnet and the dilution refrigerator**
- **LN₂ for the s/c magnet dewar**
- **He gas recovery if practical**
- **LHe and LN₂ will be piped in from the Research Yard Refrigerator Facility (Bldg. 113) Moving dewars in and out of ESA should not be necessary**
- **This system uses mainly preexisting components**

2. Vacuum

- Isolation vacuums are required for the magnet and dilution refrigerator (3).**
- Vacuum service will be provided by typical Cryo Group turbopump carts**
- Some carts from E158 may be used. We are investigating whether any new carts will have to be built.**

3. Controls

System	Solution	Responsibility	Status
Superconducting Magnet	Solenoid – LabView Dipole -TBD	UVA UVA/SLAC	Working Not Started
Microwave	Remote Panel for Power Supply	SLAC / UVA	Can be based on a working system
Dilution Refrigerator	Remote Operation of Valves and Pumps	SLAC/UVA	Can be based on a working system
NMR	TBD	TBD	Not Started
LHe Supply	Automated fill system & PC based LabView	SLAC /EFD	75 % complete
LN ₂ Supply	Automated fill system	SLAC / EFD	Not Started

- **Control system design will start this summer**

4. Power

- **The Roots pumps for the dilution refrigerator typically require either 100 A at 208V or 460 V service.**
- **Additional work will be required to provide this service in ESA and Bldg 113.**

5. Mechanical Support

- **Dilution refrigerator, magnet and associated components will be installed on a cart or stand for placement in the beam line**
- **Definition of cart requirements will start this week**
- **R. Boyce (SLAC/EFD) will start design this summer**

- **Cryo Group will provide machining and shop support to the Target System as appropriate**

6. Safety

- **The target system was presented to the SOC in April 2001**
- **It is expected that the system will be reviewed by the HEEC, electrical, non-ionizing radiation and earthquake safety committees**
- **No extraordinary safety problems are foreseen**
- **Straw man dates have been put into the target schedule for safety reviews**

7. Off Line Test

- The target system will be assembled and completely tested (cryogenic operation, polarization of target material) off line in the Bldg. 113 high bay**
- As in the case of E158, the final transfer lines and dewars planned for the beam test will be used in the off line test.**
- The goal of this test is to minimize surprises when the target is in the beam and gain operating experience for the group technicians.**

8. Travel

- **The target system work will be split between UVA and SLAC. This will require regular visits by SLAC staff to UVA and vice versa**
- **SLAC & UVA staff will also be present during the final acceptance test of the 7 T solenoid**

9. Status and Schedule

Component Status

Item	To Buy or to Do	On Hand		Cost \$	Delivery
		SLAC	UVA		
Solenoid	¢			255,945	18 months
EIO tube	¢			95000 ¹	12 months
³ He Roots Pump	¢			93000	4 months
Vacuum system turbo pumps		¢ ?			
⁴ He Roots Pumps	¢				
Compressors	¢	?	?		
Instrumentation	¢	¢	¢		
NMR (analog)			¢		
NMR (digital)	¢	¢	¢		
Microwave	¢ ²		¢ ³		
Dilution Fridge			¢		
Target Material	¢ ?		¢		
³ He		¢	¢		
Cryogenic Support	¢ (40%)	¢ (60%)			
Electrical Support	¢				
Controls	¢				
Gases		¢			

Schedule Highlights

- **Acquire Long Lead Time Components**

18 months for magnet

12 months for EIO tube

- **Construction & Commissioning at UVA**

1 year (6 months required after receipt of magnet)

- **Target Assembly & Commissioning at**

SLAC - 6 months

- **Installation into ESA beam**

line – 6 months

