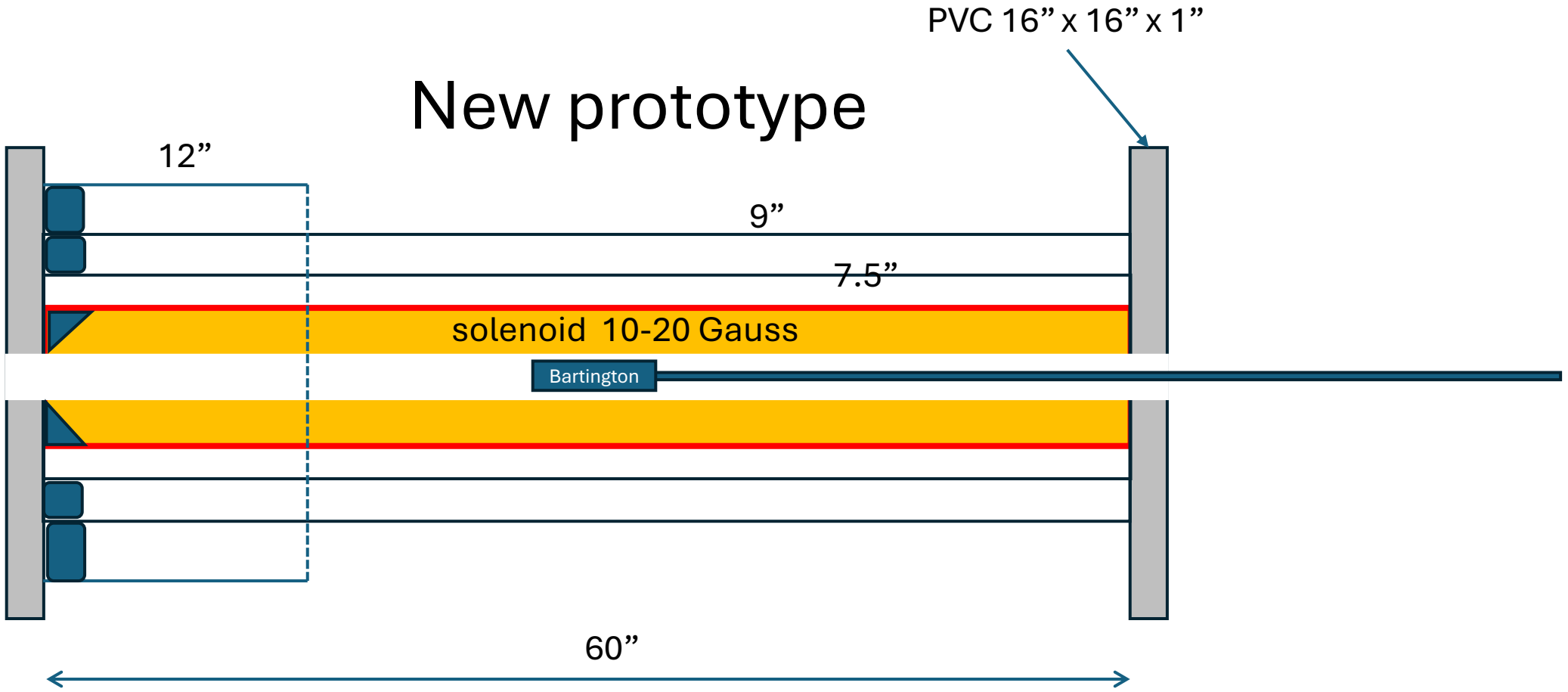
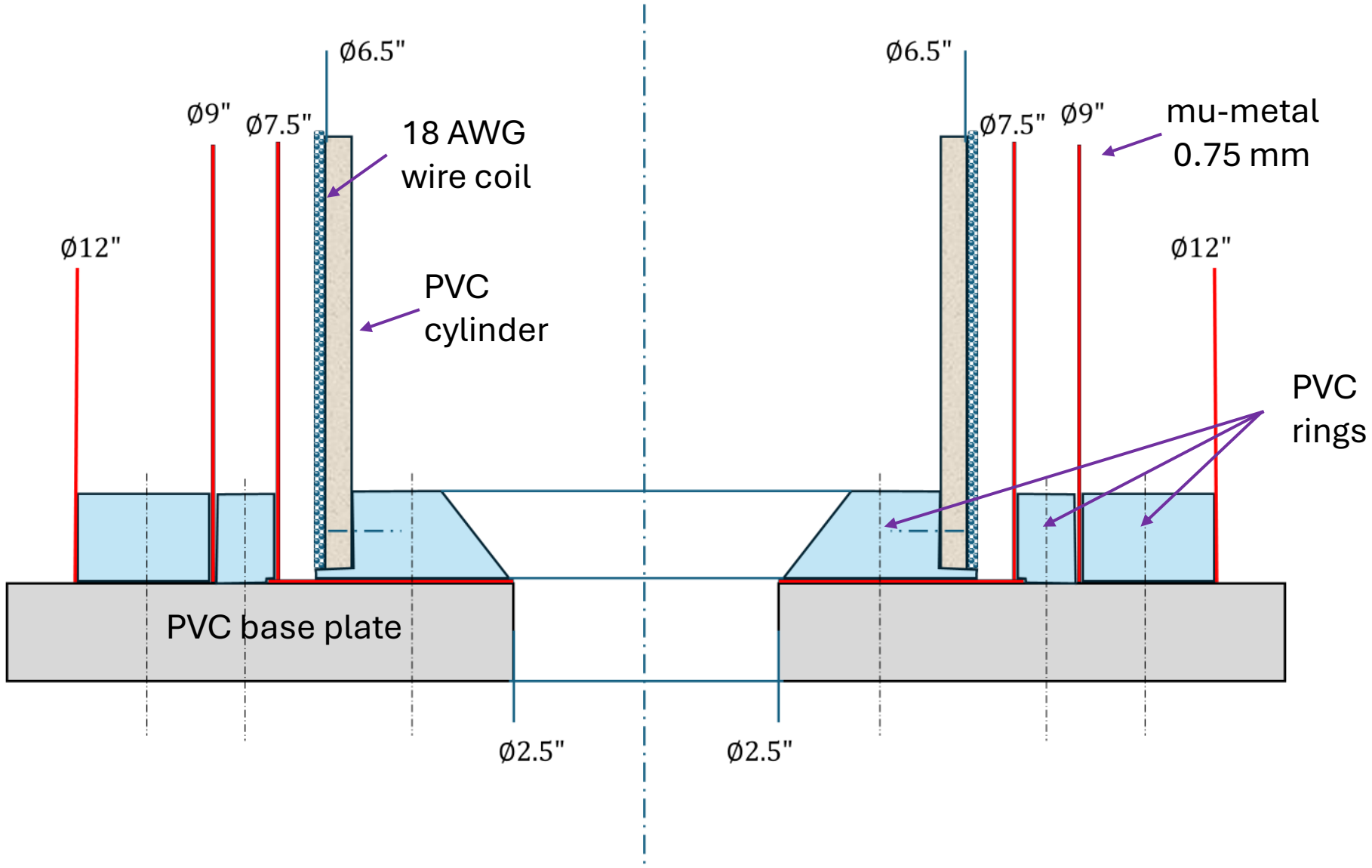
Agenda of the meeting today:

1. Lisa – update on the start date August 26
2. Lisa and Matt - progress with neutron discrimination measurements
3. ~~Mubi - COMSOL simulations and the prototype at the UKY~~
4. Linus (welcome to TN) – COMSOL simulations at LU
5. John, Yuri – Progress with construction of the mu-metal shielding prototype at UTK
6. Yuri - Status of the paper in Overleaf on data of January 2024 + June 2021

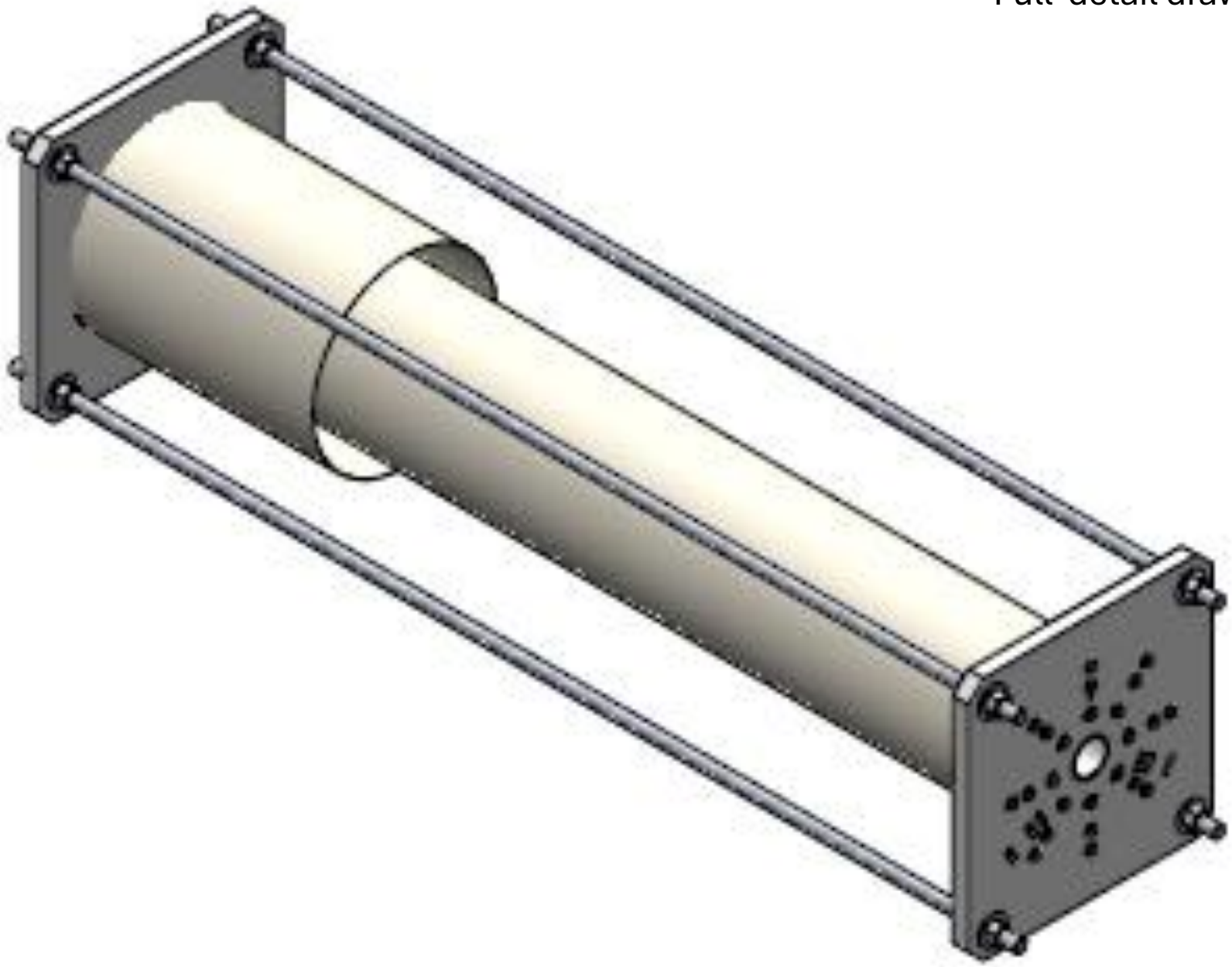
Status of mu-metal prototype for 211 update • YK



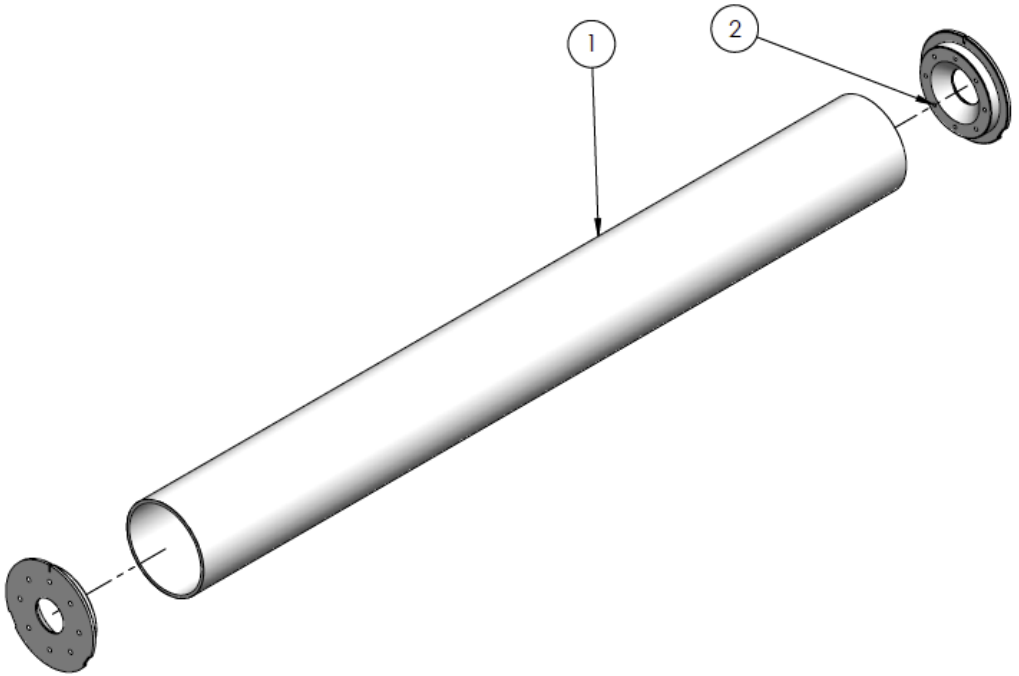
Concept of the prototype end assembly



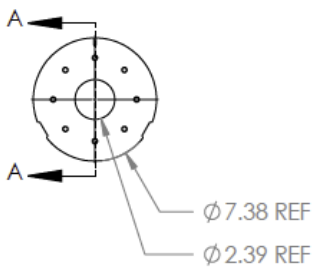
Full detail drawings are prepared by John

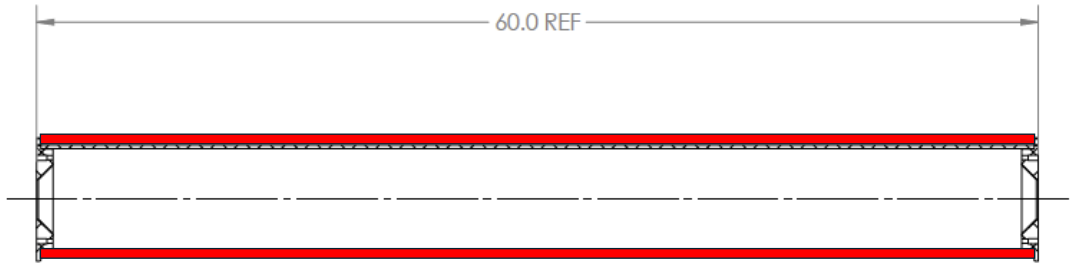


ITEM NO.	File Name	DESCRIPTION	QTY.
1	SHIELDING TEST COIL FORM	nTMM-1-2-3	1
2	SHIELDING TEST INNER SUPPORT RING	nTMM-1-2-4	2



- PVC material at UT shop
- Remington wires on a way to ORNL
- Construction will start at UT today
- All other materials are ordered
- need Kapton film between 2 wire layers size 22” x 60”





SECTION A-A

NOTES:
1. CLOCK POSITIONS OF ITEMS 2 TO ONE ANOTHER IS CRITICAL
2. ITEMS 2 TO BE GLUED TO ITEM 1 USING PVC SOLVENT ADHESIVE WITH GLUE JOINT SURFACES PREPARED WITH PRIMER PER ADHESIVE INSTRUCTIONS

PHYSICS DIVISION
OAK RIDGE NATIONAL LABORATORY
OAK RIDGE, TN, 37831

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS SPECIFIED:
ANGULAR: ±0° 30'
TWO PLACE DECIMAL ± 0.01
THREE PLACE DECIMAL ± 0.003
SURFACE FINISH: 128 MICRO-INCH MAX ALL MACHINED SURFACES
BREAK ALL SHARP EDGES
MATERIAL: SEE NOTE 2
NEXT ASSEMBLY: nTMM-1-2-1

	NAME	DATE
DRAWN	RAMSEY	7/23/2025
CHECKED		
APPROVED		
REVIEWED		

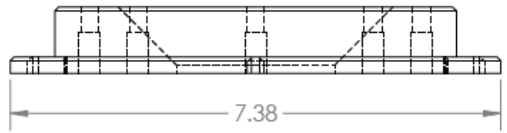
COMMENTS:

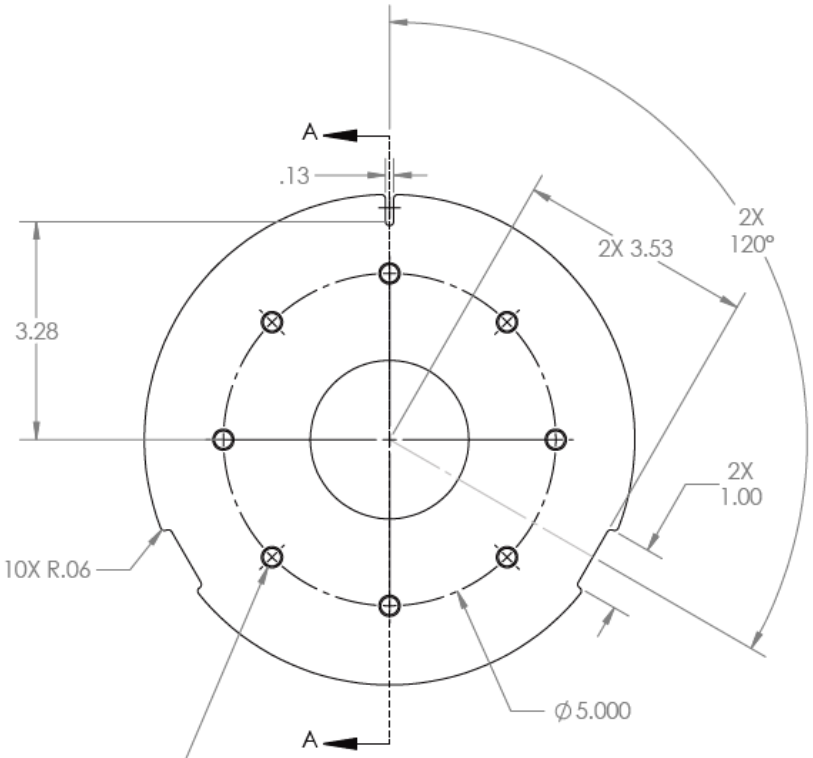
nTMM@HFIR

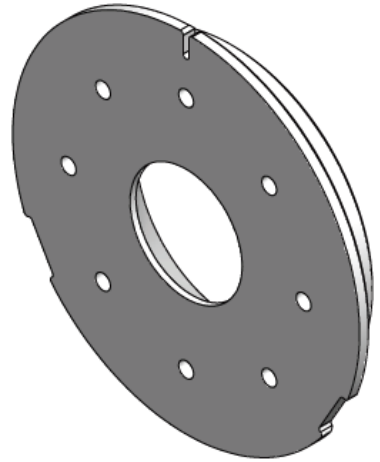
SHIELDING TEST COIL FORM ASSEMBLY

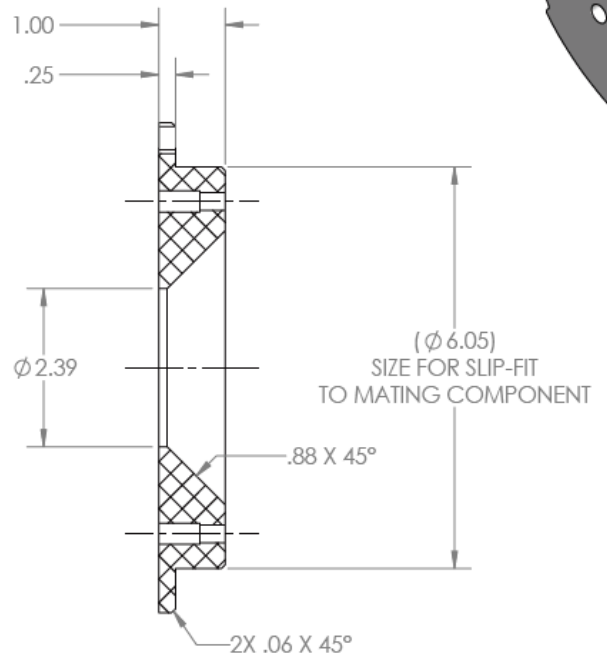
SIZE B | DWG. NO. nTMM-1-2-2 | REV. 00
SCALE:1:8 | WEIGHT: 14.2 LB | SHEET 1 OF 1

Production drawing of magnet endcap





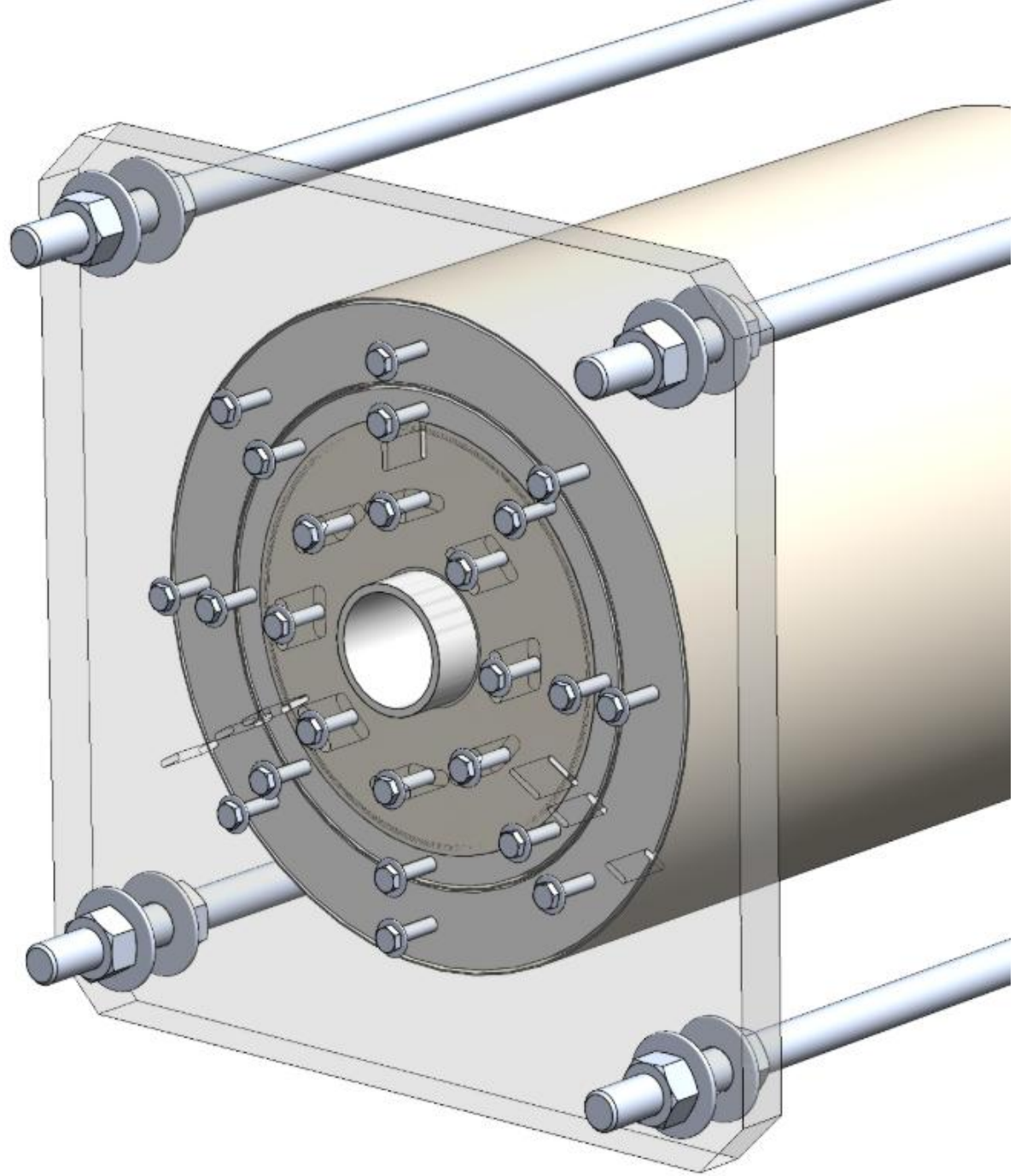




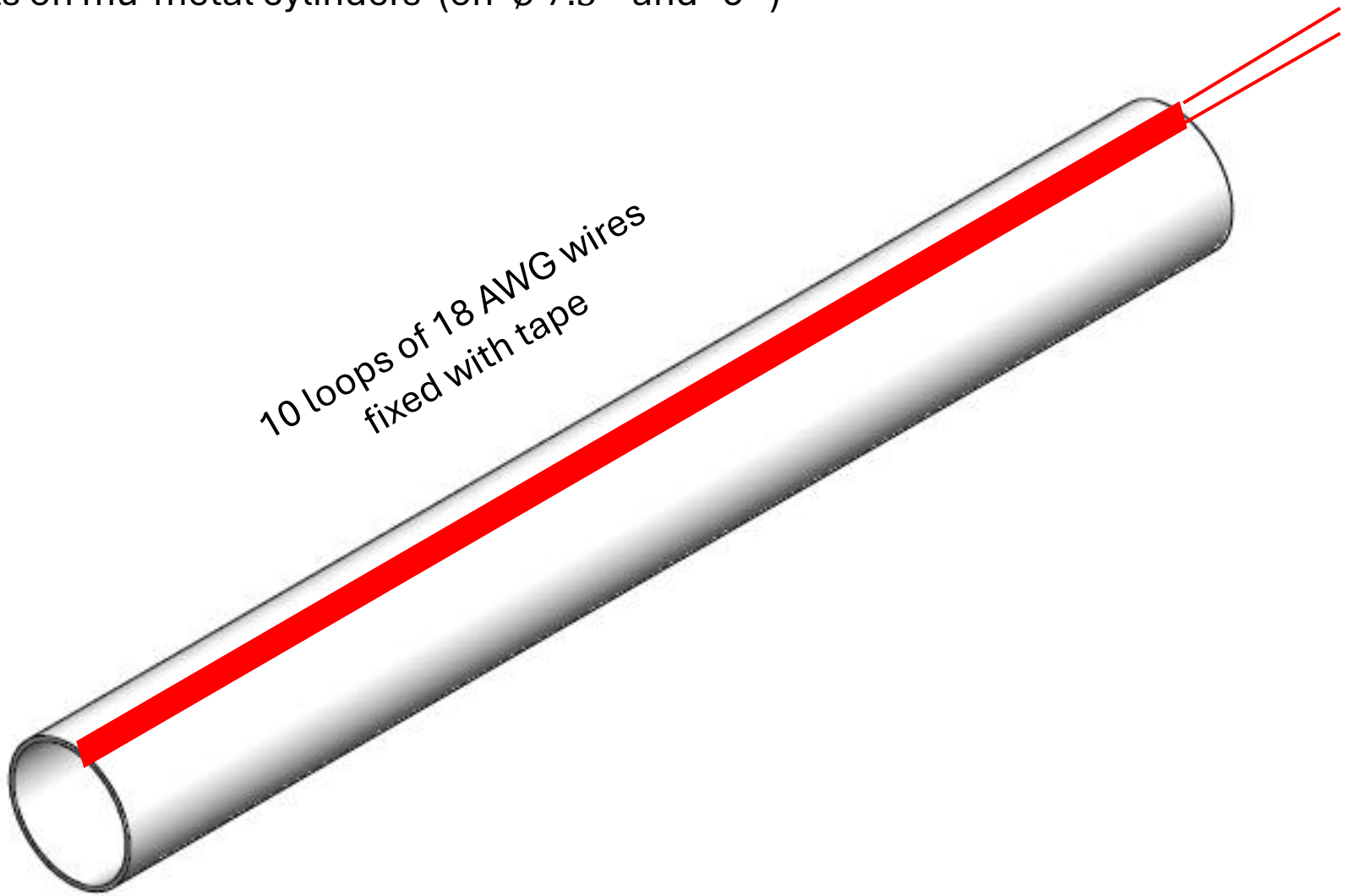
SECTION A-A

NOTES:
1. INSTALL TITANIUM HELICOIL INSERTS ONLY (TO BE SUPPLIED)
2. SEE SOLID MODEL FOR FURTHER GEOMETRY DETAIL

PHYSICS DIVISION OAK RIDGE NATIONAL LABORATORY OAK RIDGE, TN. 37831	DIMENSIONS ARE IN INCHES TOLERANCES UNLESS SPECIFIED: ANGULAR: ±0° 30' TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.003 SURFACE FINISH: 128 MICRO-INCH MAX ALL MACHINED SURFACES BREAK ALL SHARP EDGES MATERIAL: PVC PLATE NEXT ASSEMBLY: nTMM-1-3-2	NAME / DATE DRAWN: RAMSEY 7/23/2025 CHECKED APPROVED REVIEWED COMMENTS:
nTMM@HFIR SHIELDING TEST INNER SUPPORT RING	SIZE: B DWG. NO.: nTMM-1-2-4 SCALE:1:2 WEIGHT: 1.1 LB SHEET 1 OF 1	



Degaussing coils on mu-metal cylinders (on Ø 7.5" and 9")

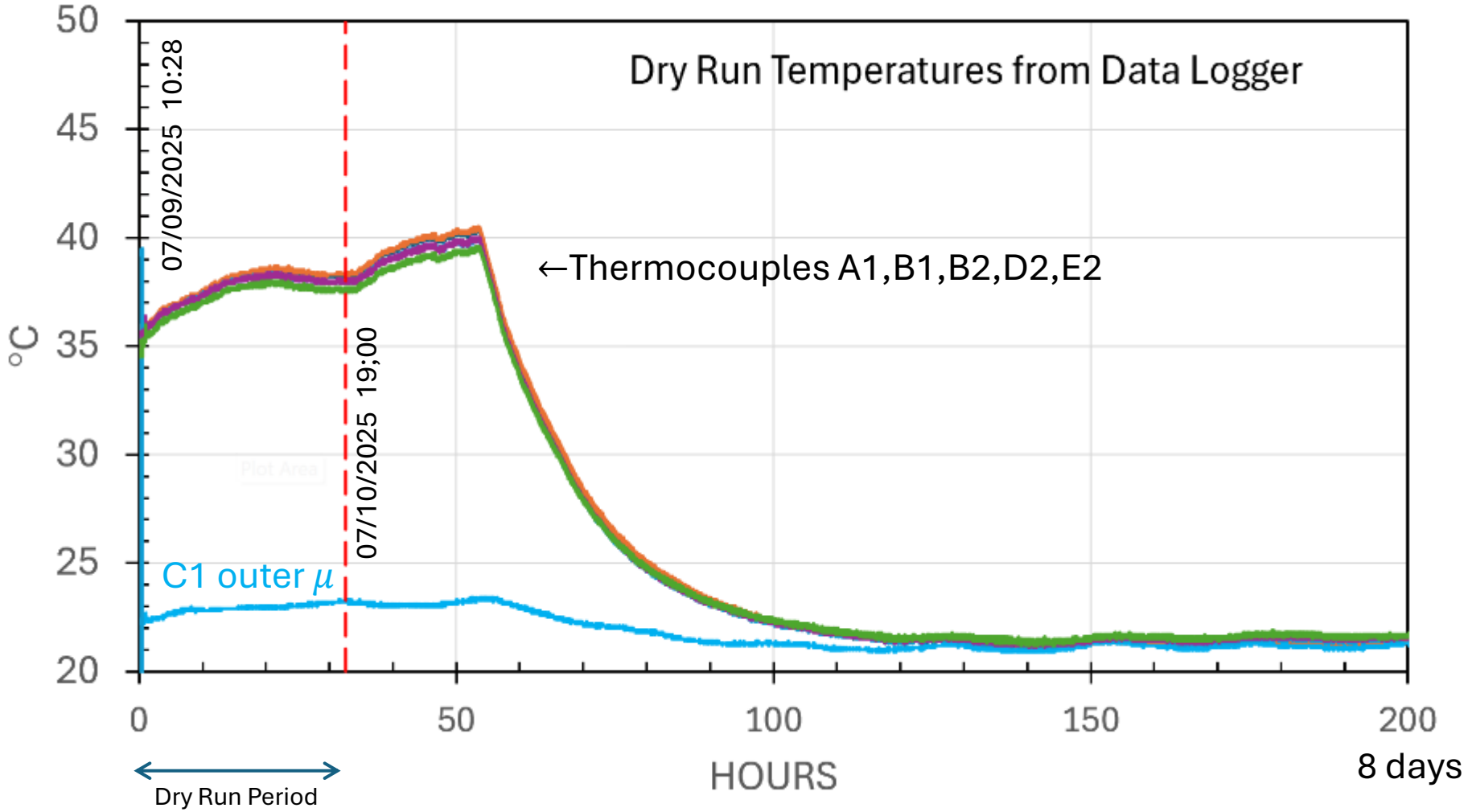


For measurements we also need to build another magnet
for external ~ 8 Gauss perturbation.

1. Single non-degaussed Ø7.5” shield; without/with mu-shield (no current)
2. same but after degaussing of mu-shield (no current)
3. inside 10 G solenoid with Ø7.5” shield: without/with external magnet
4. same after mu-metal degaussing
5. add additional 9” mu-shield (no degaussing) without/with external magnet
6. Effect of local (short 16” long) shield without/with external magnet

- Goal: compare measured shielding factor with COMSOL simulated to find effective μ for mu-metal Ø7.5” shield saturated by solenoidal field

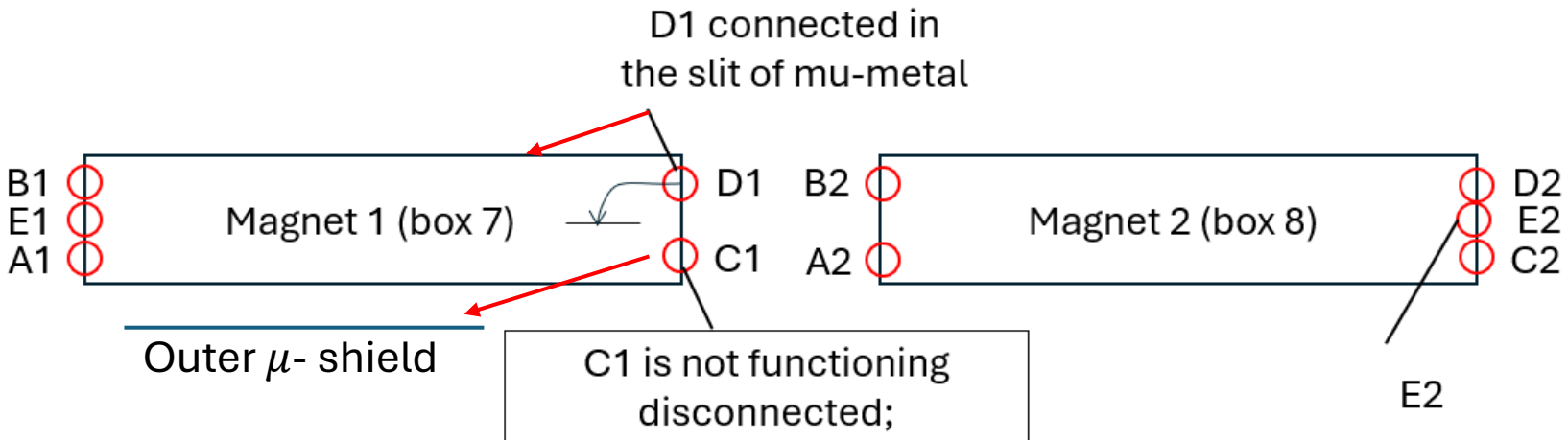
During Dry Run current was increasing from 0.32 A by steps 0.0004 A every 30 min.
At the end of dry run the current was set to 0.35 A



Not confirmed:
Lisa said that
D1 thermocouple
went to 48℃
(on the black mu-metal)

Cooling constant from exp fit is ~ 15 hours

Installed Thermocouples in nTMM Experiment
5 thermocouples per each magnet



D1 – connected to black mu-metal

C1 – connected to outer shiedl

7/9/25 update according to Shaun C1 is connected to outer mu-metal shield

Observation on 7/9/25 at 9 am: B2 seems not working – room temp

Thermocouples connection verified on July 9, 2025

Magnet 1 Box 7		Magnet 2 Box 8	
Yellow cable tag	Going to	Yellow cable tag	going to
A1	T1	A2	C2PV
B1	T2	B2	T4
C1	T3	C2	C3PV
D1	C1PV	D2	T5
E1	C4PV	E2	T6

Cable to controller ←was replaced on C3PV

July 9,2025