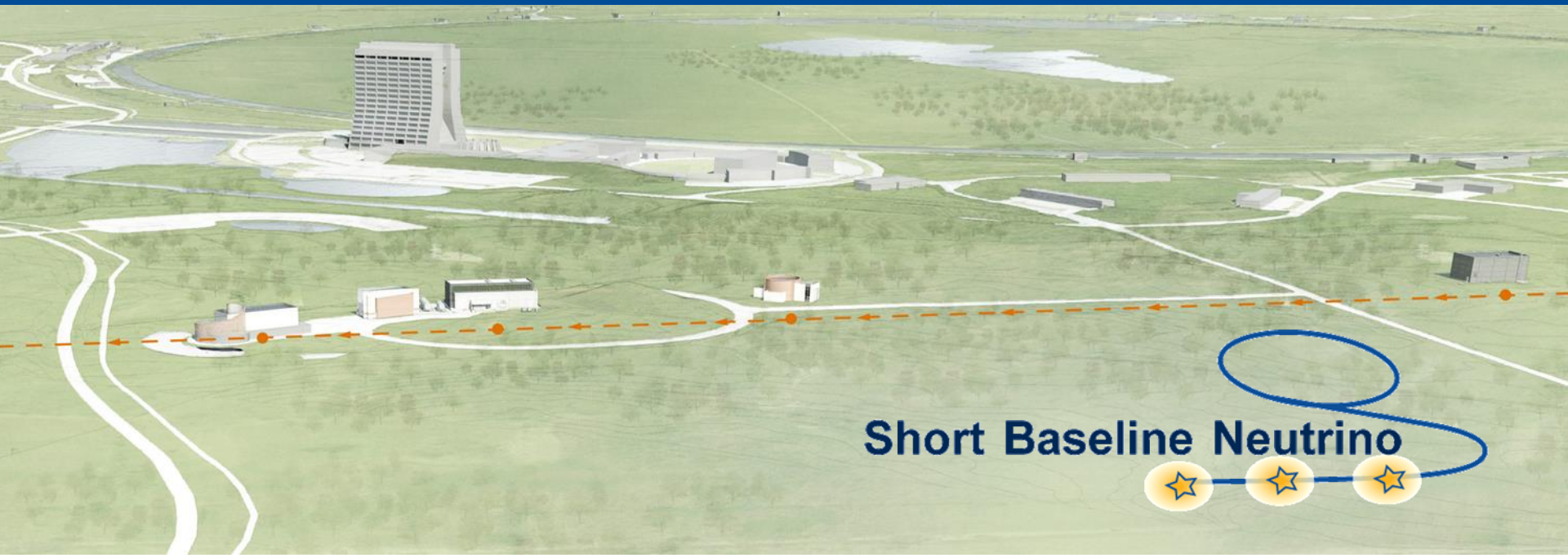
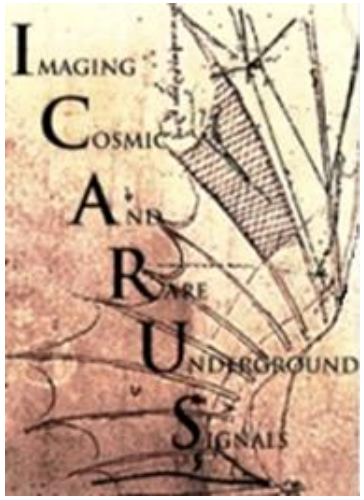


ICARUS

HV Drift and Field Cage Measurement

Linda F. Bagby on behalf of
HV Working Group

September 19, 2018



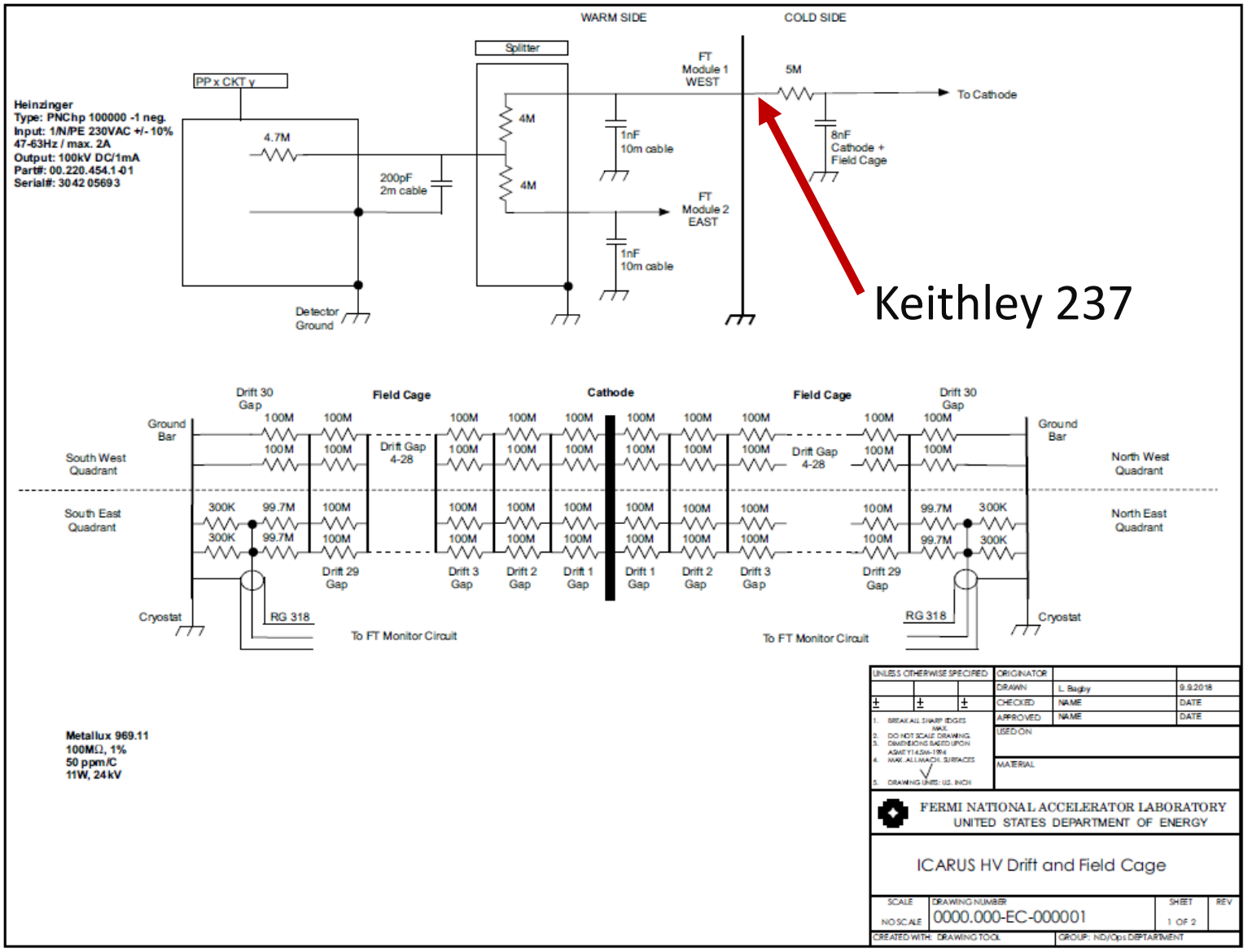
Outline

- HV Drift Field Cage measurement motivation
- Schematics
- Test Procedure
- Results

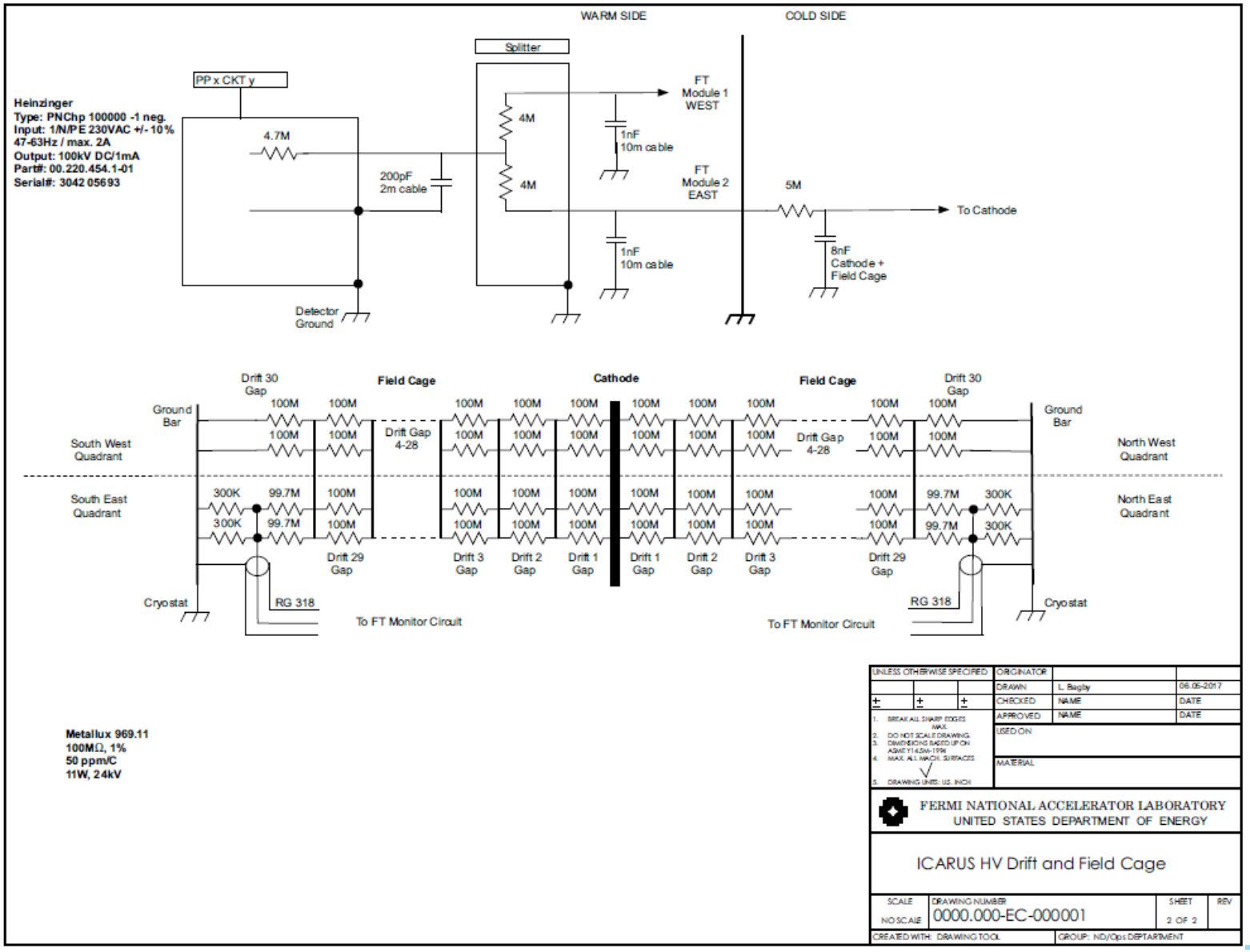
Motivation

- Before welding the cryostat access hatches closed, it is desirable to apply an external voltage to the HV Drift cup and measure the resulting voltage via the field cage ‘pick-off’ leads.
- If the voltage and current measurements are not as expected, the circuit is accessible for repairs or adjustments.

HV Drift and Field Cage Circuit: Module 1

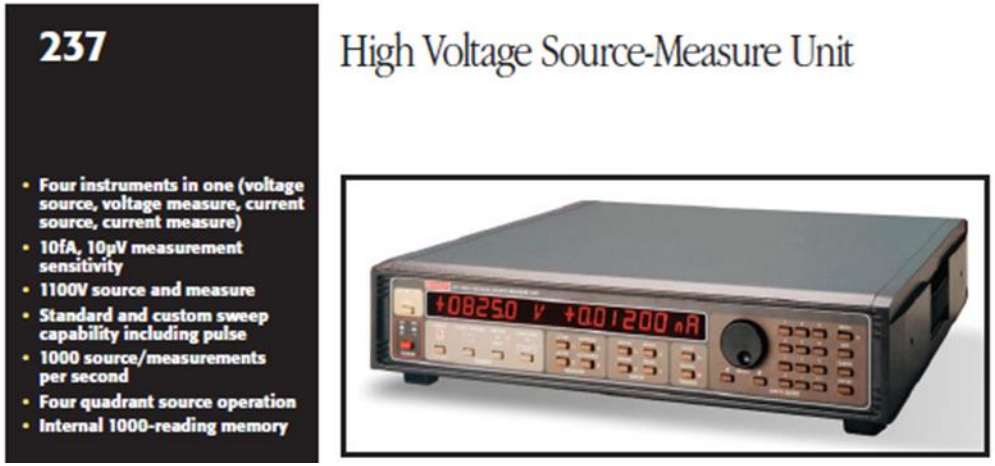


HV Drift and Field Cage Circuit: Module 2



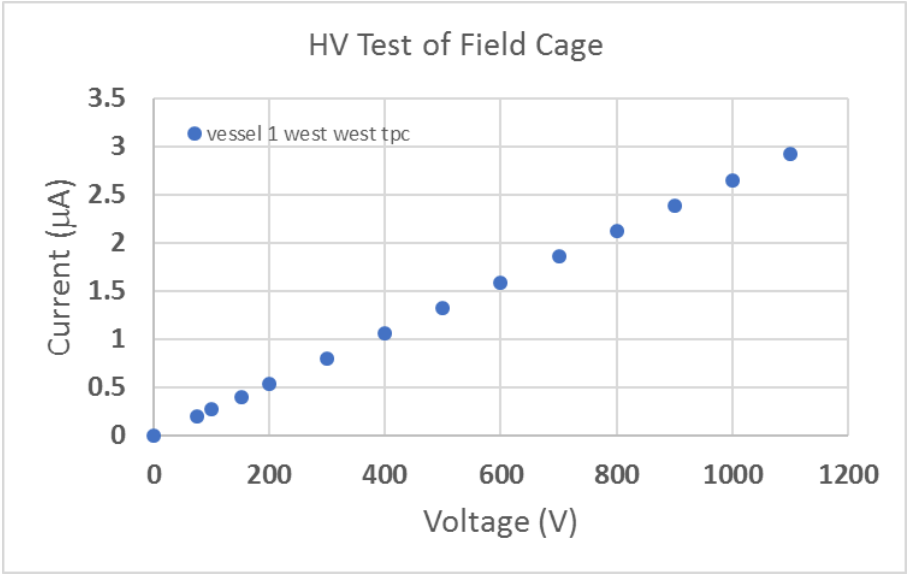
Test Procedure

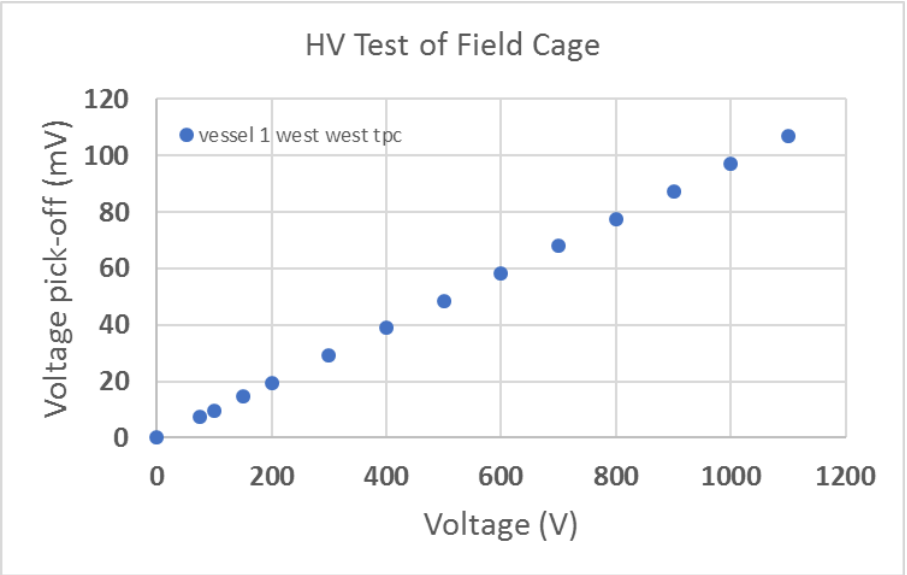
- Connect a high voltage power supply (current limited) to the cathode cup.



- Connect a volt meter to the ‘pick-off’ cable leads on the warm side of the feedthrough.
- Increase power supply voltage from 0V – 1100V in 100V increments, monitoring and recorded power supply displayed current and ‘pick-off’ voltage value.
- Plot value in real time to visually see deviating trends.

Results





- All four Field Cage circuits have been measured for continuity.
- The voltage expected at the ‘pick-off’ for a 1100V cathode voltage is within ~2.4% of the calculated value for all 4 Field Cage chains.
- Calculated ‘pick-off’ voltage = 108.6mV.
- Measured ‘pick-off’ voltage = 105.4 – 106.9mV.
- The Field Cage circuits have been verified for proper connectivity.