

ARIS: ATLAS Radiation Interlock System

1. Project

- A. Replace old SY/Max that has been working for 25 years
- B. Simple Digital Input/Output, Timer
 - No liquid tanks filling, conveyor belts moving, etc.
- C. Sense: Gates Open/Closed, Reset Buttons pressed, Keys in digital positions
- D. Control: Alarms, Lights, RF Power, Faraday Cups In/Out

2. SPECS

- A. Find appropriate PLC vendor – Safety PLC vs. non-Safety PLC
- B. SIL3, SIL-4 (Safety Integrity Level)
- C. Access States and transitions
- D. Radiation values (mRem/hour)

Issues

1. Counter cards with enough Channels and sufficient speed
 - A. PLC counter card modules not sufficient
 - B. Went with Ludlum cards
2. Read configuration file
3. Perform mathematical calculations:
 - A. Calculate Moving averages
 - B. Calculate accumulated dose