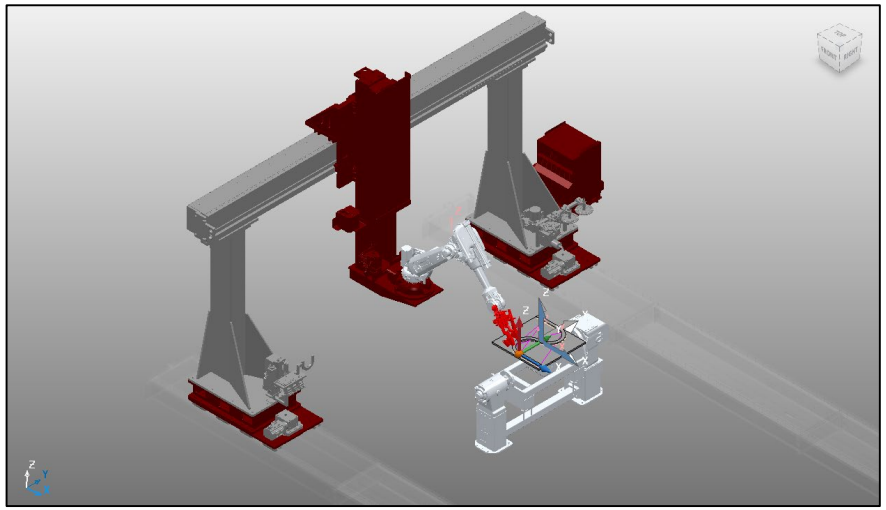
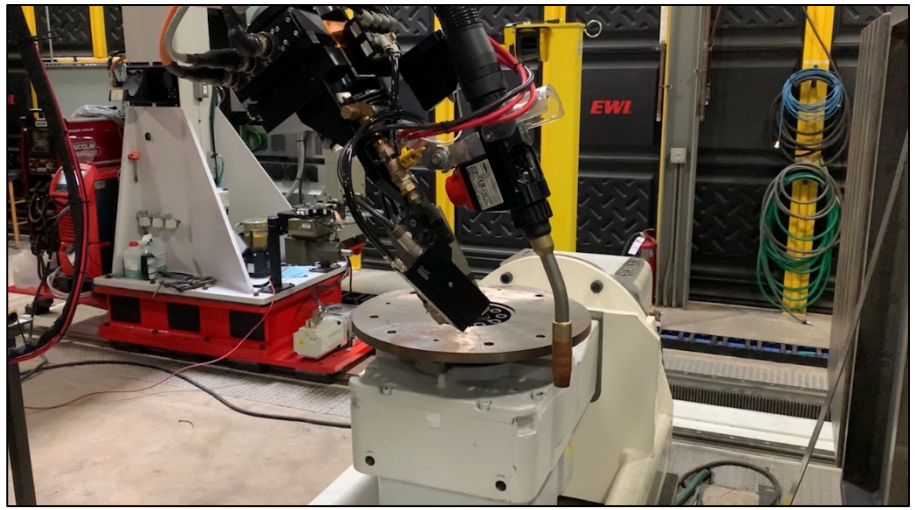
Task 6 – Robotic Arc Gantry DED AM System Integration and Build Trials (1 of 1)

- Post processor development
  - Gantry + Robot
    - Update: This has been combined into one post.
  - Gantry + Robot + Positioner
    - Posting
    - Testing in process





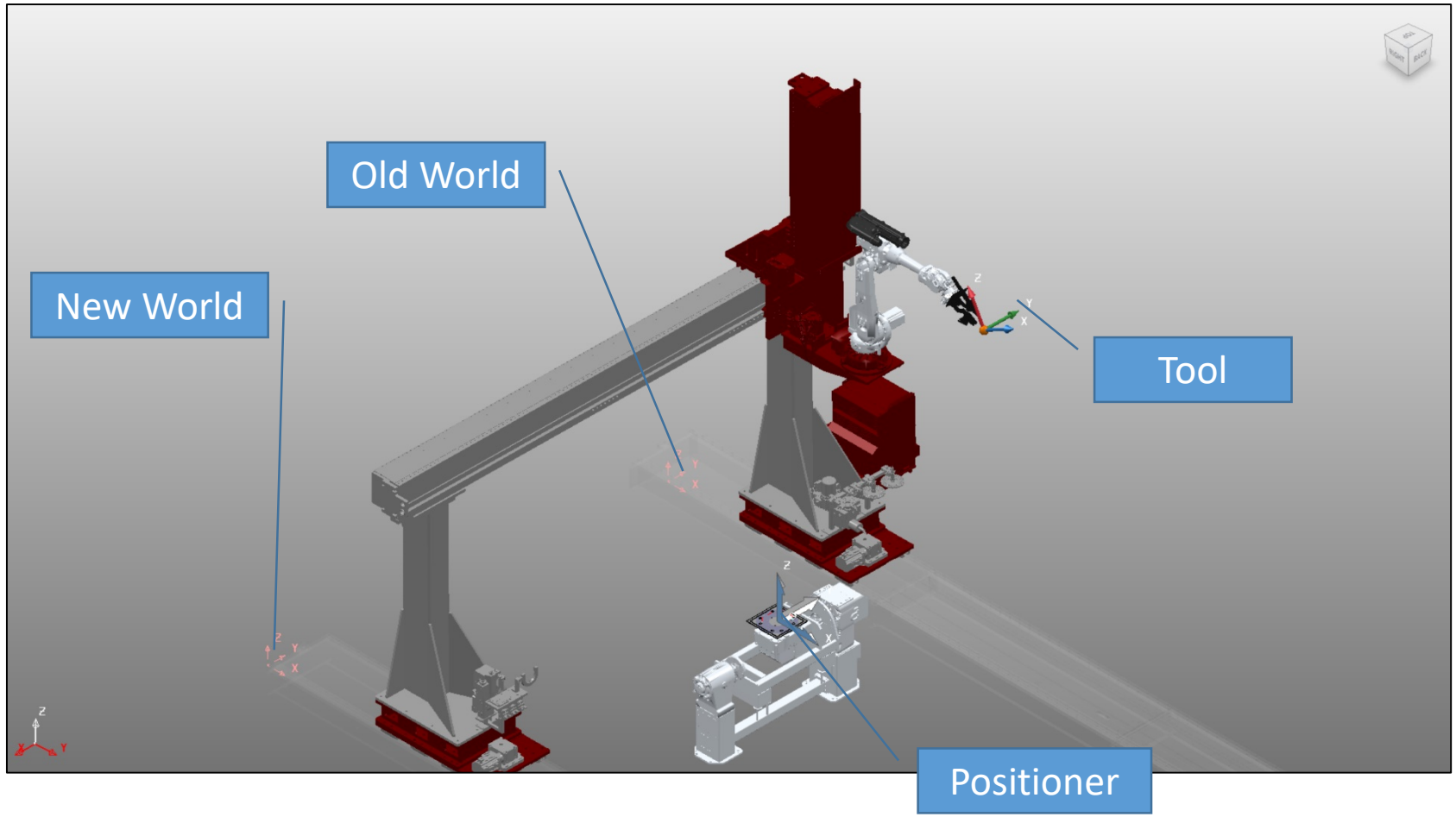
NC program | Parameters

ABB - NAVUS cell - Rev 5

Parameter	Value	Unit
Robot		
Module (MainROB)	PMill_MainT...	
Module (MainPOS)	PMill_MainT...	
Acceleration (Robot)	20	%
Jerk (Robot)	20	%
Smoothing (Zone)	fine	
Joint Feedrate	400	
Joint Smoothing	50	
Tracking	track1	
Welding		
Seam	seam1	
Weld	weld1	
Weave	weave1	
SpeedData		
v_tcp	50	mm/s
v_ori	50	degr...
v_leax	50	mm/s
v_reax	50	degr...
Setup		
ABB WorkObject	wobj0	
ABB Tool Frame(TC...	tpWeld_Fron	
Welding - Initial Parameters		
Fronius OPT1	72	
Fronius OPT2	7	
Fronius OPT3	8	mm/s
Fronius OPT4	1	%
Fronius OPT5	11	See ...
Fronius OPT6	5	%

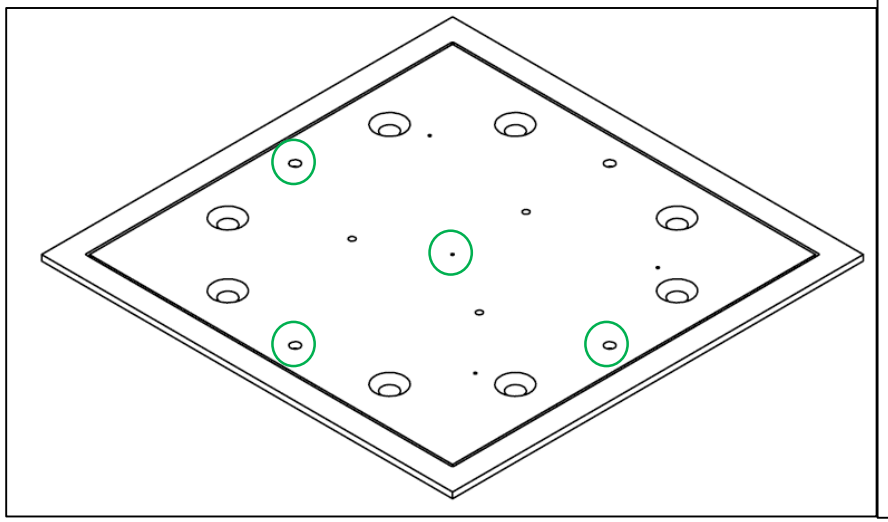
Task 6 – Robotic Arc Gantry DED AM System Coordinates (1 of 1)

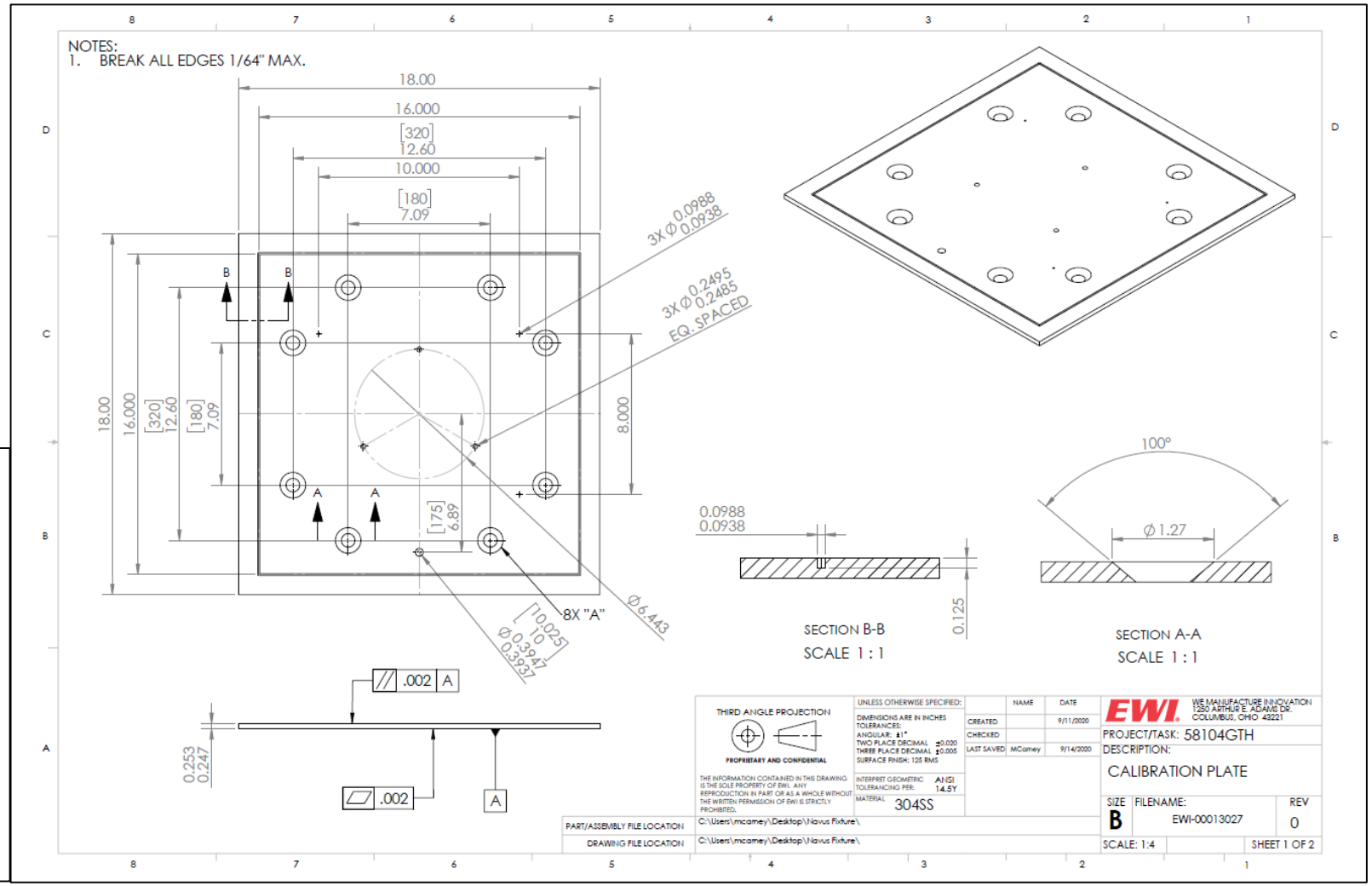
- Description of Coordinates
  - World
    - Update: This was relocated to support a single post processor.
  - Tool
  - Positioner



Task 6 – Robotic Arc Gantry DED AM System Calibration (1 of 6)

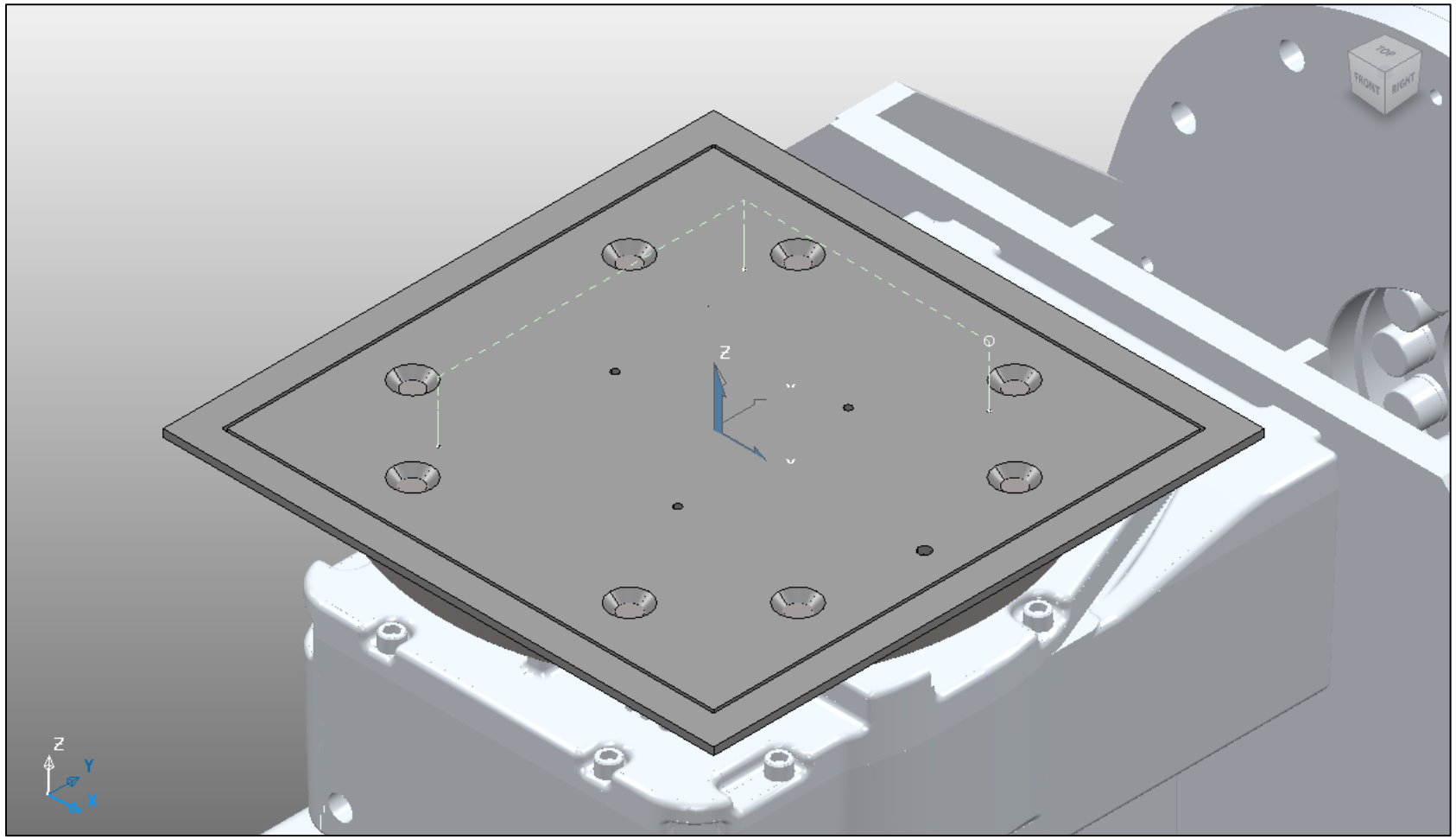
- Calibration plate
  - 3 points to check position (3/32-in)
  - 1 groove to check motion (3/32-in)
  - Update: Added additional dowel holes and a center datum to plate.





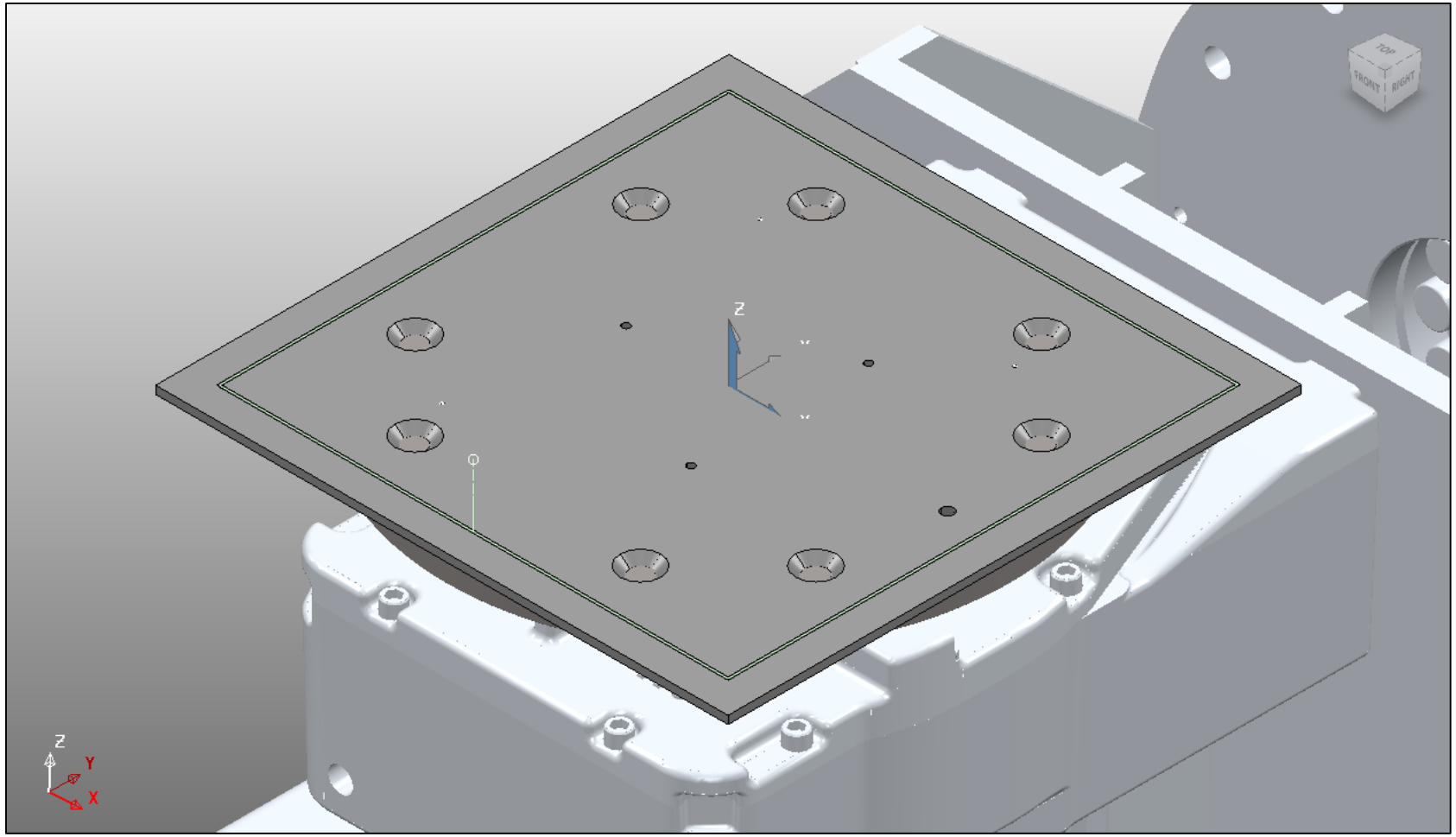
Task 6 – Robotic Arc Gantry DED AM System Calibration (2 of 6)

- 3 points to check position (3/32-in)
  - Test with World
  - Test with Positioner



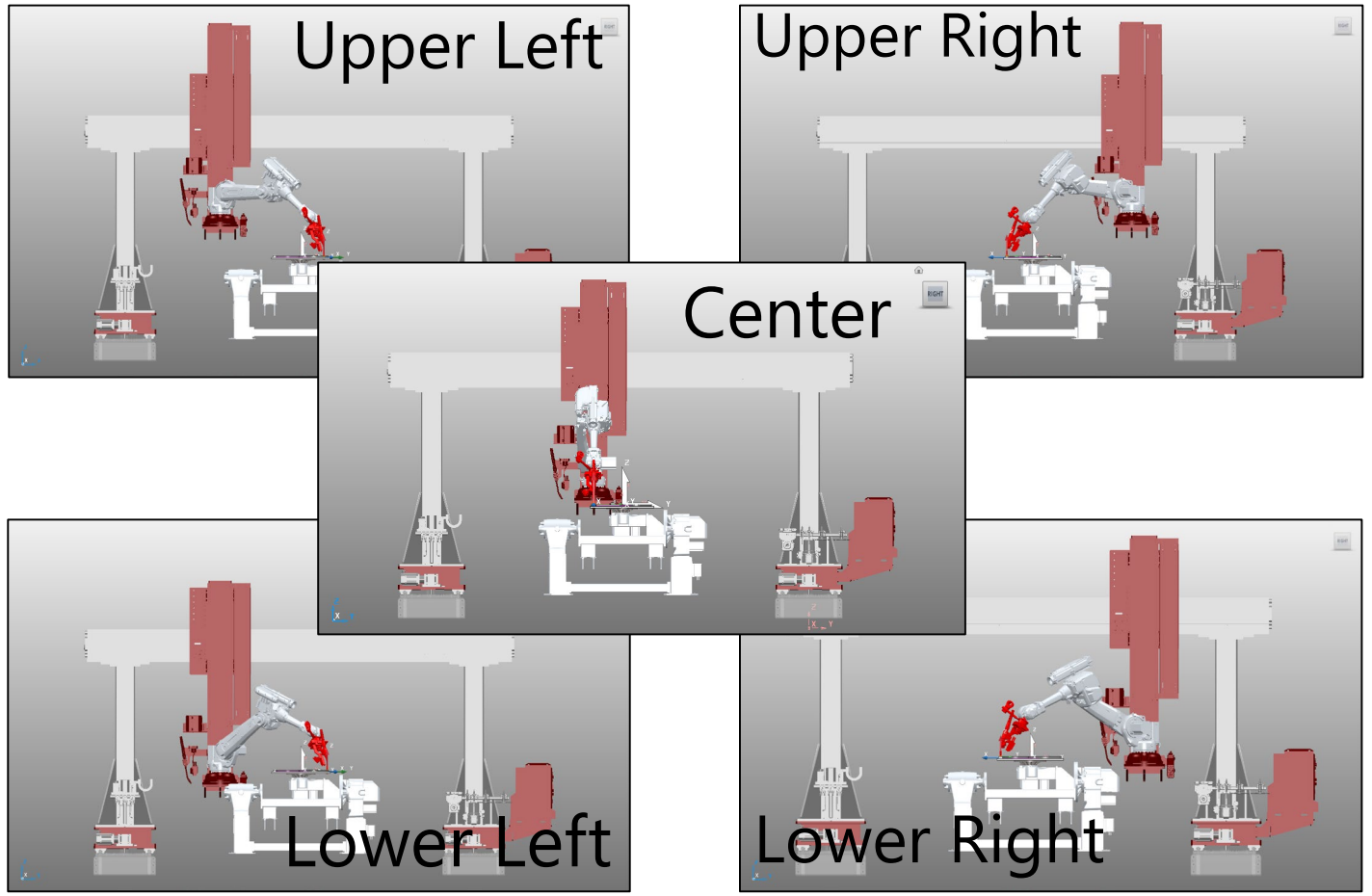
Task 6 – Robotic Arc Gantry DED AM System Calibration (3 of 6)

- 1 groove to check motion (3/32-in)
  - Test with World
  - Test with Positioner



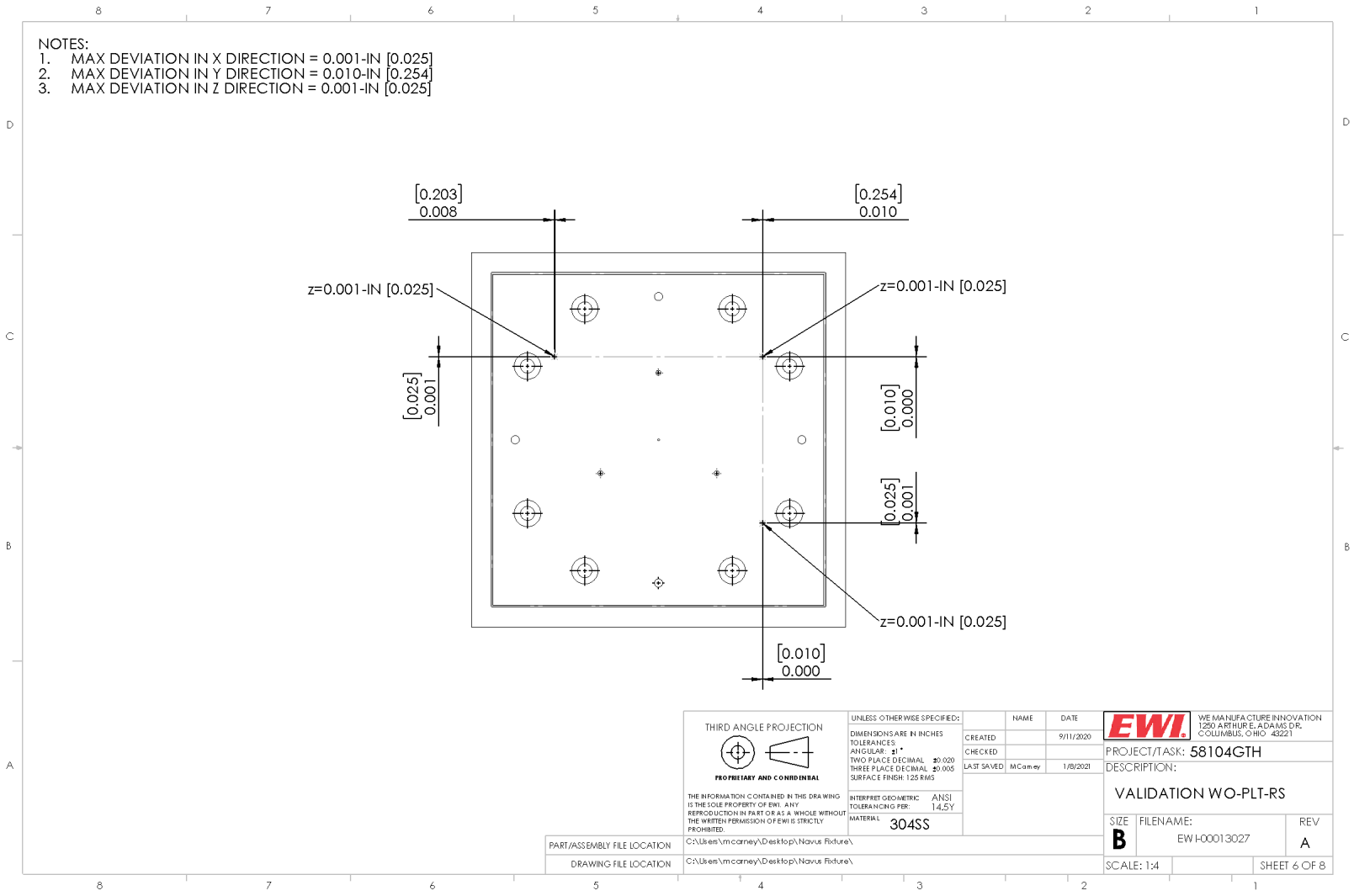
Task 6 – Robotic Arc Gantry DED AM System Calibration (4 of 6)

- Test cell at 5 different gantry locations
  - C=Center
  - UL=Upper Left
  - UR=Upper Right
  - LL=Lower Left
  - LR=Lower Right
- Robot close to fully extended
- Simulation videos available



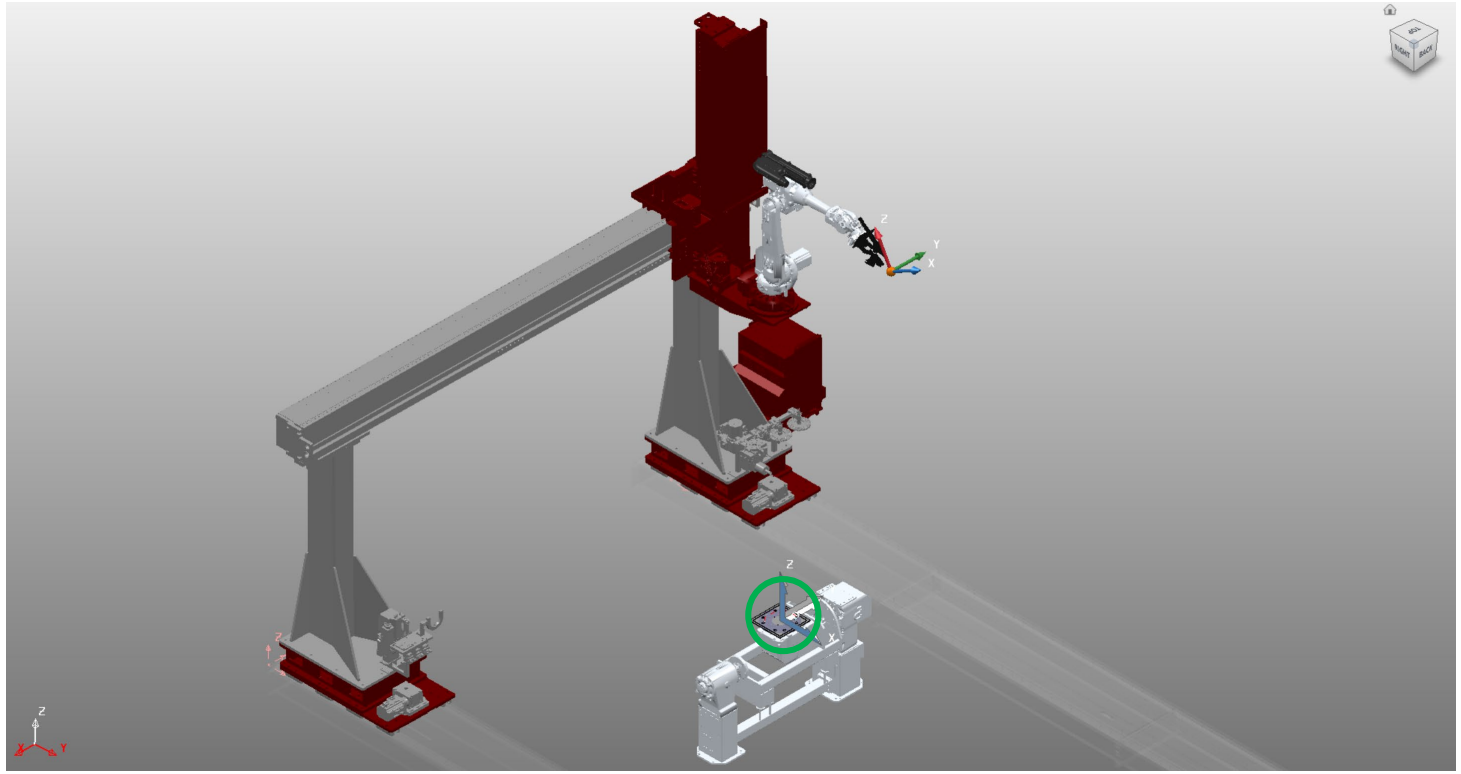
Task 6 – Robotic Arc Gantry DED AM System Calibration (5 of 6)

- Post Processor Rev WO-PLT-RS
  - Created a work object at the corner of the plate.
  - Output from ABB Robot Studio.



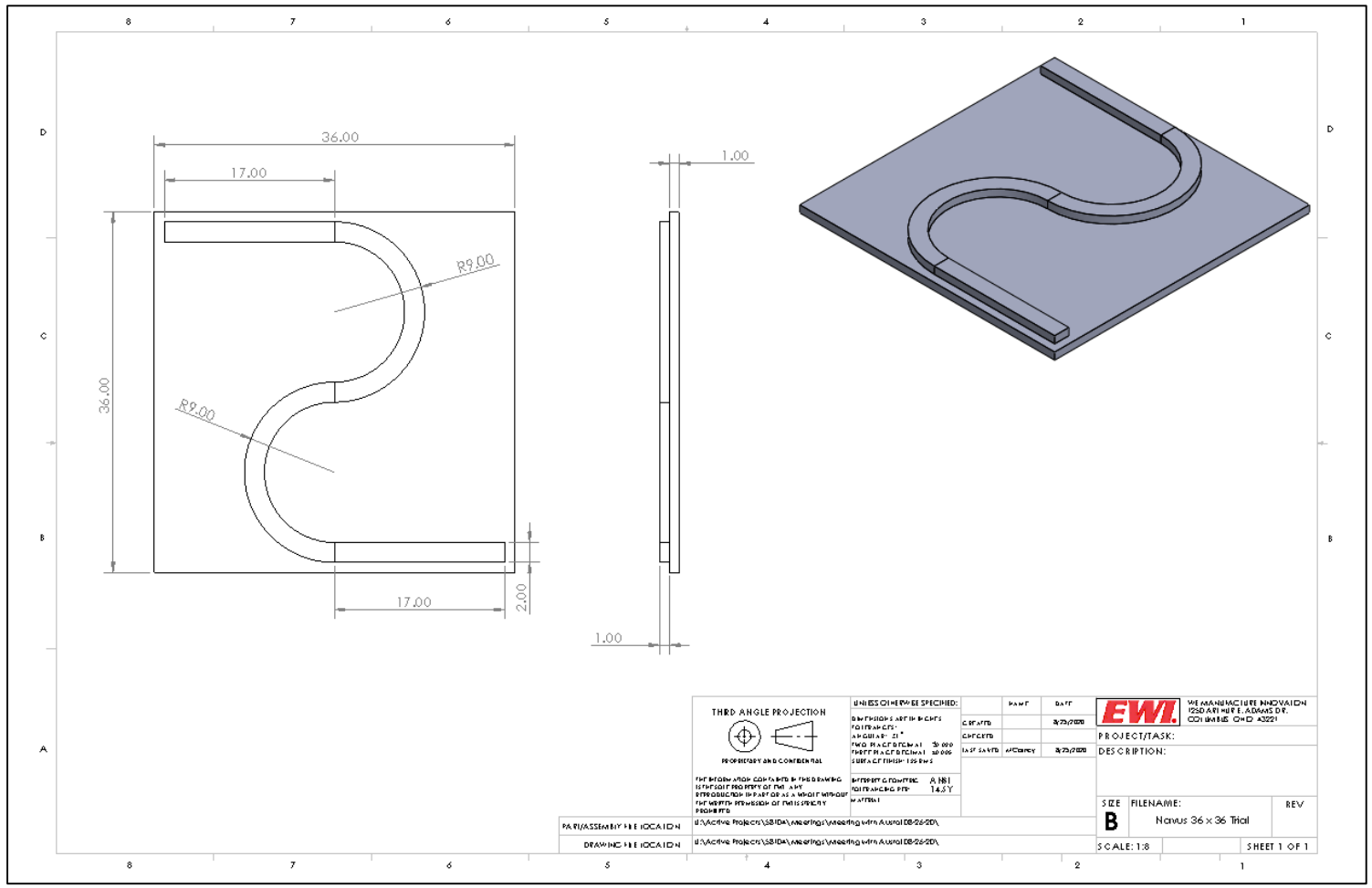
Task 6 – Robotic Arc Gantry DED AM System Calibration (6 of 6)

- Next steps:
  - Modify calibration plate to provide center datum
    - In process
  - Mirror ABB Robot Studio (RS) in PowerMill (PM).
    - Confirm that it matches in real world.
  - Create a work object at the center of the positioner.
    - Confirm that both RS and PM match in real world.



Task 6 – Robotic Arc Gantry DED AM System Build Trials (1 of 1)

- Basic shape for testing the system & post-processor is shown
  - Shape will engage both the robot and the gantry axis's
    - 5 Gantry Positions
      - All Gantry Motion
      - All Robot Motion
    - 10 total layers
  - Previously developed AMPS for the Fronius system will be used



Task 6 – Robotic Arc Gantry DED AM System IR Camera Confirmation (1 of 5)

- Integration of IR Camera
  - Back to robot IO
    - IO to take snapshot
    - IO for over limit
    - IO for under limit
  - Write subroutine to monitor temperature
  - Will test in final PowerMill post.