1.0 PURPOSE

The purpose of this document is to provide instructions for the use of a 3D printer to create parts involved in the Lockheed ATLAS system

2.0 SCOPE

All 3D printed parts for the Lockheed ATLAS system using the Folger Tech FT5 printer or equivalent.

3.0 DEFINITIONS

Filament	Printing material.
Build Plate	Flat 3D printing surface
Infill	Area between outer and inner wall.
Infill Pattern	Printing Pattern used in the infill area for strength.
Infill Speed	Speed at which printer material is used inside the infill area.
Infill Density	Density of material in the infill area.
Support	Structure created to support geometry in the y-direction during printing.
Diameter	Thickness of the printing material expelled from the printer.
Cura	3D Printing Software

4.0 RESPONSIBILITY

This process was designed by RIT's senior design team P18319 in partnership with Lockheed Martin Oswego.

5.0 TOOLS, GAGES, FIXTURES

The Folger Tech FT5 printer is applicable to this process sheet. The overall principles can be applied to other 3D printers as needed.

6.0 SAFETY REQUIREMENTS

6.1 Use 3D printers in areas that are properly ventilated.
6.2 Use low-emitting filaments when possible.
6.3 Wear appropriated personal protective equipment
6.4 Maintain safe distance when operating

7.0 INSTRUCTIONS

7.1 Power On
7.2 Using Cura, appropriately layout the part(s) on the table.

7.3 Use the following printer settings:

7.3.1

Layer Height	0.4 mm
Initial Layer Height	0.3 mm
Line Width	0.4 mm
Wall Thickness	1.2 mm
Top/Bottom Thickness	1.6 mm
Infill Density	25%
Infill Pattern	Concentric
Printing Temperature	220°C
Printing Temperature Initial Layer	230°C
Initial Printing Temperature	230°C
Build Plate Temperature	70°C
Diameter	1.75 mm
Flow	100%
Enable Retraction	Yes
Print Speed	60 mm/s
Infill Speed	60 mm/s
Wall Speed	30 mm/s
Outer Wall Speed	30 mm/s
Inner Wall Speed	60 mm/s
Top/Bottom Speed	30 mm/s
Travel Speed	120 mm/s
Initial Layer Speed	30 mm/s
Initial Layer Travel Speed	60 mm/s
Enable Print Cooling	Yes
Generate Support	Part Dependent
Build Plate Adhesion Type	None
Print Sequence	All at Once

7.4 Insert SD card with the desired part(s).

7.5 Print.

7.6 Let cool until room temperature.

7.7 Inspect with calipers to ensure proper tolerance.