



CRYOGENIC TANK TECHNOLOGY PROGRAM (CTTP)

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CRYOGENIC TANK TECHNOLOGY PROGRAM (CTTP)

OBJECTIVES

- **DETERMINE FEASIBILITY AND COST EFFECTIVENESS OF NEAR NET SHAPE HARDWARE**
- **DEMONSTRATE NEAR NET SHAPE PROCESSES BY FABRICATING LARGE SCALE-FLIGHT QUALITY HARDWARE**
- **ADVANCE STATE OF CURRENT WELD PROCESSING TECHNOLOGIES FOR ALUMINUM LITHIUM ALLOYS**



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NEAR NET SHAPE TECHNOLOGIES

- **EXTRUDED BARREL PANELS**
- **ROLL FORGED Y-RING ADAPTERS**
- **ONE PIECE SPIN FORMED DOMES**

OTHER TECHNOLOGIES

- **LOW PROFILE, NON-TANGENT NET SHAPE SPIN FORMED BULKHEADS**
- **FRICTION STIR WELDING**

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• PROGRAM STATUS

- ADAPTERS, BARREL PANELS, AND DOMES HAVE BEEN COMPLETED**
- FRICTION STIR WELD TOOLING IN PLACE ON CIRCUMFERENTIAL TOOL**
- BARREL PANEL WELDS COMPLETED**
- EXCESSIVE POROSITY IN BARREL TO ADAPTER WELDMENTS PLACED TANK FABRICATION ON HOLD STATUS**

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CONCLUSIONS

- **NEAR NET SHAPE HARDWARE CAN BE COST EFFECTIVE FOR HIGHER PRODUCTION RATE CRYOTANK HARDWARE**
- **LARGE SCALE-FLIGHT QUALITY HARDWARE CAN BE MANUFACTURED USING NEAR NET SHAPE PROCESSES**
- **FRICITION STIR WELDING SUCCESSFULLY DEMONSTRATED**