NASA Langley Research Center's
General and Precision Machining/Fabrication
Statement of Work
80LARC26R0004

NASA Langley Research Center (LaRC) has a requirement for Blanket Purchase Agreements (BPA) for general and precision machining/fabrication. This BPA will allow NASA LaRC to easily acquire various required fabrication and machining services over the next 5 years which generally have short response times to meet critical research project requirements at NASA LaRC.

A brief description of requirements are as follows:

- Furnish all personnel, facilities, services, equipment, supplies, materials, and transportation
- Must meet strict research schedules
- Work to specifications such as (but not limited to) Government-furnished drawings, sketches, or written narratives
- The Contractor shall conform to various NASA and industry standards/codes as specified in task orders. Such standards/codes include (but not limited to) all applicable internal/external Langley Management System documents.
- Perform accurate machining and handwork for precision tolerances, fits, and finishes. Dimensional tolerances will vary with hardware and may range from general (+/- .020 inches, 125 RMS) to tight (+/- .0001 inches, 4 RMS) constraints depending on the nature of the work
- Manufacture, repair, rework, or modify research and facility hardware to include, but not be limited to; structural members and assemblies
- Modification of aerospace and aeronautical models
- Three day response (or less if required) on requests for quotes
- General fabrication and precision machining
- Quality Management System
- The Contractor shall inspect all completed tasks prior to delivery to the Government to ensure compliance with the task order and specified standard. The Contractor shall furnish a final inspection report with completed tasks.

Typical materials to be worked shall include (but not limited to) the following:

- Metals, including aluminum and its alloys, copper, brass, carbon steels, stainless steels, alloy steels, titanium, nickel, nickel alloys, and other special alloys.
- Non-metallic materials, including fibrous reinforced polymeric, plastic, ceramics, glass, carbon, and fiberglass of composites with epoxy, phenolic, polyester, polyamide, and polimide resin and adhesive systems
- Metal matrix filament reinforced plastics, including boron, carbon, graphite, and tungsten filaments
- Advanced state-of-the-art metallic, polymeric, and hybrid composites
- Wood, including epoxy or polyester impregnated products
- Combinations of these materials

Core Capabilities

General & Precision Machining

- Metallic and non-metallic machining
- Conventional Milling Machines and Turning Lathes
- Computer Numerical Control Machining Center (3 axes)
- Component assembly and integration
- Inspection & Measurement Equipment
- CNC programming

Optional Core Capabilities or Sub-contract Services

General & Precision Machining

- Electrical Discharge Machining (EDM)
  - 3-axis wire
  - 4-axis wire
  - Ram EDM
- 4-Axis CNC Machining Center
- 5-Axis CNC Machining Center
- Multi-axis Turning Center
- Surface Grinding Equipment
- Cylindrical Grinding Equipment
- Coordinate Measurement Machine
- Metal Printing/Laser Sintering

Metal Fabrication

- Metal forming. Conventional and specialized forming processes of metals and their alloys in various sheet, plate and structural forms. Typical metal sheet sizes are .016" X 48" X 144" to .250" X 48" X 144". Typical plate sizes are .375" X 48" X 144" up to 1.00" X 48" X 144". Special plate sizes may exceed 1 inch thickness and/or measure 72" X 144". Structural forms include commercially available angle, channel, I-Beam, H-Beam, pipe, rod, bar, etc. Forming processes include the ability to fabricate similar structural configurations not commercially available utilizing high capacity precision metal cutting/forming equipment, such as manual or power shears and slip rolls, hydraulic press brakes and punches.
- Fastening metal components utilizing certified commercial fasteners. This includes a wide variety of standard and aerospace approved fasteners. (i.e. bolts, nuts, screws, rivets, Jo-bolts, Helicoils, Cherry fasteners, etc.)
- Water-Jet Cutting
- Programmable Press Brake
- Programmable Rolling Machine
- Hydraulic Tube / Pipe Bending Equipment

Metal joining - joining processes include:

- Silver Soldering
- Torch Brazing
- SMAW Shielded Metal Arc Welding (Stick) various steels, alloy steels, nickels, and stainless steels. Used for thicker sections, structural items.

- ☐ GMAW Gas Metal Arc Welding (Mig, solid wire) various steels, alloy steels, nickels, and stainless steels. Capable of welding thinner sections with this equipment 1/8 thick and below, and also used on some thicker sections some structural items.
- ☐ FCAW Flux Cored Arc Welding (Mig flux cored wire) various steels, alloy steels, some nickel alloys, and stainless steels. This process is used in heavy production or structural welding.
- ☐ GTAW Gas Tungsten Arc Welding (Tig) Aluminum, various steels, alloy steels, tool steels, nickel alloys, precipitation hardened steels, stainless steels. Process used in thinner applications or when weld quality must be exceptional. Can also be used in thicker sections.
- ☐ GMAW Gas Metal Arc Welding (Mig aluminum welding) Aluminum materials, mostly used for welding aluminum structural or thicker sections.
- ☐ Vacuum Furnace Brazing

Heat Treat Operations

- ☐ Annealing
- ☐ Normalizing
- ☐ Hardening (aging)
- ☐ Inert Gas or Vacuum Heat treating

Non Destructive Testing (NDT) in accordance with American Society for NDT (ASNT)

- ☐ Visual Testing (VT)
- ☐ Dye Penetrant Testing (PT)
- ☐ Magnetic particle Testing (MT)
- ☐ Eddy Current Testing (ET)
- ☐ Ultrasonic Testing (UT)
- ☐ Radiographic Testing (RT)

Metal Finishing

- ☐ Chemical, solvent, and abrasive cleaning
- ☐ Oxide Coatings (Anodize & Black Oxide)
- ☐ Surface Treatments (Passivate, Phosphate, Iridite, Electropolishing)
- ☐ Electrolytic Plating (Nickel, Silver, Gold, Zinc, Chromium, Tin)
- ☐ Electroless Plating (Nickel & Copper)

Vendor line cards may be submitted in <u>addition</u> to the form.