

TECHNICAL WORK MAY NOT BEGIN PRIOR TO CO APPROVAL

NASA/GODDARD SPACE FLIGHT CENTER

REQUEST FOR TASK PLAN / TASK ORDER

CONTRACTOR

CONTRACT NO. / TASK NO.

QSS Group, Inc.

NAS5-
99124

TASK NO.
264

AMENDMENT

Applicable paragraphs from contract Statement of Work: Function II, Paragraphs D5, and E

STATEMENT OF WORK: (Continue on blank paper if additional space is required)

See attached SWIFT Image Processor Electronics Assembly Statement of Work (SOW).

PERFORMANCE SPECIFICATIONS:

1. Perform Printed Wiring Board design/layout, fabrication, and assembly documentation using THEDA PCB S/W, version 2.1 (or later) or Mentor PCB S/W Version C.4 (or later).
2. Perform Enclosure, and related hardware, fabrication and assembly documentation using Autocad 14 (or later) format.
3. Perform Electrical design using Viewlogic/simulations and Model Tech/Design Synthesis.

APPLICABLE DOCUMENTS:

See section 1.4.0 of SOW (Applicable Documents) for list of applicable documents.

TASK END DATE: 12/31/01

MILESTONES/DELIVERABLES AND DATES:

See section 1.9.0 (Deliverables Schedule), and Attachment A (Hardware Deliverables List), of SOW for list of deliverable dates and quantities.

PERFORMANCE STANDARDS:

Schedule: On-time delivery of assembled and inspected Image Processor hardware.

Technical: Meets requirements as specified in Section 1.1.0, "Requirements", of the attached SOW

FINAL DELIVERY DESTINATION (NAME, BLDG, ROOM):

Dennis Albaijes, building 5, room N13.

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STATEMENT OF WORK:Task #: **264**

March 16, 2000

**SWIFT IMAGE PROCESSOR ELECTRONICS ASSEMBLY
STATEMENT OF WORK****1.0 SCOPE**

The purpose of this task is to produce one SWIFT Image Processor, Flight-like, Engineering Test Unit (ETU) assembly, and one SWIFT Image Processor Flight Unit (FU) assembly. To complete this task the contractor shall provide the skills, facilities, materials and services necessary to design, fabricate, assemble and deliver these units.

1.1.0 REQUIREMENTS**1.1.1 DESIGN**

Electrical: The contractor shall provide electrical circuit design services for the DSP card, the LVPC card, and the Backplane card. The contractor shall also provide electrical design services to the SWIFT Image Processor Team Lead, as required, through testing and integration.

Mechanical: The contractor shall provide mechanical packaging design for the ETU and the FU. The FU packaging design shall include Enclosure design, PWB design, EMI, Radiation, Structural and Thermal analysis and all internal interconnect wiring. The FU circuit board assembly packaging design effort shall include board level mechanical and thermal analysis, and all associated hardware and materials such as heatsinks, connector brackets and mounting hardware.

The ETU and FU electronics development will require close coordination and review between the GSFC Lead Engineers and the contractor's representatives and designers in order to meet electrical, EMI, radiation, mechanical and thermal requirements, and ensure a successful overall design.

1.2.0 MANUFACTURING

The contractor shall provide the required skills and materials (less the GFE specified in section 1.7.0) required to completely fabricate and assemble the ETU and FU electronics equipment described in section 1.1.0. This equipment shall be fabricated in accordance with the requirements of sections 1.4.0 and 1.6.0 of this Statement of Work. Conformal coating and staking shall be applied to the flight electronics equipment after engineering test in accordance with the project schedule.

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STATEMENT OF WORK:Task #: **264****1.2.1 QUANTITIES**

See Attachment A (Hardware Deliverables List) of this Statement of Work for a detailed list of hardware types and quantities.

1.3.0 TESTING**1.3.1 MECHANICAL TESTING**

Mass Properties Measurement: Weight only.

Sine Burst Test: Performed at equivalent "qualification" level by the GSFC.

Random Vibration (3 uniaxial) Test: Performed at equivalent "qualification" level by the GSFC.

1.3.2 ELECTRICAL TESTING

The contractor shall provide on-site services through the functional and integration test phases.

1.3.3 ENVIRONMENTAL TESTING

Environmental testing shall be performed by the GSFC.

1.4.0 APPLICABLE DOCUMENTS (Partial List)

1.4.1 GSFC Engineering "Drawing Standards Manual," Doc. No. X673-64-1E

1.4.2 Applicable GSFC Approved Contractors Procedures.

1.4.3 GFE schematics, netlists, and parts specification lists.

1.4.4 NASA-STD-8739 and NAS5300.4 series documents for the fabrication, assembly, wiring, and coating of flight electronics hardware.

1.4.5 GSFC Quality Manual, GPG 8730.3.

1.4.6 FPGA Design Guidelines, 561-PG-8700.2.1.

1.5.0 STATUS REPORTING REQUIREMENTS

The contractor is required to conduct meetings with the ATR and all other relevant GSFC and subcontractor personnel a minimum of twice per month. This meeting shall cover the status of all ongoing activities related to the task including schedule, cost and potential or unresolved problem areas.

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1.8.0 DELIVERABLES

1.8.1 DESIGN DOCUMENTATION

A complete design package shall be delivered. The package shall consist of the following:

1. Electronic copy of final assembly and piece part fabrication drawings.
2. One hard copy of final assembly and piece part drawings.
Note: Additional copies of drawings may be required, as needed, during the development of the packaging design.
3. All original fabrication and assembly drawings.
4. PDR or comparable Presentation Package.
5. CDR or comparable Presentation Package.
6. Final Structural/Fracture, Thermal, EMI and Radiation Reports documenting all analyses conducted and the results.
7. Materials and Processes List (contractor proposed materials) for PDR.
8. Final, complete Materials List (including GFE and GFP) for CDR.
9. Final End Item Acceptance Data Package including the as-built Configuration List, the as-built Materials and Processes List, the WOA and/or Certification Logs and a list of any open items.
10. Performance Assurance documentation as required.

1.8.2 HARDWARE

The contractor shall deliver one (1) ETU assembly and one (1) FU assembly according to Attachment A (Hardware Deliverables List) and other items per the schedule in section 1.9.0. Any spare residual unused hardware and equipment shall also be returned to the TM. All deliverables related to this task shall be made in person to the ATR or his duly appointed representative. This shall be the method of delivery unless explicitly specified otherwise by the ATR.

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Task #: **264**1.8.3 PARTS

The contractor should anticipate delivering approximately fifty (50) part types due to late design changes.

1.9.0 **DELIVERABLES SCHEDULE**1.9.1 DESIGN DOCUMENTATION

<u>Deliverable to fab.</u>	<u>Brdbd</u>	<u>ETU</u>	<u>Flight</u>
RAD6000 Processor card		6/30/00	6/30/00
DRAM card		7/17/00	9/22/00
1553/EEPROM card		6/26/00	9/1/00
DSP card		11/21/00	1/26/01
Block Controller I/F breadboard	10/4/00		
Block Controller I/F card		2/15/01	5/11/01
LVPC card		7/10/00	9/15/00
Backplane card		6/26/00	9/1/00
Extender card		5/1/00	
Enclosure		7/7/00	11/20/00

1.9.2 HARDWARE ASSEMBLY

<u>Deliverable to test</u>	<u>Brdbd</u>	<u>ETU</u>	<u>Flight</u>	<u>Test</u>
RAD6000 Processor card		8/18/00	8/18/00	
DRAM card		8/18/00	10/6/00	
EEPROM card		7/28/00	9/15/00	
DSP card		12/25/00	2/9/01	2/23/01
Block Controller I/F breadboard	10/18/00			
Block Controller I/F card		3/21/01	5/25/01	
LVPC card		8/11/00	9/29/00	10/13/00
Backplane card		7/28/00	9/15/00	9/20/00
Extender card		6/23/00		
Enclosure		9/11/00	12/31/00	

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Task #: **264****ATTACHMENT A
Hardware Deliverables List****SWIFT IP BB, ETU and FU Printed Wiring Assemblies****

Item	Sides	BB Ass'y	ETU Ass'y	UNPOP ETU		FLT Ass'y	Unpop FLT	
				PC Bd	Parts		PC Bd	Parts
Rad6000	1	0	1	1	1	1	1	1
DRAM	1	0	1	1	1	1	1	1
EEPROM	1	0	1	1	1	1	1	1
DSP	2	0	1	1	1	1	1	1
Block Cont I/F	1	1	1	1	1	1	1	1
LVPC	1	0	1	1	1	1	1	1
Backplane	1	0	1	1	1	1	1	1
Extender	1	0	2	1	1	0	0	0

** Only one set of Printed Wiring Boards will be fabricated. This set of Printed Wiring Boards will be used to assemble the BB, ETU, and FU Printed Wiring Assemblies.

SWIFT IP BB, ETU and FU Mechanical Hardware

Item	BB Ass'y	ETU Ass'y	UNPOP ETU		FLT Ass'y	Unpop FLT	
			PC Bd	Parts		PC Bd	Parts
Enclosure	0	1			1		
Extender Frame	0	2			0		