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.	JOB ORDER NUMBER	APPROP. FY
QSS Group, Inc.	NAS5- 99124 TASK NO. 455 AMENDMENT	562-626-30-33-89	00

TASK TITLE: (NTE 80 characters; include Project name)

Radiation Testing on Intel Pentium Family for REE

APPROVALS: (Type or print name and sign)

ASSISTANT TECHNICAL REPRESENTATIVE (OR TASK MONITOR) Kenneth A. LaBel — Robert A. Kichak	DATE 12/22/00	ORG CODE 562	MAIL CODE 562.1	PHONE 301-286-9936
BRANCH HEAD Darryl Lakins — Robert A. Kichak	DATE 12/22/00	CODE 562		PHONE 301-286-6382
CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE (COTR) for Robert S. Lebair, Jr. — Deborah A. Clark	DATE 12/22/00	CODE 560		PHONE 301-286-6588

FLIGHT HARDWARE, CRITICAL GSE OR SOFTWARE? (IF YES, NEED CODE 303 CONCURRENCE NEXT BLOCK)	CONTRACTING OFFICER'S QUALITY REP.	DESIGNATED FAM:
[X] NO [ ] YES		

The contractor shall identify and explain the reason for any deviations, exceptions, or conditional assumptions taken with respect to this Task Order or to any of the technical requirements of the Task Order Statement of Work and related specifications. The contractor shall complete and submit the required Reps and Certs.

(To be completed by Contracting Officer)
C.O. Requested Quote on:
Date:

Contractor will develop specification or statement of work under this task for a future procurement. [X] NO [ ] YES

Flight hardware will be shipped to GSFC for testing prior to final delivery. [ ] NO [ ] YES [X] N/A

Government Furnished Property/Facilities: [ ] NO [X] YES -- SEE LIST OF GFP (offsite only) / FACILITIES (onsite only)

Onsite Performance: [ ] NO [X] YES If yes: [X] TOTAL [ ] PARTIAL
If partial, indicate onsite work in SOW by asterisk (*)

Surveillance Plan Attached: [X] NO [ ] YES

Highlighted Contract Clauses: *(to be completed by Contracting Officer)*

INCENTIVE FEE STRUCTURE (check one)
(See Contract NAS5-99124, Attachment K, Incentive Fee Plan)

	__ No. 1	__ No. 2	__ No. 3	_X_ No. 4	__ No. 5
Cost	10%	50%	25%	25%	20%
Schedule	15%	25%	25%	50%	40%
Technical	75%	25%	50%	25%	40%

(To be completed by Contracting Officer)

The target cost of this task order is $_____.
The target fee of this task order is $_____.
The total target cost and target fee of this task order as contemplated by the Incentive Fee clause of this contract is $_____.

The maximum fee is $_____.
The minimum fee is $0.

AUTHORIZED SIGNATURE:

THIS TASK ASSIGNMENT IS ISSUED ACCORDING TO THE CONTRACT CLAUSE "TASK ASSIGNMENTS AND REPORTS"

SIGNATURE OF CONTRACTING OFFICER | DATE | TYPED NAME OF CONTRACTING OFFICER

CONTRACTOR'S ACCEPTANCE:

AUTHORIZED SIGNATURE | DATE

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Applicable paragraphs from contract Statement of Work: Function 2D8

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

This is a follow-on to Task 254 under this contract; uninterrupted transition is required.

Objective: The Remote Exploration and Experimentation (REE) Project plans to develop a space-based supercomputer using commercial off-the-shelf (COTS) microelectronics. It is understood that the hazardous effects of the space radiation environment may well be a limiting factor on technology usage. This effort is aimed at providing insight into the radiation sensitivities of state-of-the-art (SOTA) and next generation commercial microprocessors from INTEL Corporation and working with the RE&E program to determine effective methods of radiation-induced fault mitigation/recovery and performance prediction techniques.

This effort focuses on radiation testing advanced Intel microprocessors and associated components Assessment of other microprocessor families such as the Alpha will be performed.

The requirement is to provide services to the Radiation Effects and Analysis (REA) Group of the Component Technologies and Radiation Effects Branch (Code 562). The radiation effects of concern are total ionizing dose (TID), displacement damage (DD), and single event effects (SEE).

The contractor shall provide services to the REA in the design and development of radiation test systems and radiation analyses in support of the REE Project as follows:

1. Design and development of test plans as well as test suite hardware and software compatible with existing VXI or PXI test equipment or with standalone capabilities for radiation effects testing of complex microprocessors and systems.
2. Performance of radiation effects tests. This includes detailed abilities to interface with facility equipment (hardware and software).
3. Provide services for determining radiation effects test levels (TID, SEE, or Displacement Damage) for tests as well as beam control capabilities at selected offsite facilities.
4. Reduce raw radiation test data and determine mission-specific and generic performance analyses of radiation effects test results as deemed necessary. Develop test and application reports.
5. Determine mission-specific system-level impacts of radiation test results and make recommendations to REE Project.
6. Develop technical assessments for monthly and quarterly reports.
7. Test software and hardware shall be developed for the target processor card(s). Specific technical development requirements will be gathered periodically from the REE Project.
8. Provide insight into radiation-induced fault mechanisms of tested components to REE project as part of analyses.
9. Testing and test systems will include thermal management, vacuum management (where applicable), cabling, die accessibility and packaging, and related areas.

GFE is PCs, hardware test systems, and software tools for code development and website maintenance. Performance of radiation tests may take place onsite (i.e., GSFC's Co-60 source) or offsite (i.e., Brookhaven National Labs or Indiana University Cyclotron Facility or GANIL (France) or other). Radiation safety certification is required.

PERFORMANCE SPECIFICATIONS:

Analyses shall provide experiment/engineering background and full analysis of events observed during radiation experiments. Analyses for mission issues shall be in accordance with mission needs or as required by sponsor.

Test suite deliverables shall include documented and functioning test setups. Documentation shall be in accordance with industry standard practice.

APPLICABLE DOCUMENTS:
TBS from the REE Project.

TASK END DATE: 12/31/01

MILESTONES/DELIVERABLES AND DATES:

See Page 3.

PERFORMANCE STANDARDS:

Schedule: On-time delivery of the above
Technical: ATR's acceptance of the above

FINAL DELIVERY DESTINATION (NAME, BLDG, ROOM):
Kenneth A. LaBel, building 11, room E208B

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MILESTONES/DELIVERABLES AND DATES:

Analysis of radiation experiments: 2 weeks following test completion
Radiation experiment setup development is from 2-6 months prior to test date.
Off-site radiation tests:

Tests in FY01	*Site*	*Dates*
(1) Proton experiments Intel processors, others	IUCF	May-01, Aug-01
(2) Co-60 experiments on Pentium III, others	GSFC	Feb-01, Jun-01
(3) Heavy ion experiments on Pentium III, others	TAMU, MSU NSCL, GANIL	Feb-01, Aug-01, Sep-01

Reports:	(1) Draft proton test document	Jun-01, Sep-01
	(2) Draft Heavy Ion test document	Mar-01, Oct-01
	(3) Draft TID test document	Feb-01, Jul-01
	(4) Pentium III Assessment - Final Report	4/1/01

Additional Hardware:	(1) Modified Pentium III Test System - Proton Test	7/1/01
	(2) Modified Pentium III Test System - TID Test	5/1/01
	(3) Modified Pentium III Test System - Heavy Ion Test	8/1/01
	(4) Test hardware for "other" processors	1 month prior to test dates
Test plans:	(1) Advanced Intel and others proton test plan	7/30/01
	(2) TID test plan	5/30/01
	(3) Heavy Ion test plan	8/31/01
Analyses:	(1) Preliminary proton sensitivity analysis	9/30/01
	(2) Preliminary heavy ion sensitivity analysis	11/30/01
	(3) Fault assessment analysis	12/31/01
Miscellaneous:	(1) Monthly technical status updates	
	(2) Quarterly reports	
	(3) Reviews at JPL	1/01, 4/01, 7/01, 10/01
	(4) Submission to IEEE NSREC Radiation Effects Data Workshop	1/31/01
	(5) Provide services at IEEE NSREC and RADECS Conferences	Jul-01, Sep-01

Travel to off-site facilities and JPL is expected. Potential trips to processor/board manufacturers may also be included.