

Task Order Plan (TOP)

Contract Number: NNM05AB50C
TO Title: General GES & STE Analysis
TO Number: 37-020215 **Revision:** 09

Period of Performance: 10/02/2010 to 9/20/2011

MSFC Initiator: Doug Fox

(b)(4)


Emergency: No

Revision -09

The purpose of this revision, -09, is to extend this task into Contract Year 6 of the NNM05AB50C ESTS contract, and expand the scope of subelement -00 to include dynamics and thermal analysis support. This revision defines and estimates work for the period October 2, 2010 through September 30, 2011. Additionally, the Schedule, Performance Plan and Risk Assessment have been revised to reflect changes in task activities for the new period of performance. This revision affects the following project elements:

- General GSE & STE Structural Analysis Support, -00
- 2nd Generation Shell Buckling Structural Test Support, -04

Sub-element Mapping and WBS funding

New Subelement	Previous TO	WBS	Status
-00	31-010301-00	Various	
-02		TBD	Closed with Revision -09
-04		869021.04.08.01.13.04	Added with Revision -08
-CA		136905.10.60.30.10.10	Closed Administratively July 2, 2010

Revision -08

The purpose of this revision, -08, is to extend this task into Contract Year 5 of the NNM05AB50C ESTS contract. This revision defines and estimates work for the period October 3, 2009 through October 14, 2010. The work on subelements -01 and -03 was completed in CY4. Two new subelements -04 and -CA, have been added. Additionally, the Schedule, Performance Plan and Risk Assessment have been revised to reflect changes in task activities for the new period of performance. This revision affects the following project elements:

- General GSE & STE Structural Support, -00

- Shell Buckling Structural Test Support, -01
- MSFC Center Operations Tank Barge and Transporter, -02
- The Inertia Load Simulator, -03
- 2nd Generation Shell Buckling Structural Test Support, -04

This revision affects the following APO elements:

- 5% Ares 1 Scale Model Acoustic Test (ASMAT), -CA

Other adjustments:

No other changes have been made to the current plan for Contract Year 5.

Revision -07

The purpose of this Task Order (TO) revision, -07, is to decrease subelement -00 (b)(4)

(b)(4)

(b)(4) The Subelement -02 (b)(4) travel estimate was removed due to of customers rescheduling of inspection of the Stennis Space Center and Michoud Assembly Facility transporter and barge to next fiscal year. Subelement -03 (b)(4)

(b)(4)

This represents a total reduction of (b)(4) hours for the task. These changes are due to changes in the customer's task schedule plan and requirements for a more senior engineer to work the task (subelements).

Revision -06

The purpose of this Task Order (TO) revision, -06, is to decrease subelement -00 hourly estimate by (b)(4) hours, subelement -01 hourly estimate by (b)(4) hours, and increase subelement -02 hourly estimate by 178 hours and subelement -03 by (b)(4). In addition, an other estimate of (b)(4) was added to subelement -02 for (b)(4). These changes are due to changes in the customer's task schedule plan.

Revision -05

The purpose of this Task Order (TO) revision, -05, is to increase subelement -03 hourly estimate by (b)(4) hours due to drawing changes requiring additional analysis. Subelement -02 hourly estimate was reduced by (b)(4) hours due to changes in the customers planned task schedule. In addition, a travel estimate of (b)(4) was added to subelement -02 for travel to Stennis Space Center and Michoud Assembly Facility for the inspection of transporter and barges.

Revision -04

The purpose of this Task Order (TO) revision, -04, is to adjust the estimate on subelements -00, -02, and -03 due to changes in scope. The estimate for Subelement -03 was increased by (b)(4) hours. The travel estimate of (b)(4) was deleted from subelement, -02. On subelement -00, the other estimate was decreased by (b)(4) and travel estimate of (b)(4) was added.

Revision -03

The purpose of this revision is to extend this task into Contract Year 4 of the NNM05AB50C ESTS contract. This revision defines and estimates work for the period September 27, 2008 through October 2, 2009. Additionally, the Schedule, Performance Plan and Risk Assessment have been revised to reflect changes in task activities for the new period of performance. This revision adds subelements -02 and -

03 to provide support to the MSFC Center Operations Tank Barge and Transporter and the Inertia Load Simulator (ILS) Structural Test. No Ares funding is required for this task.

Revision -02

The purpose of this Task Order (TO) revision, -02, is to increase the other estimate by (b)(4) on subelement -00 to cover work conducted by (b)(4) for the current period of performance. No other changes were made in this revision.

Revision -01

The purpose of this Task Order (TO) revision, -01, for sub-element -00 is to decrease the hourly estimate by (b)(4) hours to cover the anticipated work for the current period of performance. This revision for sub-element -01 increased the hourly estimate by (b)(4) hours to cover work performed and anticipated work for the current period of performance. No other changes were made in this revision.

Revision -00

This Task Order (TO) is a continuation of work being performed on TO 31-010301-00 of the NNM05AB50C ESTS contract. This TO realigns work performed previously in E113, and now supports ES22 within the new ED organizational structure. This TO defines and estimates work for the period 1 March 2008 through 26 September 2008. For Subcontracted efforts, this TO shall authorize work for the same period. TO 31-010301-00 will be revised for closure in March with an effective date of 29 February 2008.

Other adjustments:

1. Added sub-element -01 for Buckling Test Support Structure Analysis.
2. Allocated additional (b)(4) of labor resource for the new sub-element -01.

1.0 Task Order Description & Objectives

This task is to provide stress, dynamics, and thermal analysis support necessary for the design and fabrication of ground support equipment and facilities. This task supports fabrication and structural modification of test stands, piping systems, pressure vessels, vacuum chambers, structural testing hardware, and transportation hardware. Historically this task has supported 60 drawing packages per year, and it supports all MSFC programs.

Subelement -00

This subelement provides stress, dynamics, and thermal analysis support necessary for the design and design verification of Ground Support Equipment (GSE), Special Test Equipment (STE), MSFC Facilities, and other hardware. This task supports structural modifications to propulsion test stands, piping modifications, vacuum chambers, structural testing hardware, and hardware required to transport and handle rocket motors and payloads. This task is funded on a per job basis since much of this work is unknown in advance.

Subelement -04

This subelement provides Special Test Equipment (STE) Stress Analysis support for the 2nd Generation Shell Buckling Structural Test.

2.0 Technical Approach (Including required input, guidelines & assumptions)

Structural assessments of design packages shall be accomplished by classical mechanics of materials computations and finite element analyses. Structural assessments may include stress, strain, defor-

mation, fracture/fatigue, dynamic and thermal analyses. The hardware's designer shall provide hardware use environments and loads. Required minimum factors of safety and methods of analysis shall comply with the NASA-STD-5005, "Design Criteria Standard, Ground Support Equipment."

3.0 Discussion of Skills Required

This task requires engineers with experience in structural, thermal, and dynamic analysis of metallic structures, welded joints, and knowledge of AISC and ASME code requirements.

4.0 Special Tools Required

MathCAD, MSC PATRAN, NASTRAN, ANSYS, Thermal Desktop, SINDA/FLUINT, and MATLAB Software.

5.0 Participating Subcontractors

None

6.0 Milestones & Deliverables

Analysis reports and redlined drawings in support of each drawing package will be delivered to the NASA Subtask Initiator. Activity Reports, GSE Job Status Worksheets, and Financial Reports will be provided monthly.

7.0 Special Considerations (Recruiting, Special Equipment / Material, Safety, etc.)

Finite element analyses shall be performed using MSC/NASTRAN or ANSYS on the MSFC computer systems, or other MSFC-provided workstations. Pre-processing and post-processing of finite element data shall be accomplished using FEMAP, MSC/PATRAN or ANSYS. Thermal assessments shall be performed using Thermal Desktop or SINDA/FLUINT.

Travel estimate is included for two trips in support of subelement -00.

8.0 Work Shelf

The following activities could be accomplished as part of the Task Order performance by personnel that are temporarily available due to program or funding delays on other Tasks. Specific assignments will be coordinated with the Task Initiator to ensure appropriate skills and experience.

TO/Subelement	Description	Due Date	Skill
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9.0 Schedule

ID	Charge #	SubElement	Task Work Element	2011											
				Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	37-020215-00	00	General Analysis Support	[Gantt bar spanning Sep to Oct]											
2	37-020215-04	04	2nd Generation Shell Buckling Analysis Support	[Gantt bar spanning Sep to Oct]											
3	37-020215-04	04	Deliver Final Shell Buckling Analysis Report	[Gantt bar spanning Sep to Oct]											

ESTS Contract Task Order Request Performance Plan

Task Order Title: [General GSE & STE Analysis](#)

Task Order Number: [37-020215](#) Revision: 09

Category	Weighting Technical %	End of Period Technical Score
Technical Objectives	65%	X 65% =
<p>Justification</p> <p>For All Subelements</p> <p>Provide stress, dynamics, and thermal analysis support necessary for the design and design verification of ground support equipment, special test equipment, and other structures.</p>		
Schedule Objectives (Milestones)	Weighting Schedule % 10% (min 10%)	X 10% =
<p>Justification</p> <p>For All Subelements</p> <p>Provide Monthly Activity Reports with updated schedules. Provide Analysis report in support of each drawing package.</p>		
Cost (actual vs. negotiated)	Weighting Cost% 25% (min.25%)	X 25% =
		Justification
	Weighting Total % 100.00%	Total Score

Technical, Schedule, and Cost Grading Scale

Score	Description
9.0-10.0	Exceeded TO Performance Plan objectives resulting in major benefit(s)
8.0-8.9	Exceeded TO Performance Plan objectives resulting in modest benefit(s)
7.0-7.9	Met TO Performance Plan objectives
3.0-6.9	Did not meet all TO Performance Plan objectives resulting in minimal impact or requiring additional agency funds
0.0-2.9	Did not meet TO Performance Plan objectives resulting in substantial impact and/or requiring additional agency funds

ESTS Contract Task Order Request Performance Plan

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Comments:

Risk Assessment

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(b)(4)

Task Order Risk Assessment to Cost, Technical, and Schedule

List identified risk associated with Task Order performance as related to task cost, technical, and schedule. Classify the risk(s) according to probability of occurrence and impact as defined below and enter the risk into risk matrix.

Risk	Risk Type	Probability (1-4)	Impact (1-4)	Risk Description
Risk C1	Cost			No cost risk has been identified.
Risk C2	Cost			
Risk T1	Technical			No technical risk has been identified.
Risk T2	Technical			
Risk S1	Schedule			No schedule risk has been identified.
Risk S2	Schedule			

*Note: See page 2 for risk mitigation plan for those risks which are Primary Risk Drivers.



