

Task Order Plan (TOP)

Contract Number: NNM05AB50C
TO Title: Structural Strength Test Engineering Support
TO Number: 36-030002 **Revision:** 14

Period of Performance: 10/02/2010 to 9/30/2011

MSFC Initiator: Robert Bobo

(b)(4)

Emergency: No

Revision 14: The purpose of this revision is to extend this task into Contract Year 6 of the NNM05AB50C ESTS contract. 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 the new period of performance.

Revision History:

Revision 13: The purpose of revision -13 is to increase the scope of work of this task order to support the External Tank Shell Buckling Test. Labor hours were increased by (b)(4)

Revision 12: The purpose of revision -12 is to extend this task into Contract Year 5 of the NNM05AB50C ESTS contract. This revision defines and estimates work for the period October, 03, 2009 through October 14, 2010. Additionally, the Schedule, Performance Plan and Risk Assessment have been revised to reflect changes in task activities for the new period of performance.

Revision 11: The purpose of this revision is to reduce the labor hours by (b)(4) hours to reflect the actual manpower needed for this Task Order.

Revision 10: The purpose of this revision is to reduce the labor hours by (b)(4) hours to reflect the actual manpower needed for this Task Order.

Revision 9: The purpose of this revision is to add a specialty sub-contractor to support live fire testing of the redesigned Solid Rocket Booster Hold Down Post Plunger and to increase labor hours by (b)(4) to reflect actual hours needed to support the Shell Buckling Test. The period of performance for the Solid Rocket Booster Hold Down Post Plunger test is December 29, 2008 through January 9, 2009.

Revision 8: The purpose of revision -08 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.

The purpose of revision -07 is to reduce the number of hours on the task by (b)(4) due a reduction of testing expected to be performed on this task. (b)(4)

(b)(4)

The purpose of revision -06 is to extend this task into Contract Year 3 of the NNM05AB50C ESTS contract. This revision defines and estimates work for the period 29 September 2007 through 26 September 2008. Additionally, the Schedule, Performance Plan and Risk Assessment have been revised to reflect any changes in task activities for the new period of performance.

The purpose of revision -05 is to update planned hours on the task to account for schedule changes of anticipated tests and to assign new personnel to this task. Also "Test and Evaluation" has been added to the Skills Tracking section of this task order.

The purpose of revision -04 is to update the planned hours on the task to account for changes in staffing levels resulting from the addition of a separate task order for Constellation Structural Strength Test Engineering support.

The purpose of revision -03 is to revise the planned hours on the task to account for temporary changes in staffing levels and to correct an estimating error made in revision -02.

The purpose of revision -02 is to extend this task into Contract Year 2 of the NNM05AB50C ESTS contract. This revision defines and estimates work for the period 30 September 2006 through 28 September 2007. Additionally, the Schedule, Performance Plan and Risk Assessment have been revised to reflect changes in task activities for the new period of performance.

The purpose of revision -01 is to add training and associated travel to the task. This revision is effective 31 July 2006.

Revision 00 Initial Release – continued work previously performed under TO 26-020101-00. This revision is effective 01 April 2006 with funding provided through MSFC PR 145676.

1.0 Task Order Description & Objectives

This task is to provide load & pressure systems control, instrumentation and data acquisition, and test engineering expertise in support of multi-program structural strength test activities.

Load & pressure control support includes: hydraulic load line configuration, tuning, and directions for installation based on test requirements; creation and implementation of test load and pressure profiles; operation of manual and automated control systems during strength testing; and the development, implementation and verification of control system improvements.

Instrumentation and data acquisition support includes: instrumentation selection, installation, check-out, and operation, data systems setup, check-out, and operation, system troubleshooting, system development and upgrades.

Test engineering support includes: acting as the point of contact between the various project offices, and the various test requestors to ensure all strength test requirements are attained in a safe and efficient manner. The test engineer will direct all strength test activities to meet customer requirements including: technician work directions; co-ordination of load/pressure control and data system requirements to support test conduct; develop test procedures, implement test activity, and produce the final test report that compiles all relevant test information per ISO standards.

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

Subelement -00 is assigned to the load & pressure systems control, instrumentation and data acquisition, and test engineering support for structural strength test activities.

Structural Test Load and Pressure Control Engineering:

Review test requirements, coordinate assembly, tuning, and installation of load lines. Assign and configure hydraulic and load control resources based upon test requirements. Configure and operate the load control systems to meet test requirements and to ensure personnel and test article safety. Review current load control methodology and provide inputs for hardware improvements.

Instrumentation and Data Acquisition Engineering:

Review test requirements and coordinate the installation and checkout of the instruments based upon test requirements. Assign and configure data collection resources based upon test requirements. Configure and operate the data acquisition systems to ensure that data collection requirements are met. Review current data collection methodology and provide inputs for hardware and software improvements.

Structural Strength Test Engineering:

Evaluate requirements and make recommendations as to facilities and equipment most suited for a specified test. Coordinate test fixture design to devise a test setup configured to meet the test requirements and incorporate design features to utilize existing facilities and/or equipment to the maximum extent possible. Consult with customer during test buildup to ensure that the test article and load application hardware configuration meet the intent of the test requirements. Prepare detailed test procedures identifying the necessary steps to perform the tests in a safe and professional manner. All data shall be recorded and archived per ISO procedures. At the conclusion of testing, test reports shall be prepared in accordance with ISO procedures.

3.0 Discussion of Skills Required

Structural Test Load and Pressure Control:

Requires experience with the procedures and concepts of structural strength testing. Mandatory requirements include experience in the fields of mechanical design, hydraulics, computer automated load control operations, instrumentation and data system operations. Skills required to support this task order include operating and troubleshooting knowledge of the MTS Aero 90 load-control system, Cyber Fatigue Master load-control system, Moog FCS load-control system, hydraulic and pneumatic system design and operating experience, and knowledge of the Structural Strength Team's organizational work instructions.

Instrumentation and Data Acquisition Engineering:

Requires experience with the procedures and concepts of instrumentation for structural strength testing. Skills required to support this task order include knowledge of structural test instrumentation requirements, operation and maintenance of the data acquisition systems, equipment calibration, strain gauges (metal and composites; ambient and temperature extremes), load cells, pressure transducers, deflection transducers, and thermocouples.

Structural Strength Test Engineering:

Requires experience with procedures and concepts associated with static structural load testing. Mandatory requirements include experience in the fields of mechanical design, hydraulics, computer automated load control operations, and data system operations.

4.0 Special Tools Required

None.

5.0 Participating Subcontractors

None.

6.0 Milestones & Deliverables

Deliverables include monthly activity reports, task memos, presentations, technical reports, data files of load profiles (predefined and as run), support for Technical Interchange Meetings and Test Readiness Reviews, test procedures, “as-run” procedures, final test reports and MSFC quality records in accordance with the Structural Strength Team’s organizational work instructions.

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

Adherence to the MSFC Industrial Safety procedures and policies and compliance with the MSFC ISO guidelines are intrinsic to performance of all test conduct and related activities.

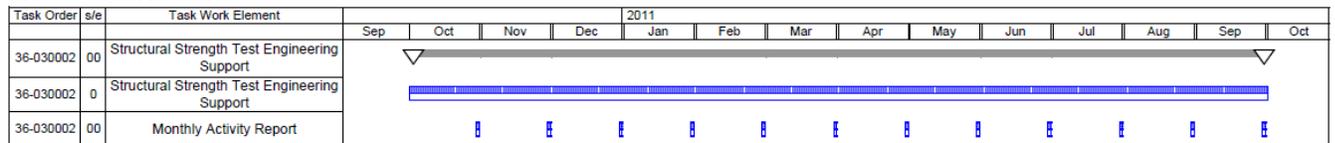
(b)(4)

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



ESTS Contract Task Order Request Performance Plan

Task Order Title: [Structural Strength Test Engineering Support](#)

Task Order Number: [36-030002](#) Revision: 14

Category	Weighting Technical %	End of Period Technical Score
Technical Objectives	65%	X 65% = Justification
Structural Strength Test Engineering, Structural Test Load and Pressure Control Engineering, and Structural Test Instrumentation Engineering Support (see Comments section for additional detail)		
Schedule Objectives (Milestones)	Weighting Schedule % 10% (min 10%)	Schedule Score X 10% = Justification
Support as required to accomplish/satisfy each project/customer schedule requirements.		
Cost (actual vs. negotiated)	Weighting Cost% 25% (min.25%)	Cost Score 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

Task Order Number: [Structural Strength Test Engineering Support](#)

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Risk Assessment

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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 risks have been identified for this task order.
Risk C2	Cost			
Risk T1	Technical			No technical risks have been identified for this task order.
Risk T2	Technical			
Risk S1	Schedule	1	1	Delayed delivery of hardware could delay completion of testing as scheduled.
Risk S2	Schedule			

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

