

**Task Order Plan (TOP)**

**Contract Number:** NNM05AB50C

**TO Title:** Materials Mechanical Test Facility Operations and Maintenance

**TO Number:** 34-010003 **Revision:** 19

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

**MSFC Initiator:** Tina Malone

(b)(4)

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**Emergency:** No

**REVISION 19:**

The purpose of this revision is to reallocate resources between the various subelements. This revision does not affect the Performance Plan or Risk Assessment. Specific detail is provided for each subelement revised.

**Subelement -00 (Revised):**

The scope of this task was reduced to reflect less calibration requirements needs than originally estimated.

**Labor:**

Reallocated labor and decreased the labor hours estimated under this subelement (b) hours which decreased the labor cost estimate by (b)(4).

**Subelement -01 (Revised):**

Additional hours were needed to comply with increased maintenance requirements.

**Labor:**

Reallocated labor and increased labor estimate under this subelement (b) hours which increased the labor cost estimate by (b)(4).

**Subelement -02 (Closing):**

Close subelement -02 after October 31st because this effort is complete.

**Labor:**

Decreased the labor hours estimated under this subelement (b) hours which decreased the labor cost estimate by \$(b)(4).

**Subelement -03 (Closing):**

Close subelement -03 after October 31st because this effort is complete.

**Labor:**

Decreased the labor hours estimated under this subelement (b)(4) hours which decreased the labor cost estimate by (b)(4).

**Subelement -27 (Revised):**

The scope of task for this subelement has increased to provide material testing for AL-Li 2195 spun formed dome development.

**Labor:**

Reallocated labor and increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4)

Other Direct Charges (ODC):

Removed the other estimate of (b)(4) no resources are required.

Travel:

Removed the travel estimate of (b)(4) no travel is required.

**Subelement -62 (Revised):**

The scope of task for this subelement has increased to provide additional material testing than originally estimated.

Labor:

Reallocated labor and increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4)

**Subelement -70 (Revised):**

The scope of task for this subelement has increased to provide additional experimentation with ionic liquids to support this effort.

Labor:

Increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4)

**Subelement -96 (Revised):**

The scope of this task was reduced to reflect a decrease in testing than originally estimated will be required.

Labor:

Decreased the labor hours estimated under this subelement (b)(4) hours which decreased the labor cost estimate by (b)(4)

**Subelement -97 (Revised):**

The scope of this task was reduced to reflect a decrease in testing than originally estimated will be required.

Labor:

Decreased the labor hours estimated under this subelement (b)(4) hours which decreased the labor cost estimate by (b)(4)

**Subelement -98 (Revised):**

The scope of this task was reduced to reflect a decrease in testing than originally estimated will be required.

Labor:

Decreased the labor hours estimated under this subelement (b)(4) hours which decreased the labor cost estimate by (b)(4)

**Subelement -99 (Revised):**

The scope of task for this subelement has increased to provide additional material testing than originally estimated.

Labor:

Reallocated labor and increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4)

**Subelement -JE (Revised):**

The scope of task for this subelement has increased to provide additional material testing than originally estimated.

Labor:

Reallocated labor and increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4)

**Subelement -SB (Revised):**

The total scope of this task was reduced due to requirement changes for testing which required different personnel supporting this task and a reduction in materials needed to support this task.

**Labor:**

Reallocated labor and increased labor estimate under this subelement (b) hours which decreased the labor cost estimate by (b)(4). The reduction in cost with an increase in hours is due to changes in labor category supporting this task.

**Materials**

Removed the materials estimate of (b)(4), no material is required.

**Subelement -SE (Revised):**

The scope of task for this subelement has increased to provide additional material testing than originally estimated.

**Labor:**

Reallocated labor and increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4).

**Materials**

Removed the materials estimate of (b)(4), no material is required.

**Other Direct Charges (ODC):**

Removed the other estimate of (b)(4), no resources are required.

**Subelement -SI (Opened):**

**Labor:**

Added (b)(4) hours in labor estimate to support new Shuttle Integration effort, which added (b)(4) labor cost estimate.

**Subelement -SM (Revised):**

The scope of task for this subelement has increased to provide additional material testing than originally estimated.

**Labor:**

Reallocated labor and increased labor estimate under this subelement (b) hours which increased the labor cost estimate by (b)(4).

**Materials**

Removed the materials estimate of (b)(4), no material is required.

**Subelement -ST (Revised):**

The scope of task for this subelement has increased to provide additional material testing than originally estimated.

**Labor:**

Reallocated labor and increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4).

**Materials**

Removed the materials estimate of (b)(4), no material is required.

**Other Direct Charges (ODC):**

Removed the other estimate of (b)(4), no resources are required.

**Revision 18:**

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 changes in task activities for the new period of performance.

**REVISION 17:**

The purpose of this revision is to reallocate resources between the various subelements. Since the last revision many subelements have been administratively closed. Subelements CA, CC, CR, CS, CU, and CY were administratively closed and the work corresponding to these is being continued under the

new TO # 34-000001 Subelement CC. Subelements CE was administratively closed and the work corresponding to this subelement is being continued under the new TO # 34-000001 Subelement BC. Subelement CD was administratively closed and the work corresponding to this subelement is being continued under the new TO # 34-000001 Subelement DC. Subelement CP was administratively closed and the work will not be continuing. This revision does not affect the Performance Plan or Risk Assessment. Specific detail is provided for each subelement revised.

**Subelement -00 (Revised):**

Additional hours were needed to comply with increased calibration requirements. Although labor has increased limited funding is available for materials and ODC so this estimate was reduced to reflect expected expenditures.

Labor:

Increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4).

Materials

Decreased the material estimate by (b)(4).

Other Direct Charges (ODC):

Decreased the ODC estimate by (b)(4).

**Subelement -01 (Revised):**

Less hours were needed to comply with increased calibration and maintenance requirements.

Labor:

Increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4).

**Subelement -02 (Revised):**

Additional hours were needed to comply with increased technical writing requirements.

Labor:

Increased labor estimate under this subelement (b) hours which increased the labor cost estimate by (b)(4).

**Subelement -03 (Revised):**

Additional hours were needed to accommodate additional requirement for 4601 building manager activities.

Labor:

Increased labor estimate under this subelement (b) hours which increased the labor cost estimate by (b)(4).

**Subelement -16 (Revised):**

The scope of testing for this subelement has increased to provide material testing for support of new hardware and material verification.

Labor:

Increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4).

**Subelement -20 (Revised):**

The scope of this task was reduced to reflect a decrease in testing than originally estimated will be required.

Labor:

Decreased the labor hours estimated under this subelement (b) hours which decreased the labor cost estimate by \$(b)(4).

**Subelement -21 (Revised):**

The scope of task for this subelement has increased to provide additional material testing than originally estimated.

Labor:

Increased labor estimate under this subelement (b) hours which increased the labor cost estimate by (b)(4).

Subcontract:

Added (b)(4) subcontract estimate, for subcontract labor support.

The total subelement estimate increase is (b)(4).

**Subelement -22 (Revised):**

The total scope of this task was reduced due to requirement changes for testing which required different personnel supporting this task and a reduction in materials needed to support this task.

Labor

Increased labor estimate under this subelement (b) hours which decreased the labor cost estimate by (b)(4). The reduction in cost with an increase in hours is due to changes in labor category supporting this task.

**Subelement -25 (Revised):**

The scope of task for this subelement has increased to provide additional material testing than originally estimated.

Labor:

Increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4).

Materials

Decreased the material estimate by (b)(4).

**Subelement -27 (Revised):**

The scope of task for this subelement has increased to provide material testing for AL-Li 2195 spun formed dome development.

Labor:

Increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4).

Materials

Added (b)(4) in materials.

Travel:

Added (b)(4) in travel.

Subcontract:

Added (b)(4) subcontract estimate, for subcontract labor support.

**Subelement -31(Revised):**

The scope of this task was reduced to reflect less testing needs than originally required.

Labor:

Decreased the labor hours estimated under this subelement (b)(4) hours which decreased the labor cost estimate by (b)(4).

**Subelement -32 (Revised):**

The scope of task for this subelement has increased to provide additional material testing than originally estimated.

Labor:

Increased labor estimate under this subelement (b)(4) hours which increased the labor cost estimate by (b)(4).

**Subelement -35 (Revised):**

The scope of this task was reduced to reflect less testing needs than originally required.

Labor:

Decreased the labor hours estimated under this subelement (b)(4) hours which decreased the labor cost estimate by (b)(4).

Travel:

Decreased (Removed) the travel estimate by \$ (b)(4) no travel was required.

**Subelement -60 (Revised):**

The scope of this task was reduced to reflect less testing needs than originally required.

**Labor:**

Decreased the labor hours estimated under this subelement (b) hours which decreased the labor cost estimate by \$ (b)(4)

**Subelement -62 (Revised):**

The scope of this task was reduced to reflect less testing needs than originally required.

**Labor:**

Decreased the labor hours estimated under this subelement (b)(4) hours which decreased the labor cost estimate by \$ (b)(4)

**Subelement -64 (Revised):**

The scope of this task was reduced to reflect less testing needs than originally required.

**Labor:**

Decreased the labor hours estimated under this subelement (b)(4) hours which decreased the labor cost estimate by \$ (b)(4)

**Subelement -70 (Revised):**

The scope of task for this subelement has increased to provide additional labor to support this effort.

**Labor:**

Increased labor estimate under this subelement (b) hours which increased the labor cost estimate by \$ (b)(4)

**Subelement -99 (Revised):**

The scope of this task was reduced to reflect less testing needs than originally required.

**Labor:**

Decreased the labor hours estimated under this subelement (b)(4) hours which decreased the labor cost estimate by \$ (b)(4)

**Subelement -CA (Closed):**

This subelement has been administratively closed and the work corresponding to this subelement is being continued under the new TO # 34-000001 Subelement CC.

All future estimate has been removed.

**Subelement -CC (Closed):**

This subelement has been administratively closed and the work corresponding to this subelement is being continued under the new TO # 34-000001 Subelement CC.

All future estimate has been removed.

**Subelement -CD (Closed):**

This subelement has been administratively closed and the work corresponding to this subelement is being continued under the new TO # 34-000001 Subelement DC.

All future estimate has been removed.

**Subelement -CE (Closed):**

This subelement has been administratively closed and the work corresponding to this subelement is being continued under the new TO # 34-000001 Subelement DC.

All future estimate has been removed.

**Subelement -CR (Closed):**

This subelement has been administratively closed and the work corresponding to this subelement is being continued under the new TO # 34-000001 Subelement BC.

All future estimate has been removed.

**Subelement -CS (Closed):**

This subelement has been administratively closed and the work corresponding to this subelement is being continued under the new TO # 34-000001 Subelement CC. All future estimate has been removed.

**Subelement -CU (Closed):**

This subelement has been administratively closed and the work corresponding to this subelement is being continued under the new TO # 34-000001 Subelement CC. All future estimate has been removed.

**Subelement -CY (Closed):**

This subelement has been administratively closed and the work corresponding to this subelement is being continued under the new TO # 34-000001 Subelement CC. All future estimate has been removed.

**REVISION 16:**

The purpose of this revision 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. 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 APO elements

- Ares I Upper Stage (Subelements CA, CB, CC, CL, & CP)
- Ares I Upper Stage Engine (Subelement CD)
- Ares I First Stage (Subelement CE)

**REVISION 15:**

This TO Revision 15 revises the below subelements. Specific detail is provided for each subelement revised. The total task order estimate is increased from \$ (b)(4) to \$ (b)(4)

**Subelement -02 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -17 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by 1 hour, which decreased the labor cost estimate by \$ (b)

**Subelement -20 (Revised):**

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$ (b)(4)

**Subelement -21 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

Material:

Decreased the material estimate by \$ (b)(4) fewer resources are being required to accomplish the work than were originally estimated.

Other Direct Charges (ODC):

Increased other estimate by \$ (b)(4) more resources are required to accomplish the work than were originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$ (b)(4)

**Subelement -22 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -25 (Revised):**

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b) hours, which increased the labor cost estimate by \$ (b)(4)

Material:

Increased the material estimate by (b)(4) more resources are required to accomplish the work than were originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$ (b)(4)

**Subelement -27 (Revised):**

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b) hours, which increased the labor cost estimate by \$ (b)(4)

**Subelement -31 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

Material:

Increased the material estimate by \$ (b)(4) more resources are required to accomplish the work than were originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$ (b)(4)

**Subelement -32 (Revised):**

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by (b)(4)

**Subelement -35 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by (b)(4)

Material:

Increased the material estimate by (b)(4), more resources are required to accomplish the work than were originally estimated.

Travel:

Decreased (Removed) the travel estimate by (b)(4), no travel was required.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is (b)(4)

**Subelement -60 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by (b)(4)

**Subelement -66 (Closed):**

Materials:

Removed the materials estimate of \$ (b)(4) no material is required.

**Subelement -99 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -CA (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.01.08

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$ (b)(4)

Material:

Increased the material estimate by \$ (b)(4) more resources are being required to accomplish the work than were originally estimated.

Other Direct Charges (ODC):

Increased other estimate by \$ (b)(4) more resources are required to accomplish the work than were originally estimated.

Subcontract:

Increased the subcontract estimate by \$(b)(4) due to an increase in scope of work.

Travel:

Increased travel estimate by \$(b)(4) for test engineer to attend (b)(4) and (b)(4) training classes

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

**The total subelement estimate increase is \$(b)(4)**

**Subelement -CC (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.07.08 **No additional funding is required.**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$(b)(4)

**Subelement -CD (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.02.99.02.08.02. **No additional funding is required.**

Labor:

Increased labor estimate to accommodate an increase in scope of work to support High Cycle Fatigue (HCF) testing in liquid nitrogen. Increased labor hours estimate by (b) hours, which increased the labor cost estimate by \$(b)(4)

Travel:

Decreased (Removed) the travel estimate by \$(b)(4) no travel was required.

The total subelement estimate decrease is \$(b)(4)

**Subelement -CE (Revised):**

This revision affects the following Ares Project Office (APO) Element: 1<sup>st</sup> Stage RSRM V WBS# 136905.08.01.11. **No additional funding is required.**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$(b)(4)

**Subelement -CP (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.13.02.01.08. **No additional funding is required.**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$(b)(4)

Subcontract:

Decreased the subcontract estimate by \$(b)(4) due to a decrease in scope needed by subcontract.

The total subelement estimate decrease is \$(b)(4)

**Subelement -CR (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08.02

Labor:

Added labor estimate to accommodate a work being transferred from another Upper Stage subelement. Added (b)(4) labor hours estimate, which added \$ (b)(4) labor cost estimate.

**Subelement -CU (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08.05. **No additional funding is required.**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -CY (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08.09. **No additional funding is required.**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**(The total Upper Stage subelements estimate increase is: \$ (b)(4))**

**(The total 1st Stage subelement estimate decrease is: \$ (b)(4))**

**REVISION 14:**

This TO Revision 14 revises the below subelements. Specific detail is provided for each subelement revised. The total task order estimate is increased from \$ (b)(4) to \$ (b)(4)

**Subelement -02 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -21 (Revised):**

Material:

Increased the material estimate by \$ (b)(4) more resources are required to accomplish the work than were originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

**Subelement -25 (Revised):**

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$ (b)(4)

Material:

Decreased the material estimate by \$ (b)(4) fewer resources are being required to accomplish the work than were originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$ (b)(4)

**Subelement -27 (Revised):**

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$ (b)(4)

Travel:

Added \$ (b)(4) travel estimate for test engineer attend presentation on Simulated Service testing for spun formed dome.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$ (b)(4)

**Subelement -35 (Revised):**

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$ (b)(4)

Material:

Increased the material estimate by \$ (b)(4) more resources are required to accomplish the work than were originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$ (b)(4)

**Subelement -99 (Revised):**

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$ (b)(4)

**Subelement -CA (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.01.08

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$ (b)(4) Additional hours were necessary due to work transitioning from WBS# 136905.08.05.12.02.08 to this subelement.

Material:

Increased the material estimate by \$ (b)(4) more resources are being required to accomplish the work than were originally estimated.

Subcontract:

Increased the subcontract estimate by \$ (b)(4) due to an increase in scope of work.

Travel:

Increased travel estimate by \$(b)(4) for test engineer to attend (b)(4) and (b)(4) training classes

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$(b)(4)

**Subelement -CB (Closing):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08 .Closing subelement -CB and removing estimate after November 30th because this effort was transferred to subelements -CA (WBS# 136905.08.05.12.01.08), -CR (WBS # 136905.08.05.12.02.08.02), -CS (WBS # 136905.08.05.12.02.08.03), -CU (WBS # 136905.08.05.12.02.08.05), and -CY (WBS # 136905.08.05.12.02.08.09). **No additional budget is required.**

**Labor:**

Decreased labor estimate to accommodate work being transferred to other Upper Stage subelements. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$(b)(4)

**Material:**

Decreased (Removed) the material estimate by \$(b)(4) resources were transferred to another Upper Stage subelement.

**Other Direct Charges (ODC):**

Decreased (Removed) other estimate by \$(b)(4) resources were transferred to another Upper Stage subelement.

**Subcontract:**

Decreased the subcontract estimate by \$(b)(4) due to a decrease in scope needed by subcontract.

**Travel:**

Decreased (Removed) the travel estimate by \$(b)(4) no travel was required.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$(b)(4)

**Subelement -CC (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.07.08 **No additional budget is required.**

**Labor:**

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$(b)(4)

**Material:**

Decreased the material estimate by \$(b)(4) fewer resources are being required to accomplish the work than were originally estimated.

**Other Direct Charges (ODC):**

Decreased other estimate by \$(b)(4) fewer resources are needed to accomplish the work than were originally estimated.

**Travel:**

Added (b)(4) travel estimate for (b)(4) to travel for training on testing capabilities at another NASA facility.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$ (b)(4)

**Subelement -CD (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.02.99.02.08.02

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$ (b)(4). Additional hours are necessary to support High Cycle Fatigue (HCF) testing in liquid nitrogen than was originally estimated.

**Subelement -CE (Revised):**

This revision affects the following Ares Project Office (APO) Element: 1<sup>st</sup> Stage RSRM V WBS# 136905.08.01.11

Labor:

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$ (b)(4).

**Subelement -CL (Closing):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08 Closing subelement -CL and removing estimate after November 30th because this effort was transferred to subelements -CA (WBS# 136905.08.05.12.01.08), -CR (WBS # 136905.08.05.12.02.08.02), -CS (WBS # 136905.08.05.12.02.08.03), -CU (WBS # 136905.08.05.12.02.08.05), and -CY (WBS # 136905.08.05.12.02.08.09). **No additional budget is required.**

Labor:

Decreased labor estimate to accommodate work being transferred to other Upper Stage subelements. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4).

**Other Direct Charges (ODC):**

Decreased (Removed) other estimate by \$ (b)(4) resources were transferred to another Upper Stage subelement.

Subcontract:

Decreased the subcontract estimate by \$ (b)(4) due to a decrease in scope needed by subcontract.

Travel:

Decreased (Removed) the travel estimate by \$ (b)(4) no travel was required.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$ (b)(4)

**Subelement -CP (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.13.02.01.08

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$(b)(4)

Subcontract:

Decreased the subcontract estimate by \$(b)(4) due to a decrease in scope needed by subcontract.

The total subelement estimate decrease is \$(b)(4)

**Subelement -CR (Opened):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08.02

Labor:

Added labor estimate to accommodate a work being transferred from another Upper Stage subelement. Added (b)(4) labor hours estimate, which added \$(b)(4) labor cost estimate.

**Subelement -CS (Opened):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08.03

Labor:

Added labor estimate to accommodate a work being transferred from another Upper Stage subelement. Added (b)(4) labor hours estimate, which added \$(b)(4) labor cost estimate.

**Subelement -CU (Opened):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08.05

Labor:

Added labor estimate to accommodate a work being transferred from another Upper Stage subelement. Added (b)(4) labor hours estimate, which added \$(b)(4) labor cost estimate.

**Subelement -CY (Opened):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08.09

Labor:

Added labor estimate to accommodate a work being transferred from another Upper Stage subelement. Added (b)(4) labor hours estimate, which added \$(b)(4) labor cost estimate.

**(The total Upper Stage subelements estimate decrease is: \$(b)(4))**

**(The total 1st Stage subelement estimate increase is: \$(b)(4))**

**Revision 13:**

The purpose of this revision is to extend this task into Contract Year 4 of the NNM05AB50C ESTS contract. This revision defined and estimates work for the period September 27,2008 through October2, 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 affects the following APO elements;

- Ares I Upper Stage (Subelements CA, CB, CC, CL, & CP)
- Ares I Upper Stage Engine (Subelement CD)
- Ares I First Stage (Subelement CE)

**REVISION 12:**

This TO Revision 12 revises the below subelements. Specific detail is provided for each subelement revised. The total task order estimate is decreased from \$ (b)(4) to \$ (b)(4)

**Subelement -00 (Revised):**

Material:

Decreased the material estimate by \$ (b)(4) fewer resources were required to accomplish the work than were originally estimated.

Other Direct Charges (ODC):

Added \$ (b)(4) to cover maintenance and training charges by (b)(4) or lab test equipment.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$ (b)(4)

**Subelement -01 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -02 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -15 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -16 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -17 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -20 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -21 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4)

Material:

Increased the material estimate by \$ (b)(4) more resources were required to accomplish the work than were originally estimated.

Travel:

Added \$ (b)(4) travel estimate for fracture engineer to present at a conference on plasticity of materials.

Other Direct Charges (ODC):

Added \$ (b)(4) other estimate to cover hotel expenses.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$ (b)(4)

**Subelement -22 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4)

Other Direct Charges (ODC):

Decreased other estimate by \$ (b)(4) fewer resources were required to accomplish the work than were originally estimated.

The total subelement estimate decrease is \$ (b)(4)

**Subelement -25 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

Material:

Increased the material estimate by \$ (b)(4) more resources were required to accomplish the work than were originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$ (b)(4)

**Subelement -31 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

Material:

Increased the material estimate by \$ (b)(4) more resources were required to accomplish the work than were originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$ (b)(4)

**Subelement -32 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4)

Material:

Decreased the material estimate by \$ (b)(4) fewer resources were required to accomplish the work than were originally estimated.

Other Direct Charges (ODC):

Decreased other estimate by \$ (b)(4) fewer resources were required to accomplish the work than were originally estimated.

Travel:

Added \$ (b)(4) travel estimate for (b)(4) attend training class.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$ (b)(4)

**Subelement -35 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4)

Material:

Decreased the material estimate by \$ (b)(4) fewer resources were required to accomplish the work than were originally estimated.

Other Direct Charges (ODC):

Increase other estimate by \$ (b)(4) for (b)(4) materials test machine training class.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$ (b)(4)

**Subelement -60 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4)

Other Direct Charges (ODC):

Increase other estimate by \$ (b)(4) for (b)(4) materials test machine training class.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$ (b)(4)

**Subelement -65 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -70 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -71 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$ (b)(4)

**Subelement -99 (Revised):**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4)

Material:

Decreased the material estimate by \$ (b)(4) fewer resources were required to accomplish the work than were originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$ (b)(4)

**Subelement -CA (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS136905.08.05.12.01.08 **No additional budget is required.**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$ (b)(4) Labor was over estimated due to personnel who transitioned off this task. Furthermore labor was over estimated due to available personnel supporting another Upper Stage subelement.

Material:

Increased the material estimate by \$ (b)(4) more resources were required to accomplish the work than were originally estimated.

Other Direct Charges (ODC):

Added \$ (b)(4) estimate for (b)(4) and (b)(4) materials test machine training classes.

Subcontract:

Increased the subcontract estimate by \$ (b)(4) due to an increase in scope of work.

Travel:

Added \$ (b)(4) estimate for travel to (b)(4) training classes

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$ (b)(4)

**Subelement -CB (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08

**Labor:**

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$(b)(4). Additional hours were necessary to support friction stir weld parameter development.

**Material:**

Increased the material estimate by \$(b)(4) more resources were required to accomplish the work than were originally estimated.

**Other Direct Charges (ODC):**

Decreased other estimate by \$(b)(4) fewer resources were required to accomplish the work than were originally estimated.

**Subcontract:**

Decreased the subcontract estimate by \$(b)(4) due to a decrease in scope needed by subcontract.

**Travel:**

Decreased travel estimate by \$(b)(4) less travel was required than was originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$(b)(4)

**Subelement -CC (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.07.08

**Labor:**

Increased labor estimate to accommodate an increase in scope of work. Increased labor hours estimate by (b)(4) hours, which increased the labor cost estimate by \$(b)(4). Additional hours were necessary to support Thermal Protection System foam testing in liquid helium that was not originally estimated.

**Material:**

Decreased the material estimate by \$(b)(4) fewer resources were required to accomplish the work than were originally estimated.

**Other Direct Charges (ODC):**

Decreased other estimate by \$(b)(4) fewer resources were required to accomplish the work than were originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate increase is \$(b)(4)

**Subelement -CD (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.02.99.02.08.02 **No additional budget is required.**

**Labor:**

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$(b)(4) Labor was over estimated due to available personnel supporting another Upper Stage subelement.

Travel:

Decreased travel estimate by \$(b)(4) less travel was required than was originally estimated.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$(b)(4)

**Subelement -CE (Revised):**

This revision affects the following Ares Project Office (APO) Element: 1<sup>st</sup> Stage RSRM V WBS# 136905.08.01.11 **No additional budget is required.**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b) hours, which decreased the labor cost estimate by \$(b)(4) Labor was over estimated due to available personnel supporting Upper Stage subelements.

**Subelement -CL (Revised):**

This revision affects the following Ares Project Office (APO) Element: Upper Stage WBS# 136905.08.05.12.02.08 **No additional budget is required.**

Labor:

Decreased labor estimate to accommodate a decreased scope of work. Reduce the labor hours estimate by (b)(4) hours, which decreased the labor cost estimate by \$(b)(4) Labor was over estimated due to available personnel supporting another Upper Stage subelement.

Material:

Decreased the material estimate by \$(b)(4) fewer resources were required to accomplish the work than were originally estimated.

Subcontract:

Decreased the subcontract estimate by \$(b)(4) due to a decrease in scope needed by subcontract.

Paragraph 7.0 further defines the non-labor effort supporting the cost estimate.

The total subelement estimate decrease is \$(b)(4)

**(The total Upper Stage subelements estimate increase is: \$(b)(4)**

**(The total 1st Stage subelement estimate decrease is: \$(b)(4)**

**The purpose of Revision 11 is to:**

- Change (b)(4) .
- Increase the scope of work to support Ares I 1st Stage RSRM V under new subelement -CE (WBS:136905.08.01.11) and add labor to support this effort.
- Close subelement -71 (Intelligent and Integrated Manufacturing/Supply Chain Integration) and remove estimate after February 29th because this effort was transferred to task 34-020001.
- Add \$(b)(4) labor estimate under subelement -CA (Ares I Integrated Manufacturing and Assembly) to reflect an increase in scope of work.

- Reduce the labor estimate by \$ (b)(4) (t) under subelement -CB (Ares I LOX and LH2 Tank and Structural Test Articles) to reflect a reduced scope of work.
- Add \$ (b)(4) labor estimate under subelement -CC (Ares I Cryogenic Insulation) to reflect an increase in scope of work.
- Reduce the labor estimate by \$ (b)(4) under subelement -CD (J2X Engine) to reflect a reduced scope of work.
- Reduce the labor estimate by \$ (b)(4) under subelement -CL (Ares I Manufacturing Demonstration Article) to reflect a reduced scope of work.
- Add (b)(4) labor estimate to subelement -CA, -21, and -25 to cover adding a (b)(4) (b)(4) to support the increased scope of work.
- Adjust labor estimate to reflect (b)(4) being promoted to (b)(4)
- Adjust labor estimate to reflect that an (b)(4) (b)(4) is being used to replace an (b)(4) (b)(4) who transitioned off this task.
- Adjust material and ODC estimate to more accurately reflect expected material costs.

**The purpose of Revision 10 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.
- Close subelements -26 (SSME Low-Sulfur Nickel Plating), -64 (NESC Locking Compound Assessment) and -68 (TIPS NASA Piston Alloy Database) since this effort is complete.

**The purpose of Revision 09 is to:**

- Increase the scope of work supporting the CLV cryogenic insulation under subelement -CC to reflect additional testing and support requirements and add estimate for one engineer supporting this effort.
- Remove approximately \$ (b)(4) in materials estimate from September because test control hardware purchased this year is not expected to be invoiced until next fiscal year.
- Remove approximately \$ (b)(4) in subcontract estimate from August and September to more accurately reflect expected subcontractor costs.
- Adjust the distribution of estimated labor to more accurately reflect expected support requirements.

**The purpose of Revision 08 is to:**

- Increase the scope of work to include testing support for the Manufacturing Demonstration Article (MDA) under new subelement -CL and add engineering estimate to cover this work.
- Add (b)(4) labor estimate to subelement -CA to cover adding (b)(4) to support increased design allowables testing requirements.
- Adjust labor estimate to reflect that (b)(4) and (b)(4) were hired in lower labor categories than originally estimated, and that an (b)(4) (b)(4) is being used to replace an (b)(4) (b)(4) who will be transitioning off this task.
- Remove (b)(4) (b)(4) labor estimate to reflect a delay in filling the (b)(4) position.
- Adjust material and ODC estimate to more accurately reflect expected material costs. This involved removing estimate from subelements -CA, -CB, and -CD that is not expected to be spent, and adding estimate to subelements, -25, -31 and -35 to cover the purchase of test controllers valued at approximately (b)(4).

**The purpose of Revision 07 is to:**

- Close subelements -05 and -08 and remove estimate after March 31<sup>st</sup> because this effort was transferred to tasks 34-040002 and 34-040005 respectively.
- Reduce the estimate for subelements -32 and -35 to reflect transition of the fabrication efforts previously performed under this task to task 34-040005.
- Close subelement -23 and reallocate the labor estimate after March 31<sup>st</sup> because this effort is complete.
- Add (b)(4) in (b)(4) labor estimate to subelement -CB to cover the additional scope for an engineer to support tooling development for the CLV tank interstage. Also removed (b)(4) of (b)(4) labor and materials estimate to provide funding to the Materials Lab to bring on temporary engineering support outside this task.
- Add (b)(4) in labor estimate supporting the CLV J2X engine under subelement -CD to reflect providing continued testing support through the end of the year.
- Add labor estimate under subelement -CA to hire (b)(4) additional engineers and an additional technician to support increased testing requirements for developing materials property design allowables for CLV Integrated Manufacturing and Assembly.
- Reallocate -CA subcontract estimate to (b)(4) labor to reflect a change in personnel on the task.
- Add \$(b)(4) in estimate to subelement -71 to support a new subcontract to UAH to develop a product lifecycle management system.

**The purpose of Revision 06 is to:**

- Remove estimate for an (b)(4) (b)(4) (b)(4) position supporting EM10 that did not materialize.
- Adjust labor estimates to reflect an increased scope of work to support CLV Integrated Manufacturing and Assembly under subelement -CA. Also added estimate to this subelement for a technician needed to provide procurement, fixture design, and fabrication coordination support for the sizeable testing effort to produce design allowables data.
- Reduce the estimate supporting the CLV J2X engine under subelement -CD to reflect a reduced scope of work and the level of available funding.
- Increase the scope of work to support oxygen production from lunar regolith using ionic liquids under new subelement -70 and reallocate technician labor estimate to support this effort.
- Increase the scope of work to reflect additional support for intelligent and integrated manufacturing and supply chain integration under subelement -71 and add subcontracting and labor estimate to support this effort.
- Funding for this revision is provided under MSFC PR 4200183031.

**The purpose of Revision 05 is to:**

- Increase the scope of work to support composite fabrication under new subelement -08 and reallocate labor which was originally estimated on subelement -65 to support this effort.
- Subelement -65 remains open at a low level of effort until additional funding is provided to support composites damage tolerance effort expected later in this period of performance, but materials estimate was added to cover the purchase of composite raw materials.
- Increase the scope of work to support intelligent and integrated manufacturing and supply chain integration under new subelement -71 and add subcontracting estimate and labor to support this effort.
- Funding for this revision is provided under MSFC PR 4200173425.

### **The purpose of Revision 04 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.
- Decrease the scope of work to account for effort being transferred to two new tasks 34-020002 and 34-030001, which will respectively support the Damage Tolerance Assessment and Metal Engineering Branches.
- Funding for this revision is provided under MSFC PR 4200173425.

### **1.0 Task Order Description & Objectives**

The ESTS Group will provide Operations and Maintenance (O&M) of the Materials Mechanical Test Facility (MMTF) for the MSFC Materials and Processes Department. This activity includes support for mechanical testing and operations and maintenance of the materials mechanical testing equipment in Buildings 4612 and 4707. Specific projects to be supported are listed in separate subelements below:

Subelement 01	Maintenance
Subelement 02	Technical Writing and Preparation of Reports
Subelement 03	Building Manager Activities
Subelement 15	International Space Station (Closed)
Subelement 16	ECLSS Spares (Closed)
Subelement 17	ECLSS Rack (Closed)
Subelement 20	Shuttle Integration(Closed)
Subelement 21	External Tank Metals (Closed)
Subelement 22	External Tank Nonmetals (Closed)
Subelement 25	Space Shuttle Main Engine (Closed)
Subelement 27	2195 Spun Dome Development
Subelement 31	Solid Rocket Booster Metals (Closed)
Subelement 32	Solid Rocket Booster Nonmetals (Closed)
Subelement 35	Reusable Solid Rocket Motor (Closed)
Subelement 60	Lightweight Structures (Closed)
Subelement 62	SAA-USA Second Generation Marshall Convergent Coating
Subelement 64	Advanced Composite Technology (Closed)
Subelement 65	Composite Damage Tolerance (Closed with rev 16)
Subelement 66	High Temperature RCS Materials (Closed with rev 15)
Subelement 70	Oxygen Production using Ionic Liquids
Subelement 96	Engineering support
Subelement 97	Science Support
Subelement 98	General project Support
Subelement 99	Short Term Support
Subelement CA	Ares I Integrated Manufacturing and Assembly (WBS: 136905.08.05.12.01.08) (Administratively Closed with rev 17)
Subelement CB	Ares I LOX and LH2 Tank and Structural Test Articles (WBS: 136905.08.05.12.02.08) (Administratively Closed with rev 17)
Subelement CC	Ares I Cryogenic Insulation (WBS: 136905.08.05.12.07.08) (Administratively Closed with rev 17)

Subelement CD	J2X Engine (WBS: 136905.02.99.02.08.02) (Administratively Closed with rev 17)
Subelement CE	Ares I 1st Stage RSRM V (WBS:136905.08.01.11) (Administratively Closed with rev 17)
Subelement CL	Ares I Manufacturing Demonstration Article (WBS: 136905.08.05.12.02.08) (Administratively Closed with rev 17)
Subelement CP	Ares I Ullage Settling Motor (WBS: 136905.08.05.13.02.01.08) (Administratively Closed with rev 17)
Subelement CR	MDA Weld Development (WBS: 136905.08.05.12.02.08.02) (Administratively Closed with rev 17)
Subelement CS	MDA NDE Development (WBS: 136905.08.05.12.02.08.03) ((Administratively Closed with rev 17)
Subelement CU	MDA Surface Treatment Development (WBS: 136905.08.05.12.02.08.05) (Administratively Closed with rev 17)
Subelement CY	MDA Honeycomb & Adhesive Development (WBS: 136905.08.05.12.02.08.09) ((Administratively Closed with rev 17)
Subelement JE	ECLSS Star Spares
Subelement SB	Solid Rocket Booster
Subelement SE	Space Shuttle Main Engine
Subelement SI	Shuttle Integration
Subelement SM	Resuable Solid Rocket Motor
Subelement ST	Space Shuttle External Tank

Additional subelements will be added to this task order (TO) as new projects requiring MMTF support are identified.

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

The Sverdrup-ESTS Group will perform all operations and maintenance activities required for the MMTF. Specific activities will include:

- Procure all materials, hardware, services, and documentation (not otherwise provided by the Government) necessary to accomplish materials properties testing and special materials tests.
- Static and dynamic tests shall include, but not be limited to tensile, compression, creep, high cycle fatigue, low cycle fatigue, fracture toughness, fatigue crack growth, shear, 4-point bend, hardness, special accelerated life cycle tests employing simulated rocket engine mission cycles, corrosion and stress corrosion cracking testing, and special materials tests.
- Tests shall be performed in conformance with ASTM Procedures and guidelines and/or in accordance with procedures coordinated with the customer through the Task Initiator.
- Test environments shall range from benign to hazardous. Tests shall be conducted in air and inert environments, at cryogenic or elevated temperatures.
- Abstract, scan, organize, store, and retrieve failure/material analysis reports. Provide technical writing support to assist in the production of presentations, reports, abstracts, and papers.

- Maintain a centralized work order/task log, a schedule tracking system, and files of all raw experimental data.
- Use existing Standard Operating Procedures (SOPs) for each type of test/test system. Review existing SOPs for operation and maintenance of the test facilities and revise or rewrite new procedures as necessary; maintain records of all maintenance, inspection, calibration and repair/replacement activities; and be responsible for coordination of required calibration, maintenance, and repair of the test equipment. Maintain a system to track, record, and control test equipment configuration.
- Participate, on request, in certain materials development/evaluation program planning; write and/or modify basic computer programs for computer controlled testing systems; analyze test data to determine the effects of environment on materials properties; determine and record failure modes of test specimens through aided visual examination of fracture surfaces and metallurgical analysis; prepare and deliver presentations on special test activities; and furnish various reports on the test programs. Test reports that include a summary of test performed, anomalies observed, conclusions drawn, and reference test methods and procedures shall be submitted for each test program.
- Provide all necessary training and certify that assigned personnel are proficient in the use of test systems and are knowledgeable of applicable safety regulations and procedures. No less than two persons shall be present in the mechanical testing facilities when they are in operation.

Specific projects to be supported and the technical approach for each project are described below:

#### Subelement 01 –Maintenance

- Perform normal, routine maintenance and repair of test equipment and facilities.
- Track equipment calibration using the Marshall Calibration Management System (MCMS) and insure that all test equipment is operated in accordance with applicable standards.
- Maintain a database of records of all facility or equipment maintenance, repair, and calibration.
- Large-scale facility modifications are anticipated to be performed by the MSFC base facilities contractor.

#### Subelement 02 – Technical Writing and Preparation of Reports

- Provide technical writing support to assist in the production of presentations, reports, abstracts, and papers.
- Abstract, scan, organize, store, and retrieve failure/material analysis reports.

#### Subelement 03 – Building Manager Activities

- Provide building manager activities for building 4601

#### Subelement 15 – International Space Station (Closed with Rev 18)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Prepare reports and data packages from data per customer requirements.

#### Subelement 16 – ECLSS Spares(Closed with Rev 18)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Prepare reports and data packages from data per customer requirements.

#### Subelement 17 – ECLSS Rack (Closed with Rev 18)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Prepare reports and data packages from data per customer requirements.

#### Subelement 20 – Shuttle Integration (Closed with Rev 18)

- Test and evaluate the Orbiter feedline.
- Test and evaluate the ball strut tie rod assembly (BSTRA) ball.
- Test and evaluate the Remote Manipulator Arm.
- Fabricate, pre-crack, repair and re-test samples.
- Characterize base materials.
- Provide metallographic support.
- Develop and fabricate fixturing.

#### Subelement 21 – External Tank Metals (Closed with Rev 18)

- Provide fabrication support.
- Provide materials investigation support.
- Perform test planning.
- Provide mechanical testing support.
- Perform an engineering review and quality check of the data.
- Prepare data packages from the test data per customer requirements.

#### Subelement 22 – External Tank Nonmetals (Closed with Rev 18)

- Provide fabrication support.
- Provide materials investigation support.
- Perform test planning.
- Provide mechanical testing support.
- Failure analysis and photographic support.
- Perform an engineering review and quality check of data.
- Prepare data packages from the test data per customer requirements.

#### Subelement 25 – Space Shuttle Main Engine (Closed with Rev 18)

- Provide purchasing services.
- Perform literature reviews to support program activities.
- Prepare test samples and test fixtures, coordinate machining activities.
- Perform heat treating and mechanical property testing.
- Analyze the data and perform an engineering review and quality check of the data.
- Prepare reports and data packages from test data per customer requirements.

#### Subelement 27 – 2195 Spun Dome Development

- Provide purchasing services.
- Perform literature reviews to support program activities.
- Prepare test samples and test fixtures, coordinate machining activities.
- Perform heat treating and mechanical property testing.
- Analyze the data and perform an engineering review and quality check of the data.
- Prepare reports and data packages from test data per customer requirements.

#### Subelement 31 – Solid Rocket Booster Metals (Closed with Rev 18)

- Provide metallographic and photographic support.
- Provide mechanical testing support.
- Perform an engineering review and quality check of the data.
- Prepare data packages from the test data per customer requirements.

#### Subelement 32 – Solid Rocket Booster Nonmetals (Closed with Rev 18)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Mechanical testing in air for adhesives replacement, problem and discrepancy report resolution, booster separation motor (BSM) adhesives activity, BSM process verification activities, Henson paint replacement activity and thermal coating replacement activity.
- Perform an engineering review and quality check of the data.
- Prepare data packages from the test data per customer requirements.

#### Subelement 35 – Reusable Solid Rocket Motor (Closed with Rev 18)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Prepare reports and data packages from data per customer requirements.

#### Subelement 60 – Lightweight Structures (Closed with Rev 18)

- Prepare test samples and test fixtures.
- Perform mechanical property testing of candidate materials at ambient, elevated and cryogenic temperatures.
- Perform an engineering review and quality check of the data.
- Prepare reports and data packages from data per customer requirements.

#### Subelement 62 – SAA-(b)(4) Second Generation Marshall Convergent Coating

- Design test fixtures.
- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Provide materials analysis support.
- Perform analytical studies.
- Perform an engineering review and quality check of the data.
- Prepare reports and data packages from data per customer requirements.

#### Subelement 64 – Advanced Composite Technology (Closed with Rev 18)

- Prepare test samples and test fixtures.
- Perform mechanical property testing of candidate materials at ambient, elevated and cryogenic temperatures.
- Perform an engineering review and quality check of the data.
- Prepare reports and data packages from data per customer requirements.

#### Subelement 65 – Composite Damage Tolerance (Closed with rev 16)

- Design test fixtures.
- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Provide materials analysis support.
- Perform analytical studies.
- Perform an engineering review and quality check of the data.
- Prepare reports and data packages from data per customer requirements.

#### Subelement 66 – High Temperature RCS Materials (Closed with rev 15)

- Prepare test fixtures.
- Procure testing services.
- Perform mechanical property testing.
- Provide metallographic and photographic support.
- Perform an engineering review and quality check of the data.
- Prepare a report and data package from data per customer requirements.

#### Subelement 70 – Oxygen Production using Ionic Liquids

- Assist in design and implementation of laboratory experimental set-ups:
  - to incorporate newly procured electrodes,
  - to collect and measure oxygen production,
  - to collect reduced metals for analysis,
  - to measure lunar simulant dissolution capacity.
- Assist in experimental measurements and analysis.
- Assist in design and implementation of laboratory scale demonstration of oxygen production process.

#### Subelement 96 – Engineering Support

Perform mechanical testing of small, short term tests.

- Work with customer (EM10) to develop detailed understanding of test requirements.
- Develop detailed estimate and plan as requested to meet new customer requirements.
- Perform normal, routine maintenance and repair of test equipment.
- Calibrate test equipment as needed to ensure testing accuracy.
- Produce CAD drawings as needed to support testing.
- Prepare facility and manufacturing plans.
- Prepare test samples and test fixtures, coordinate machining activities.
- Perform tests per plan and provide engineering review and quality check of the data, and prepare data packages from the test data per customer requirements.
- Purchase supplies as needed.
- Develop and execute design of experiment studies as needed.

- Perform statistical analysis.
- Support advanced development tasks.
- Support problem resolution.
- Support design changes.
- Support non-metallic high temperature design and manufacturing activities.

#### Subelement 97 – Science Support

Perform mechanical testing of small, short term tests.

- Work with customer (EM10) to develop detailed understanding of test requirements.
- Develop detailed estimate and plan as requested to meet new customer requirements.
- Perform normal, routine maintenance and repair of test equipment.
- Calibrate test equipment as needed to ensure testing accuracy.
- Produce CAD drawings as needed to support testing.
- Prepare facility and manufacturing plans.
- Prepare test samples and test fixtures, coordinate machining activities.
- Perform tests per plan and provide engineering review and quality check of the data, and prepare data packages from the test data per customer requirements.
- Purchase supplies as needed.
- Develop and execute design of experiment studies as needed.
- Perform statistical analysis.
- Support advanced development tasks.
- Support problem resolution.
- Support design changes.
- Support non-metallic high temperature design and manufacturing activities.

#### Subelement 98 – General project support

Perform mechanical testing of small, short term tests.

- Work with customer (EM10) to develop detailed understanding of test requirements.
- Develop detailed estimate and plan as requested to meet new customer requirements.
- Perform normal, routine maintenance and repair of test equipment.
- Calibrate test equipment as needed to ensure testing accuracy.
- Produce CAD drawings as needed to support testing.
- Prepare facility and manufacturing plans.
- Prepare test samples and test fixtures, coordinate machining activities.
- Perform tests per plan and provide engineering review and quality check of the data, and prepare data packages from the test data per customer requirements.
- Purchase supplies as needed.
- Develop and execute design of experiment studies as needed.
- Perform statistical analysis.
- Support advanced development tasks.
- Support problem resolution.
- Support design changes.
- Support non-metallic high temperature design and manufacturing activities.

#### Subelement 99 – Short Term Support

- Provide support for any task that requires less than 4 hours of effort and that has no specific deliverable documentation associated with it.

Subelement CA – Ares I Integrated Manufacturing and Assembly (Administratively Closed)

- Prepare facility and manufacturing plans.
- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Develop and execute design of experiment studies.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

Subelement CB – Ares I LOX and LH2 Tank and Structural Test Articles (Administratively Closed)

Prepare test samples and test fixtures.

- Coordinate machining activities.
- Provide purchasing services.
- Develop and execute design of experiment studies.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

Subelement CC – Ares I Cryogenic Insulation (Closed)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

Subelement CD – J2X Engine (Administratively Closed)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

Subelement CE – Ares I 1st Stage RSRM V (Administratively Closed)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

Subelement CL – Ares I Manufacturing Demonstration Article (Administratively Closed)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

Subelement CP – Ares I Ullage Settling Motor (Administratively Closed)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

Subelement CR – MDA Weld Development (Administratively Closed)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

Subelement CS – MDA NDE Development (Administratively Closed)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

Subelement CU – MDA Surface Treatment Development (Administratively Closed)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.
- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

Subelement CY – MDA Honeycomb & Adhesive Development (Administratively Closed)

- Prepare test samples and test fixtures.
- Coordinate machining activities.
- Provide purchasing services.
- Perform mechanical property testing.

- Perform an engineering review and quality check of the data.
- Perform statistical analysis.
- Prepare reports and data packages from data per customer requirements.

#### Subelement JE – ECLSS Star Spares

- Work with customer (EM10) to develop detailed understanding of test requirements.
- Develop detailed estimate and plan as requested to meet new customer requirements.
- Perform normal, routine maintenance and repair of test equipment.
- Calibrate test equipment as needed to ensure testing accuracy.
- Produce CAD drawings as needed to support testing.
- Prepare facility and manufacturing plans.
- Prepare test samples and test fixtures, coordinate machining activities.
- Perform tests per plan and provide engineering review and quality check of the data, and prepare data packages from the test data per customer requirements.
- Purchase supplies as needed.
- Develop and execute design of experiment studies as needed.
- Perform statistical analysis.
- Support advanced development tasks.
- Support problem resolution.
- Support design changes.
- Support non-metallic high temperature design and manufacturing activities.

#### Subelement SB – Solid Rocket Booster

- Work with customer (EM10) to develop detailed understanding of test requirements.
- Develop detailed estimate and plan as requested to meet new customer requirements.
- Perform normal, routine maintenance and repair of test equipment.
- Calibrate test equipment as needed to ensure testing accuracy.
- Produce CAD drawings as needed to support testing.
- Prepare facility and manufacturing plans.
- Prepare test samples and test fixtures, coordinate machining activities.
- Perform tests per plan and provide engineering review and quality check of the data, and prepare data packages from the test data per customer requirements.
- Purchase supplies as needed.
- Develop and execute design of experiment studies as needed.
- Perform statistical analysis.
- Support advanced development tasks.
- Support problem resolution.
- Support design changes.
- Support non-metallic high temperature design and manufacturing activities.

#### Subelement SE – Space Shuttle Main Engine

- Work with customer (EM10) to develop detailed understanding of test requirements.
- Develop detailed estimate and plan as requested to meet new customer requirements.
- Perform normal, routine maintenance and repair of test equipment.
- Calibrate test equipment as needed to ensure testing accuracy.
- Produce CAD drawings as needed to support testing.
- Prepare facility and manufacturing plans.
- Prepare test samples and test fixtures, coordinate machining activities.

- Perform tests per plan and provide engineering review and quality check of the data, and prepare data packages from the test data per customer requirements.
- Purchase supplies as needed.
- Develop and execute design of experiment studies as needed.
- Perform statistical analysis.
- Support advanced development tasks.
- Support problem resolution.
- Support design changes.
- Support non-metallic high temperature design and manufacturing activities.

#### Subelement SI – Shuttle Integration (Opened with Rev 19)

- Work with customer (EM10) to develop detailed understanding of test requirements.
- Develop detailed estimate and plan as requested to meet new customer requirements.
- Perform normal, routine maintenance and repair of test equipment.
- Calibrate test equipment as needed to ensure testing accuracy.
- Produce CAD drawings as needed to support testing.
- Prepare facility and manufacturing plans.
- Prepare test samples and test fixtures, coordinate machining activities.
- Perform tests per plan and provide engineering review and quality check of the data, and prepare data packages from the test data per customer requirements.
- Purchase supplies as needed.
- Develop and execute design of experiment studies as needed.
- Perform statistical analysis.
- Support advanced development tasks.
- Support problem resolution.
- Support design changes.
- Support non-metallic high temperature design and manufacturing activities.

#### Subelement SM – Resuable Solid Rocket Motor

- Work with customer (EM10) to develop detailed understanding of test requirements.
- Develop detailed estimate and plan as requested to meet new customer requirements.
- Perform normal, routine maintenance and repair of test equipment.
- Calibrate test equipment as needed to ensure testing accuracy.
- Produce CAD drawings as needed to support testing.
- Prepare facility and manufacturing plans.
- Prepare test samples and test fixtures, coordinate machining activities.
- Perform tests per plan and provide engineering review and quality check of the data, and prepare data packages from the test data per customer requirements.
- Purchase supplies as needed.
- Develop and execute design of experiment studies as needed.
- Perform statistical analysis.
- Support advanced development tasks.
- Support problem resolution.
- Support design changes.
- Support non-metallic high temperature design and manufacturing activities.

#### Subelement ST – Space Shuttle External Tank

- Work with customer (EM10) to develop detailed understanding of test requirements.
- Develop detailed estimate and plan as requested to meet new customer requirements.

- Perform normal, routine maintenance and repair of test equipment.
- Calibrate test equipment as needed to ensure testing accuracy.
- Produce CAD drawings as needed to support testing.
- Prepare facility and manufacturing plans.
- Prepare test samples and test fixtures, coordinate machining activities.
- Perform tests per plan and provide engineering review and quality check of the data, and prepare data packages from the test data per customer requirements.
- Purchase supplies as needed.
- Develop and execute design of experiment studies as needed.
- Perform statistical analysis.
- Support advanced development tasks.
- Support problem resolution.
- Support design changes.
- Support non-metallic high temperature design and manufacturing activities.

### **3.0 Discussion of Skills Required**

Personnel supporting this task must have experience in mechanical properties testing of materials. Selected personnel supporting the Task must be experienced in materials diagnostics activities such as, but not limited to preparation of metallographic samples; machining operations; operation of MSFC materials processing equipment; operation and maintenance of MMTF test equipment and facilities; numerical and analytical modeling.

### **4.0 Special Tools Required**

Personal protective equipment (PPE) appropriate to the performance of the various operations (machining, casting, forging, testing, etc.) accomplished by MMTF personnel.

### **5.0 Participating Subcontractors**

No subcontractors.

### **6.0 Milestones & Deliverables**

- Biweekly notes via e-mail.
- Formal monthly activity reports.
- Test plans and test reports documenting results of test programs in accordance with project requirements.
- Specimen and fixture design.
- Test specimens and fixtures.
- Technical reports, technical presentations, documents inputs, and review item discrepancies (RIDs).
- E-mail and verbal communications
- Support of product development meetings.
- Data Requirement Documents, training and awareness materials, document review inputs, and draft document revisions.
- Shop Travelers
- Schedules
- Material usage report
- Response to customer requests – Verbal inputs

- Document Inputs and RIDs: editorial
- Hazard Analysis
- Organizational Work Instructions (OWI)
- Test equipment calibrations.
- CAD drawings.
- Analysis products.
- Provide monthly project status meeting roll-up information when requested.
- Design packages for special tests and test cell configurations.
- Quality records for the EM10 database must be provided within 10 calendar days from the date of completion of the actual testing.
- Task schedule slips due to uncontrollable circumstances (examples: reprioritization of testing by customer; etc.) will not be factored negatively in assessing schedule objectives.
- A majority of the work performed is real time support and is negotiated with the requesting project at the time of receipt.

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

Materials have been included to cover additional testing controller equipment, extensometers, servo valves and materials required for operation and maintenance of the facility. Travel was included to cover trips for ASTM conference attendance, (b)(4) training and (b)(4) training. Other direct charges (ODC) were included to cover material testing and specimen machining at outside vendors and labor charges for outside vendors to maintain test equipment.

**Subelement 00 – Material Mechanical Test Facility Operations and Maintenance**

- Materials included to cover lab coat rentals and test support equipment (e.g. Extensometers, load cells, and servo valves).
- Other direct charges (ODC) to cover outside vendor maintenance.

**Subelement JE – ECLSS Star Spares**

- Materials included to cover extensometers - test support equipment.

**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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# ESTS Contract Task Order Request Performance Plan

Task Order Title: [Materials Mechanical Test Facility Operations and Maintenance](#)

Task Order Number: [34-010003](#) Revision: 19

Category	Weighting Technical %	End of Period Technical Score
<b>Technical Objectives</b>	65%	X 65% = <b>Justification</b>
Provide engineering and technical support to operate and maintain the Materials Mechanical Test Facility. Fabricate test fixturing, procure materials, develop test plans, perform tests, analyze data, develop reports and presentations, and make recommendations.		
<b>Schedule Objectives (Milestones)</b>	Weighting Schedule % 10% (min 10%)	Schedule Score X 10% = <b>Justification</b>
A majority of the work performed is real time support and is negotiated at the time of receipt. Quality records for the Electronic Work Request System database must be received within 10 calendar days from the date of completion of the actual testing.		
<b>Cost (actual vs. negotiated)</b>	Weighting Cost% 25% (min.25%)	Cost Score X 25% = <b>Justification</b>
	Weighting Total % 100.00%	<b>Total Score</b>

## 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: [Materials Mechanical Test Facility Operations and Maintenance](#)

Task Order Number: [34-010003](#)      Revision: [19](#)

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**Comments:**

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**Risk Assessment**

Contract Number: NNM05AB50C

TO Title: Materials Mechanical Test Facility Operations and Maintenance

TO Number: 34-010003 Revision: 19

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

MSFC Initiator: Tina Malone

(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	2	1	There is a risk that the Subtask cost estimate will increase due to unanticipated overtime, material and ODC charges
Risk C2	Cost			
Risk T1	Technical			No technical risks have been identified
Risk T2	Technical			
Risk S1	Schedule			No schedule risks have been identified
Risk S2	Schedule			

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



