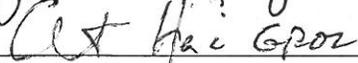
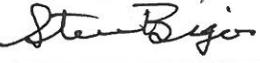
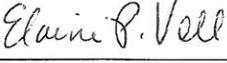


# Non-Load-Test Sling Request Form

## REVISION LOG

| REV | DESCRIPTION                     | DATE    |
|-----|---------------------------------|---------|
|     | ISS Common ORU Lifting Hardware | 7/18/13 |

## APPROVALS

| TITLE                         | NAME            | ORG           | SIGNATURE  | DATE    |
|-------------------------------|-----------------|---------------|--|---------|
| Boeing KSC Ground Ops Manager | Terry Doty      | Boeing<br>10K |    | 7/18/13 |
| Boeing Safety                 | William Jones   | Boeing<br>10K |    |         |
| TOSC Flow Manager             | Ron Constantino | TOSC<br>4100  |    | 7/18/13 |
| TOSC Safety                   | Joe Degano      | TOSC<br>8100  |    | 7/18/13 |
| NASA GP ORU Project Manager   | Curt Horanic    | GP-<br>02     |   | 7/18/13 |
| NASA UB ORU Project Manager   | Steve Bigos     | UB-C          |  | 7/18/13 |
| NASA S&MA                     | James Minnear   | SA-<br>B1     |  | 7/18/13 |
| KSC LDEM                      | Malcolm Glenn   | SA-<br>C2     |  | 7/18/13 |
| NASA GP MECH.<br>ENG          | Elaine Voll     | GP<br>06      |  | 7/18/13 |

## SLING INFORMATION

|  |                             |
|--|-----------------------------|
| SLING NAME: ISS Common ORU Lifting Hardware      |                             |
| PMN: See attached list                           | S/N: See attached list      |
| OTHER IDENTIFIER (e.g. DWG #): See attached list |                             |
| DATE OF REQUEST: 7/18/13                         | REQUESTING ORG: TOSC/Boeing |

DESCRIPTION OF THE PERIODIC LOAD TEST THAT WILL NOT BE PERFORMED

The annual periodic load test of the ISS Common ORU Lifting Hardware (per paragraph 10.3.2 of the NASA Lifting Standard, NASA-STD-8719.9) will not be performed.

**NASA Lifting Standard NASA-STD-8719.9 Paragraph 10.3.2**

**10.3.2 Periodic Load Test.** Slings shall undergo periodic load test at least every 4 years at a specific load test factor of the design rated load as given in Table 10-3. All components shall be tested together as a system, if practical. Slings used for critical lifts shall be load tested at least once per year. Slings used infrequently for critical lifts shall be load tested before each critical lift if it has been over a year since the last load test. Lifting interfaces such as eyebolts, D-rings and lifting lugs permanently attached to the load are exempt from periodic load testing.

**Table 10-3 Periodic Load Test Factors. (Based on Manufacturer’s Rated Load)**

**Equipment Periodic Load Test Factor**

Alloy Steel Chain Slings 1.00

Wire Rope Slings 1.00

Metal Mesh Slings 1.00

Synthetic Rope Slings 1.00\*

Synthetic Web Slings 1.00

Linear Fiber Slings 1.00

Structural Slings 1.00

Shackles, D-rings, Turnbuckles, Eye Bolts, Lifting Lugs, Safety Hoist Rings, etc. 1.00

\*Critical lift rope slings of synthetic material shall not be used beyond 50 percent of the manufacturer’s rating to maintain an equivalent design factor in the load system.

**NOTE:**

The ISS Common ORU Lifting Hardware has been deemed non-load test hardware as described in NASA Lifting Standard NASA-STD-8719.9 Paragraph 10.3.3, Non-Load Test Slings. Such slings do not require periodic load tests. Inspections shall be conducted in accordance with paragraph NASA-STD-8719.9 Paragraph 10.4. This non-load test designation shall be formally documented by each installation.

**SLING DESCRIPTION**

**General:**

This hardware is uniquely designed lifting slings/fixtures used to process ISS ORU’s-Payloads during ground processing.

**Design Standards:**

The hardware meets the design requirements of the NASA Standard for Lifting Devices and Equipment, NASA-STD-8719.9.

**SLING DESCRIPTION****Design Factors:**

This hardware is designed in accordance with industry standards and the NASA Lifting Standard. Design factors for such hardware typically are 3:1 yield and 5:1 ultimate.

**Material/Construction Properties:**

Hardware is steel, aluminum, and wire rope construction. The hardware was assembled using industry standards.

**SLING USAGE****Operational History:**

The hardware has been used to support ground processing during the assembly of ISS, for approximately 15 years.

**Maintenance History:**

There is a preventive maintenance program for this hardware and there are no unresolved maintenance issues.

**Test History:**

The hardware was initially proof loaded, after fabrication. Hardware will be proof loaded again if there are any design/configuration changes.

**Sling Rated Load versus Actual Load:**

This hardware is rated to lift the applicable safe working load, with design factors in accordance with the NASA Lifting Standard. Working loads are typically well below the initial proofload.

**Storage Provisions:**

This hardware is stored in a clean and humidity controlled environment.

**Planned Future Use:**

This hardware is being stored to support possible future use for the Space Station program.

**RATIONALE FOR NON-PERFORMANCE**

**NOTE:** If any of this rationale changes after approval, it is the responsibility of the requesting organization to contact the LDEM, re-submit a non-load-test request form and/or request removal of the sling from the non-load test sling list. Additionally any item on the non-load test sling list is subject to periodic review by the LDEM.

The hardware will be inspected prior to each use in accordance with paragraph NASA-STD-8719.9 Paragraph 10.4. There is a preventive maintenance program and storage provisions are good. The storage provisions treats these items as unique flight critical lifting hardware.

Describe the risks, if any, of not performing the load test and how they will be mitigated:

The risk of not performing the load test is unexpected failure of the hardware. The risk mitigations are:

- The before use inspection
- Storage in a clean and humidity controlled environment
- The initial proof load test conducted well above working load
- Good margin on design factors
- Future identified issues will be documented as non conformances and resolved prior to use

**ADDITIONAL INFORMATION**

Common ORU Lifting Hardware consists of:

| Part Number        | Nomenclature   |
|--------------------|--|
| TD-1F80519-1SF2-1  | Support, Install – SASA                                  |
| TD-1F80519-1SF2-7  | Spreader Bar, Support, Install – SASA                    |
| TD-1F80519-1SF2-9  | Lifting Sling - SASA                                     |
| TD-1F80519-1SF2-11 | Bracket, Clamp-SASA Sling Assembly                       |
| TD-1F96000-1       | Acoustic Test Fixture N2, NH3, PMA Pallet Assy           |
| TD-1F96100-1       | Lift Fixture Pump Module                                 |
| T-5850032          | Battery ORU H-Frame                                      |
| T-5850070          | Battery Charge/Discharge Unit H-Frame                    |
| T-5850070          | DC Switch Unit H-Frame                                   |
| T-5850070          | Pump Flow and Control Subassembly H-Frame                |
| T-5850071          | DC to DC Converter Unit H-Frame                          |
| T-5850135          | ORU Box & Fin Protection Fixture H-Frame                 |
| T-5850136          | DC to DC Converter Unit & Fin Protection Fixture H-Frame |
| T-8310013          | Platform ORU H-Frame                                     |
| 1F51678            | KU Antenna Lift Sling                                    |
| 1J00630            | Common Lift Beam   |
| 5839153-501-11H-01 | UTA Sling Assembly                                       |
| 5849595            | FHRC Lifting Fixture                                     |
| 82K07407           | PMN GH5-01006 HUB Brackets                               |
| 82K06744-2         | S – Band Antenna Support Assembly Lifting Sling          |
| 82K06744-4         | S – Band Antenna Strut Assembly                          |
| 82K06757-1         | UHF Antenna Lifting Sling Assy                           |
| 82K06878           | Hoisting Frame Assembly, Resupply Stowage Platform       |
| 82K07145           | FRAM ORU Lift Sling Assembly                             |
| 82K07346-1         | Large ORU Lifting Sling                                  |
| 82K07347-1         | LON ORU Bracketry  |
| 82K07347-2         | LON ORU Bracketry  |
| 82K07347-3         | LON ORU Bracketry  |
| 1C86205            | Container, Pump Module Assembly                          |
| TD-1F27318-1SF2    | Special Fixture Pump Module                              |
| TD-1F27318-1-SF3   | NTA Special Lifting Fixture                              |