Non-Load-Test Sling Request Form

REVISON LOG

REV	DESCRIPTION	DATE
Basic	Cargo Element Lifting assembly (CELA)	16 July 2013

APPROVALS

TITLE	NAME	ORG	SIGNATURE	DATE
Lifting and Handling	Pete Reutt	TOSC-4110	Peter J Reutt TO 43	7-17-2013
System Safety	Joe Degano	TOSC-8100	Joseph E Degano VOLO	7/18/13 SPC SAFETY 153
NASA Mechanical	Elaine Voll	GP-06	Elaine P. Voll GP-06	7/17/13
NASA Safety	James T. Minnear	SA-B1		7/18/13
LSC LDEM	Malcolm Glenn	SA-G2	Malcolm Glenn	7/18/13

SLING INFORMATION

SLING NAME: Cargo Element Lifting Assembly (CELA)	
PMN:GH5-00547	S/N: N/A
OTHER IDENTIFIER (e.g. DWG #): 82K03175 & 82K03181	
DATE OF REQUEST: 11 July 2013	REQUESTING ORG: TOSC 4100

DESCRIPTION OF THE PERIODIC LOAD TEST THAT WILL NOT BE PERFORMED

The annual periodic load test of the Cargo Element Lift Assembly (CELA) (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 CELA has been deemed a non-load test sling 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 and the CELA marked accordingly to designate it as a non-load test sling.

SLING DESCRIPTION

General:

The CELA is a structural sling designed to handle all types of Space Transportation System (STS) and Space Station payloads with standard trunnions. The CELA is used during payload installation/removal operations to and from payload work stands, Multi-Mission Support Equipment (MMSE) canister or other payload containers. The CELA is designed to handle a single payload that has a maximum envelope of 15 feet in diameter, a maximum trunnion spacing of 20 feet spacing and a safe working load of 36,500 pounds. The CELA has a single crane lift point. It has a remotely operated, electric motor driven, moveable counterweight system to maintain a level plane during lifting.

SLING DESCRIPTION

Design Standards:
The CELA meets the design requirements of the NASA Standard for Lifting Devices and Equipment, NASA-STD-8719.9

Design Factors:
The CELA is designed such that the entire fixture has a minimum factor of safety of 5 against ultimate and 3 against yield.

Material/Construction Properties:
The CELA is primarily carbon and stainless steel construction and includes some commercially available components.

SLING USAGE

Operational History:
The CELA was used multiple times throughout the course of the space shuttle program for processing space station assembly components. The CELA was constructed in 1993.

Maintenance History:
There is a preventive maintenance program for the CELA. The CELA is inspected prior to each use. The sling is in good condition.

Test History:
The CELA was proofloaded by the manufacturer after fabrication to 73,000 lbs (2x Safe Working Load).

Sling Rated Load versus Actual Load:
The sling is rated to lift 36,500 lbs with design factors of 3 to yield and 5 to ultimate.

Storage Provisions:
The CELA is stored in the Space Station Processing Facility (SSPF) High Bay when not in use. This is a clean, dry, air conditioned area inside a facility.

SLING USAGE

Planned Future Use:
The CELA is being stored to support future use in lifting the Multipurpose Payload Logistics Modules (MPLMs). It could also be employed for lifting the shuttle External Airlocks (EALs) and Tunnel Adapter Truss Assembly (TATA).

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 CELA will be inspected prior to each use in accordance with paragraph **NASA-STD-8719.9 Paragraph** 10.4. **There is a preventive maintenance program. The CELA is stored in a clean, dry, air conditioned facility.**

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 sling. The risk mitigations are the before use inspection, preventive maintenance program and storage provisions.

ADDITIONAL INFORMATION

Drawing of CELA (82K03175/82K03181):