



PRESENTATION TO THE GODDARD SAFETY COUNCIL

**IMPLEMENTATION OF
NASA-STD-8719.9
STANDARD FOR LIFTING DEVICES
AND EQUIPMENT**

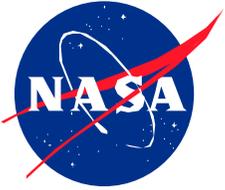
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8/20/2003**



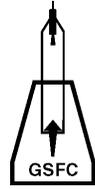
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PURPOSE OF PRESENTATION



- **Inform the GSC of RECERT's assessment of additional requirements mandated by NASA-STD-8719.9, Standard for Lifting Devices and Equipment, and**
- **Obtain GSC concurrence on RECERT's plan for implementation prior to FY04 RECERT budget request.**



BACKGROUND



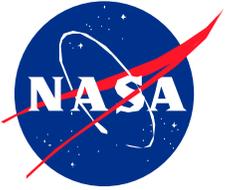
- **NASA-STD-8719.9 was released on May 9, 2002.**
- **The Standard is a revision to, and supercedes, NSS/GO 1740.9B.**
- **Revisions to existing requirements related to lifting devices and equipment (LDE) have no significant impact on GSFC (Greenbelt and WFF) RECERT operations, but may impact some user operations. Such impacts are not addressed in this presentation.**
- **Significant additions to the revised document that impact GSFC are contained in three new chapters on Mobile Aerial Platforms (MAP's), Powered Industrial Trucks (PIT's), and Critical Jacks used to lift flight hardware.**



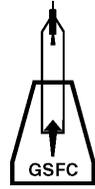
BACKGROUND (Cont'd)



- **The new chapters reflect a NASA “Safety-First” philosophy to protect personnel and valuable flight hardware by imposing requirements for test, inspection, certification, and recertification of MAP’s, PIT’s, and critical Jacks, and for operator training and certification that are in addition to those mandated by OSHA, 29CFR1910.**
- **The additional requirements parallel those already in place for LDE.**
- **New requirement in paragraph 1.9 requires that personnel who inspect equipment be certified as nondestructive testing (NDT) inspectors per American Society for Nondestructive Testing (ASNT) *SNT-TC-1A*.**
 - **Note: Operators who perform Daily Operator Inspections are excluded from this requirement.**



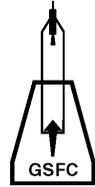
BACKGROUND (Cont'd)



- **In presentations (7/12/01 and 10/3/01) to the Director of OSSMA and former Ass't Director for Safety and Security on the Standard's additional requirements, RECERT committed to:**
 - **Survey the Center to determine the inventory and status of the MAP's, PIT's, and critical Jacks; and**
 - **Develop and present to the GSC (formerly SMC) an implementation plan with cost estimates.**



RECAP OF ADDED REQUIREMENTS



➤ DEFINITIONS - NASA-STD-8719.9

- **Noncritical Lift** - “A lift involving routine lifting operations governed by standard industry rules and practices except as supplemented with unique NASA testing, operations, maintenance, inspection, and personnel licensing requirements contained in this standard.”
- **Critical Lift** - “A lift where failure/loss of control could result in loss of life, loss of or damage to flight hardware, or a lift involving special, high dollar items, such as spacecraft, one-of-a-kind article, or major facility components, whose loss would have serious programmatic or institutional impact. Critical lifts also include the lifting of personnel with a crane, lifts where personnel are required to work under a suspended load, and operations with special personnel and equipment safety concerns beyond normal lifting hazards.”



RECAP OF ADDED REQUIREMENTS (Con't)

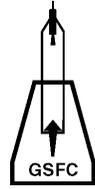


➤ **Mobile Aerial Platforms (MAPs)**

- **Scope described in ANSI/SIA A92.2, A92.3, A92.5, A92.6.**
- **Graphical descriptions follow.**
- **Require tests, inspections, certification & operator training and certification.**
- **Require Safety Hazard Analysis (SHA) if used for critical operations.**
- **Requirements parallel to those for LDE.**

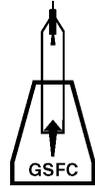


RECAP OF ADDED REQUIREMENTS (Con't) - MAPs





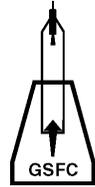
RECAP OF ADDED REQUIREMENTS (Con't)



- **Powered Industrial Trucks (PITs)**
 - **Scope described in ANSI/ASME B56.1.**
 - **Graphical descriptions follow.**
 - **Require tests, inspections, certification & operator training and certification.**
 - **Require SHA if used for critical operations.**
 - **Requirements parallel to those for LDE.**



RECAP OF ADDED REQUIREMENTS (Con't) - PITs





RECAP OF ADDED REQUIREMENTS (Con't)

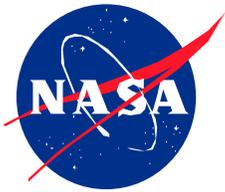


- **Jacks (Only those used for critical operations with Flight Hardware)**
 - **Scope described in ANSI/ASME B30.1.**
 - **Graphical descriptions follow.**
 - **Requires tests, inspections, certification & operator training and designation.**
 - **Requires SHA.**
 - **Requirements similar to those for LDE, but not as stringent.**

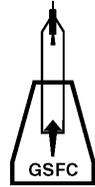


RECAP OF ADDED REQUIREMENTS (Con't) – Critical Jacks





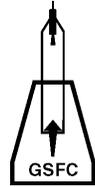
SUMMARY OF COMPLIANCE REQUIREMENTS



	EQUIPMENT T&I					OPERATOR CERTIFICATION
	INSPECT BEFORE DAILY USE BY OPERATOR	QUARTERLY INSPECTION	IN-DEPTH ANNUAL INSPECTION INCLUDING LOAD TEST	ANNUAL INSPECTION PROCEDURE WITH WRITTEN REPORT	SAFETY HAZARD ANALYSIS (CRITICAL ONLY)	TRAINING - WRITTEN EXAM - HANDS-ON EXAM PHYSICAL EXAM LICENSING
MAP	Yes	Yes	Yes	Yes	Yes	Yes
PIT	Yes	-	Yes	Yes	Yes	Yes
Critical Jacks	Yes	-	Yes	Yes	Yes	No – “Instructed in the proper use...”



RESULTS OF CENTER SURVEY



Org	MAP's				PIT's				Critical Jacks		Total GB/WFF
	Critical		Noncritical		Critical		Noncritical		GB	WFF	
	GB	WFF	GB	WFF	GB	WFF	GB	WFF			
200	-	-	7	12	12	-	9	17	-	-	28/29
400	-	-	Note 1	Note 1	-	-	Note 1	Note 1	-	-	Note 1
500	14	-	1	2	16	-	-	5	-	-	31/7
600	-	-	1	-	-	-	1	-	-	-	2/0
800	-	-	-	12	-	-	-	19	-	7	0/38
NSBF	-	-	-	Note 2	-	-	-	Note 2	-	-	Note 2
PFRR	-	-	-	Note 3	-	-	-	Note 3	-	-	Note 3
900	-	-	2	-	-	-	1	-	-	-	3/0
Total	14	0	11	26	28	0	11	41	0	7	64/74 (138)

- Notes:
1. Certifications of 1 PIT at Greenbelt and 3 MAP's and 6 PIT's at WFF to be funded and performed by CSOC per e-mail from JSC LDEM.
 2. Certification of 2 MAP's and 5 PIT's at NSBF to be funded by Balloon Project and performed by RECERT on an annual basis.
 3. Certification of 7 MAP's and 6 PIT's at PFRR to be funded by the Sounding Rockets Project and performed by RECERT on an annual basis.



RESULTS OF CENTER SURVEY (Con't)

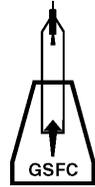


	MAP's				PIT's				Critical Jacks	
	OSHA/ANSI/SIA				OSHA/ASME				OSHA/ASME	
	Equipment T&I		Operator Training		Equipment T&I		Operator Training		Equipment T&I	
	GB	WFF	GB	WFF	GB	WFF	GB	WFF	GB	WFF
200	Partial	No	Partial	Yes	Partial	No	Partial	Yes	-	-
400	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	-	-
500	Yes	Partial	Yes	Yes	Yes	Partial	Yes	Yes	-	-
600	No	-	No	-	No	-	No	-	-	-
800	-	No	-	Yes	-	No	-	Yes	-	Yes
NSBF	-	Yes	-	No	-	Yes	-	Yes	-	-
PFRR	-	Yes	-	No	-	No	-	No	-	-
900	No	-	No	-	No	-	No	-	-	-

1. Tests & Inspections (T&I) and Operator Training and Certification at Greenbelt & WFF to be funded and performed by CSOC per e-mail from JSC LDEM.



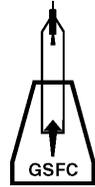
CURRENT STATUS OF EQUIPMENT T&I



- **Not all owner organizations perform equipment inspections.**
- **Equipment inspections that do occur are not consistent at the Center level.**
- **None of the current T&I meets NASA-STD-8719.9 requirements.**
- **Need to formalize test and inspection program to meet NASA-STD-8719.9 requirements.**



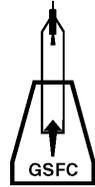
CURRENT STATUS OF OPERATOR TRAINING



- Training for Code 500 MAP & PIT operators at Greenbelt is performed by Code 549 Support Contractor. Training is made available to other Greenbelt Organizations.
- At WFF, training for MAP operators is available Base-wide, and is performed by WICC Subcontractor on a space-available basis.
- At WFF, training for PIT operators is available Base-wide, and is performed by Code 228.
- Critical Jacks used for aircraft maintenance and repair at WFF are inspected by the operator. Operator training meets requirements.
- In summary,
 - Operator training is a mixed bag, i.e., no consistency at the Center level.
 - Need to formalize training requirements and syllabus.



PROPOSED IMPLEMENTATION PLAN



- **RECERT actions for equipment T&I and Certification:**
 - **Expand RECERT Program scope to include MAP, PIT & critical Jack (re)certification.**
 - ✓ Maintenance and repairs remain owners' responsibility.
 - ✓ Maintenance budget impact to one Division.
 - **Provide template, guidance, and oversight to owners in developing SHA's for critical equipment.**
 - **Develop Daily Operator inspection procedures.**
 - **Develop Certification and Recertification T&I procedures.**
 - **Perform T&I of non-critical equipment and issue certification.**
 - **Perform T&I of critical equipment and, upon receipt of approved SHA or approved Safety Variance, issue certification.**
 - **Establish equipment CM/recall system.**
 - **Nonconforming equipment will be subject to an NCR.**



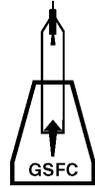
PROPOSED IMPLEMENTATION PLAN (Con't)



- **RECERT actions for operator training & (re)certification:**
 - **Expand RECERT Program to include operator certification.**
 - ✓ Operator training programs continued to be provided by the current organizations.
 - ✓ Cost of training to be borne by owner organizations.
 - **Work with Medical Director to establish physical examination requirements.**
 - **Provide oversight to organizations currently conducting training programs to assure uniformity and compliance.**
 - **Issue Operator Licenses when all certification requirements are met and verified.**
 - **Establish database system for Certified MAP and PIT Operators.**
 - **Provide periodic audit of training programs.**



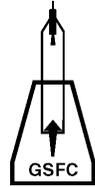
PROPOSED IMPLEMENTATION PLAN (Con't)



- **FY04 RECERT Cost Estimate for Added Scope (\$315K):**
 - **No Net Increase for Greenbelt:**
 - ✓ Engineering Increase: SHA review, T&I Procedure development, CM Planning and Scheduling (\$75K)
 - ✓ Engineering Savings: Program Scope realignment (\$70K)
 - ✓ Technician Increase: T&I (\$27K)
 - ✓ Technician Savings: Program Scope realignment (\$32K)
 - ✓ Administrative Increase of \$~2.5K can be absorbed
 - **Net Increase for WFF (\$315K):**
 - ✓ Engineering Increase: SHA review, T&I Procedure development, CM Planning and Scheduling = ~1 FTE (\$150K)
 - ✓ Technician Increase: T&I = ~ 1 FTE (\$90K)
 - ✓ Administrative Increase of \$~2.5K can be absorbed
 - ✓ Estimated one-time test equipment & inspector training cost = \$~75K



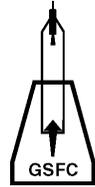
PROPOSED IMPLEMENTATION PLAN (Con't)



- **Implementation of the Proposed Plan will commence as soon as FY04 RECERT Program budget request is approved and available.**



SUMMARY OF PROPOSED RESPONSIBILITIES

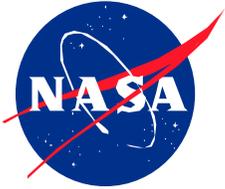


➤ **RECERT:**

1. Review SHA's.
2. Perform T&I.
3. Certify and Recertify equipment.
4. Certify and Recertify equipment operators (MAP's & PIT's only).

➤ **Owner:**

1. Develop SHA's for critical equipment prior to Certification.
2. Prepare & obtain approval of Safety Variances if required.
3. Perform maintenance & repairs per OEM recommendations.
4. Provide for operator training and physical examinations.



Summary of ROM Cost Impact to GSFC Due to MAP's, PIT's, Jacks



	<u>FY04 Estimated Cost</u>
RECERT Cost Impact	\$417,000
- SHA Review	\$109,100
- T&I Procedure Development	\$ 88,500
- Perform T&I	\$117,000
- Establish CM	\$ 22,500
- Admin Support	\$ 4,900
- Training & test Equipment	\$ 75,000
Owner Organization Cost Impact	\$287,500
- Develop SHA/FMEA	\$127,500
- Provide for Operator Training	\$ 60,000
- Provide for Physical Exam	\$100,000
TOTAL ROM COST IMPACT TO CENTER	\$704,500

Notes:

ROM SHA Development = \$2500 each x 51 units

ROM Operator Certification:

Training = \$300/candidate x 200 candidates

Physical Exam = \$500/candidate x 200 candidates