



Goddard Procedural Requirements (GPR)

DIRECTIVE NO.	<u>GPR 8719.1</u>	APPROVED BY Signature:	<u><i>Original Signed By</i></u>
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EXPIRATION DATE:	<u>November 23, 2009</u>	TITLE:	<u>Director</u>

COMPLIANCE IS MANDATORY

Responsible Office: 250/Safety and Environmental Division

Title: Certification and Recertification of Lifting Devices and Equipment

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LIST OF ACRONYMS

CLC	Critical Lift Coordinator
FMD	Facilities Management Division
GSC	Goddard Safety Council
GSFC	Goddard Space Flight Center
IMHE	Institutional Material Handling Equipment
LD	Lifting Devices
LDE	Lifting Devices and Equipment
LE	Lifting Equipment
MAP	Mobile Aerial Platform
MPJ	Mobile Aerial Platform, Powered Industrial Truck, and Critical Jack (see P10.g)
NDT	Nondestructive Testing
NRRS	NASA Records Retention Schedules
OEM	Original Equipment Manufacturer
OSHA	Occupational Safety and Health Administration
PIT	Powered Industrial Truck
RECERT	Goddard Recertification Program
WFF	Wallops Flight Facility

PREFACE

P1. PURPOSE

This directive establishes the requirements for the Goddard Recertification Program (RECERT) to provide Center organizations with inspection, certification, recertification, and consultation of lifting devices and equipment (LDE), mobile aerial platforms (MAP), powered industrial trucks (PIT), and critical jacks (collectively, MPJ). LDE Operator, Critical Lift Coordinator (CLC), and MPJ Operator

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training and certification requirements are also established. This Center program improves safety, and minimizes or prevents potential personnel injury or fatality, or damage to, or loss of, hardware and facilities.

This directive is not a substitute for applicable Occupational Safety and Health Administration (OSHA) requirements. OSHA requirements apply to all GSFC lifting operations.

P.2 APPLICABILITY

- a. This directive is applicable to all operations associated with LDE and MPJ at Greenbelt, Wallops Flight Facility (WFF), and other areas under GSFC cognizance unless specifically excluded by this directive or by the RECERT Manager.
- b. When invoked as a contractual requirement by the applicable project, this directive is applicable to critical lifts at off-site contractor installations supporting GSFC flight project work.
- c. When requested by the initiating organization, the responsible Contracting Officer and the RECERT Manager shall decide if non-NASA owned LDE and/or MPJ used in non-NASA operations poses a risk to NASA personnel, facilities, or equipment and if so, shall apply this directive to any contractor or tenant.
- d. Tenants and their contract personnel operating in facilities exclusively used for non-NASA operations and controlled by the tenant under a Center-level agreement are excluded from this directive.
- e. Contractor-owned and operated LDE and/or MPJ used on-site which are exclusively associated with facility repair, maintenance, modification, or construction activities are excluded from this directive.

P3. AUTHORITY

NASA-STD-8719.9, Standard for Lifting Devices and Equipment

P4. REFERENCES

- a. [NPR 8715.3](#), NASA Safety Manual
- b. American Society for Nondestructive Testing (ASNT) *Recommended Practice No. SNT-TC-1A*, Personnel Qualification and Certification in Nondestructive Testing

P5. CANCELLATION

GMI 1710.6B, Certification and Recertification of Lifting Devices and Equipment, and Critical Lift Requirements

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P6. SAFETY

None

P7. TRAINING

Training requirements are specified in Section 3.

P8. RECORDS

Record Title	Record Custodian	Retention
Test & Inspection Reports for: <ul style="list-style-type: none"> ▪ LDE ▪ MPJ 	RECERT Manager for Greenbelt, Deputy RECERT Manager at WFF	PERMANENT – pending approval of record schedule.
Operator Certifications: <ul style="list-style-type: none"> ▪ LDE ▪ CLC ▪ MAP ▪ PIT 	RECERT Manager for Greenbelt, Deputy RECERT Manager at WFF	*NRRS 3/33G Destroy 5 years after separation of employee or when no longer needed.
RECERT documentation	RECERT Manager	NRRS 3/33G

*NRRS – NASA Records Retention Schedules ([NPR 1441.1](#))

P9. METRICS

The RECERT Manager shall document the number of deficiencies, incidents, or mishaps related to LDE or MPJ.

P10. DEFINITIONS

Most of the terms used in this directive are defined in NASA-STD-8719.9. Those that are unique to this directive are listed below.

- a. Certification/Recertification – Written documentation that a set of requirements have been, and continues to be, met. As used in this GPR, certification and recertification is: 1) a process performed by the RECERT Manager that leads to the initial, or continuation of, certification that LDE or MPJ is safe to use within specific certification parameters, and includes, but is not limited to, LDE or MPJ compliance and documentation reviews, tests, inspections, nondestructive testing, and analyses; and 2) a license issued and renewed by the RECERT Manager for operation of LDE, MAP, or PIT (see P10.e, P10.g, P10.i as applicable).
- b. Critical Jack – For the purposes of this directive, the term “critical jack” refers to jacks meeting the design criteria and general design requirements contained within ASME B30.1, and used to lift or

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support flight hardware or where failure or loss of control could result in loss of or damage to flight hardware.

- c. Critical Lift Coordinator (CLC) – An individual who is assigned or demonstrates a need to direct critical lift activities due to specific project requirements and who has obtained the necessary training and is certified by the RECERT Manager.
- d. Division Office – For the purposes of this GPR, use of the term “Division Office” includes Project Offices and Program Offices.
- e. LDE Operator Certification - The documented status of LDE operators validating that they are trained and qualified in accordance with NASA-STD-8719.9 and certified by the RECERT Manager. For the purposes of the GSFC LDE RECERT Program, an individual certified as a LDE Operator is concurrently certified as a Rigger, and references to LDE Operators include Riggers.
- f. Lifting Devices and Equipment (LDE) (see Section 2.1) - Lifting devices (LD) are machines such as cranes, hoists, gantries, Hydra-sets, mobile cranes, etc., used for lifting, lowering, and moving loads. Lifting equipment (LE) includes slings, sling assemblies, strongbacks, shackles, load measuring devices, and hardware components used to attach the load to the lifting hook.
- g. MAP Operator Certification - The documented status of MAP operators validating that they are trained and qualified in accordance with NASA-STD-8719.9 and certified by the RECERT Manager.
- h. MPJ – For the purposes of this directive, the collective term “MPJ” refers to MAPs, PITs and Jacks as defined in NASA-STD-8719.9.
- i. PIT Operator Certification - The documented status of PIT operators validating that they are trained and qualified in accordance with NASA-STD-8719.9 and certified by the RECERT Manager.
- j. RECERT Documentation - Files that are maintained for LDE and MPJ that may include, but are not limited to, manufacturer’s/fabricator's documents, field test data, safety analyses, results of engineering analyses, repair history, facility descriptions, record of all safety variances, rerating, and correspondence.
- k. Rigger – An individual who selects and attaches lifting equipment to an item to be lifted. For the purposes of this directive, a Rigger is a certified LDE Operator.

PROCEDURES

In this document, a requirement is identified by “shall,” a good practice by “should,” permission by “may” or “can,” expectation by “will,” and descriptive material by “is.”

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1. Responsibilities

1.1 Applied Engineering and Technology Directorate shall

- a. Appoint an individual to the position of RECERT Manager, subject to approval by the Center Director.
- b. Appoint a Deputy RECERT Manager with responsibilities as described herein.

1.2 RECERT Manager shall

- a. Maintain overall responsibility for the management, implementation, and enforcement of the Center's LDE and MPJ Recertification Program;
- b. Provide technical direction to the Deputy RECERT Manager and the RECERT Support Contractor;
- c. Serve as the GSFC interface with NASA Headquarters and other NASA Centers on matters pertaining to LDE and MPJ;
- d. Serve as the GSFC representative on the NASA LDE Committee;
- e. Chair the Center LDE Committee;
- f. Attend meetings of the Goddard Safety Council (GSC);
- g. Serve as the Certifying Authority for the certification and recertification of LDE and MPJ to which this directive is applicable;
- h. Establish and maintain a system for periodic inspection of LDE and MPJ, including review of logbooks, identification of deficiencies, and completion of corrective actions;
- i. Ensure that certification and/or recertification tests and inspections are performed by personnel properly qualified and certified in accordance with applicable codes and standards;
- j. Provide expert advice on lifting device design, specification, and modification;
- k. Approve the rerating of lifting devices;
- l. Review and concur with safety variance requests prior to submittal to the GSC and Center Director for approval;
- m. Establish and maintain a RECERT configuration management system for LDE and MPJ;
- n. Preview, approve, and monitor the training courses for qualifying LDE, MAP, and PIT Operators, and define their training and retraining requirements;
- o. Certify and recertify LDE, MAP, and PIT Operators;
- p. Perform compliance spot checks of Operators, LDE, and MPJ to ensure that the requirements of this GPR are being followed;
- q. Provide Division Offices with an inventory of Division lifting devices and MPJ for review and update as required; and
- r. Coordinate with affected Center safety offices on issues of mutual interest.

1.3 Deputy RECERT Manager. The Deputy RECERT Manager shall serve as the RECERT Manager's alternate and represent the RECERT Manager at WFF for day-to-day operations.

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1.4 Division Offices shall

- a. Ensure documented compliance to this directive;
- b. Ensure that LDE and MPJ are certified prior to use;
- c. Provide resources for training and ensure that LDE, MAP, and PIT Operators are certified;
- d. Instruct critical jack operators on the proper use of jacks, including OEM instructions;
- e. Designate and authorize Critical Jack Operators;
- f. Ensure that LDE and MPJ for which the division is responsible is appropriately certified for critical or noncritical lifts, and provide the information to RECERT as required;
- g. Determine the appropriate lifting device usage category, i.e., Active, Standby, or Idle; and classification, i.e., Critical or Noncritical, based on current and projected operational requirements;
- h. Maintain a current inventory of Division LDE including slings, shackles, turnbuckles, D-rings, load measuring devices, and other lifting equipment;
- i. Control uncertified LDE and MPJ to preclude inadvertent use;
- j. Request that RECERT perform certification of new or transferred LDE or MPJ prior to their use;
- k. Notify the RECERT Manager immediately of all LDE and MPJ deficiencies and failures, and initiate the appropriate Incident/Mishap Report;
- l. Initiate repair for LDE and MPJ deficiencies found during test and inspections;
- m. Ensure that OEM-recommended maintenance is performed on LDE and MPJ;
- n. Submit requirements to the appropriate budget to bring Division LDE and MPJ into compliance with this directive;
- o. Review Division LDE and MPJ inventory as requested by the RECERT Manager;
- p. Maintain responsibility for day-to-day operations of LDE and MPJ under their cognizance;
- q. Perform spot compliance checks to verify daily inspections are being accomplished;
- r. Coordinate outages for load testing and inspections of inventoried lifting devices, MAP, and PIT with RECERT to minimize conflicts with ongoing operations; and
- s. Notify RECERT of any deficient LDE or MPJ that is removed from service.

1.5 Safety and Environmental Division shall

- a. Review RECERT operations for compliance with OSHA and NASA-STD-8719.9;
- b. Monitor the Institutional safety requirements of this directive; and
- c. Provide medical expertise via the Medical Director to establish LDE, MAP, and PIT operator physical examination criteria using applicable NASA and American National Standards Institute requirements.

1.6 Facilities Management Division (FMD). FMD shall notify the RECERT Manager of any planned LDE or MPJ acquisition, installation, upgrade, and/or removal as part of any facilities project. To ensure compliance and certifiability, all LDE designs and specifications shall be supplied to the RECERT Manager for review prior to contract implementation.

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1.7 Certified LDE Operators shall

- a. Ensure that the load is properly and safely rigged.
- b. Ensure certification status of LDE is current before commencing lifting operations;
- c. Perform LDE daily inspections and tests in accordance with RECERT procedures;
- d. Provide entry in the lifting device (including Hydra-set) log book for all inspections, tests, and operations; and
- e. Perform LDE lock out procedures if any deficiencies are observed and immediately enter the deficiencies into the log book and notify RECERT of such deficiencies.

1.8 Certified Critical Lift Coordinators

Certified CLCs may be responsible for directing and giving commands to the LDE Operator during a lifting operation if so designated in the Critical Lift Procedure. If the CLC is in charge of the lifting operation, he/she shall instruct all personnel involved in the proper preparation, rigging, lifting, and final positioning to be achieved in the pre-lift briefing. Coordination for directing the lifting operation shall be delineated in the Critical Lift Procedure and emphasized in the pre-lift briefing. A CLC shall not perform rigging activities or hands-on operation of lifting devices.

1.9 Certified MAP and PIT Operators and Authorized Critical Jack Operators shall

- a. Ensure certification status of equipment is current before commencing operations;
- b. Perform daily inspections and tests in accordance with RECERT procedures;
- c. Provide entry in the equipment log book for all inspections, tests, and operations; and
- d. Perform lock out procedures if any deficiencies are observed and immediately enter the deficiencies into the log book and notify RECERT of such deficiencies.

2. Equipment Requirements

2.1 Types and Traceability

2.1.1 Items Subject to RECERT. The following items are included in the RECERT Program and shall be subject to formal certification and recertification.

- Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist, and Jib Cranes)
- Mobile Cranes
- Base Mounted Drum Hoists
- Monorails and Underhung Cranes and Hoists
- Manually Operated Level Hoists
- Special Hoist-Supported Personnel Lifting Devices
- Hydra-sets
- Hooks
- Wire Rope Slings
- Alloy Steel Chain Slings
- Metal Mesh Slings
- Synthetic Slings
- Structural Slings
- Lifting assemblies

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- Shackles, Turnbuckles, Swivel Joints, Connecting Links, and other lifting hardware components
- Load Measuring Devices*
- Mobile Aerial Platforms
- Powered Industrial Trucks
- Critical Jacks

* Load Measuring Devices are certified and recertified by RECERT for structural integrity in the load path. Calibration of these devices shall be the owner's responsibility.

Institutional Material Handling Equipment (IMHE) not covered by the RECERT Program may be tested and inspected by RECERT if specifically requested in writing and funded by the owning Division Office.

2.1.2 Traceability to Original Equipment Manufacturer (OEM). All LE hardware components shall be traceable to a credible source of information, such as OSHA, OEM, etc., for certifiability. All LD, LE, and MPJ shall be used consistent with their intended purpose per OEM recommendations. The use of LD, LE, or MPJ that is contrary to OEM instructions or recommendations is not permitted.

LDE and MPJ shall be designed, fabricated, and certified in accordance with applicable codes, standards, and RECERT procedures.

2.2 Equipment Analyses and Certification

LDE and MPJ shall be certified before first use and recertified periodically after initial certification. LDE and MPJ shall be certified after compliance with NASA-STD-8719.9 and this directive is substantiated and validated by the RECERT Manager based upon documentation of design safety factor, load testing, and nondestructive testing reports.

A recognized Safety Analysis, such as Fault Tree Analysis, Failure Modes and Effects Analysis, or Operating and Support Hazard Analysis shall be performed by the owning organization on:

- a. Lifting devices used for critical lifts.
- b. MAPs used for lifts where failure/loss of control could result in loss of or damage to flight hardware.
- c. PITs used for lifts where failure/loss of control could result in loss of or damage to flight hardware.
- d. Jacks used for lifts where failure/loss of control could result in loss of or damage to flight hardware.
- e. Hydra-sets used for critical lifts.

The analysis shall, as a minimum, determine potential sources of danger, identify failure modes, and recommend resolutions and a system of risk acceptance for those conditions found in the hardware-facility-environment-human relationship that could cause loss of life, personal injury, and loss of or damage to the equipment, facility, or load. Safety Analyses shall be reviewed and approved by the RECERT Manager.

Altered critical lift assemblies shall be proof load tested, and certified as a system unless specifically exempted by a safety variance reviewed and approved in accordance with Section 4 of this directive. Alteration is defined as extension, modification, addition, or deletion of components to the original lift

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assembly. All components comprising a critical lifting assembly shall be uniquely identified and configuration controlled, and should not be interchanged for use elsewhere. Replacement by identical, individually certified components of equal or greater load rating is permissible without having to retest the entire assembly.

Copies of all LDE and MPJ test and inspection reports, including those for applicable off-site operations and Contractor installations, shall be forwarded to the RECERT Manager for annual equipment recertification and record keeping.

2.3 Operational Requirements

2.3.1 Criticality Determination. The Division Office shall determine the category of lifts, i.e., critical or noncritical, so that compliance requirements for lifting operations can be established by the RECERT Manager. Operations involving the lifting of personnel with a crane are defined as critical lifts.

2.3.2 LD Inspection Requirements. Inspection requirements are based on the usage categories of lifting devices. Inspections are “Daily”, “Frequent” or “Periodic,” and are defined in RECERT procedures.

2.3.2.1 Active Lifting Devices – devices that are available for unlimited daily use.

- The Certified Operator shall perform Daily Inspections and Limit Switch Tests in accordance with RECERT procedures prior to use.
- RECERT Frequent Inspections shall be performed at monthly intervals.
- RECERT Periodic Inspections for recertification shall be performed once a year. For critical cranes, a Rated Load Test shall be included as part of the annual Periodic Inspection. For noncritical cranes, the Rated Load Test shall be included as part of the Periodic Inspection every fourth year.

2.3.2.2 Standby Lifting Devices – Lifting Devices are locked out. Operation shall be allowed only after an inspection by RECERT. Reactivation will allow unlimited use for a 1-month period after which the LD will again be locked-out.

- Lifting Devices shall be tagged and locked out-of-service by RECERT.
- RECERT Frequent Inspections shall be performed at 6-month intervals.
- RECERT Periodic Inspections shall be performed once a year. For critical cranes, a Rated Load Test shall be included as part of the annual Periodic Inspection. For noncritical cranes, the Rated Load Test shall be included as part of the Periodic Inspection every fourth year.

2.3.2.3 Idle Lifting Devices: – Lifting Devices are locked out. There is no planned use of the lifting device for the next 12 months. However, if idle more than 6 months, the LD must be recertified prior to use.

- Lifting Devices shall be tagged and locked out-of-service by RECERT.

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- RECERT tests and inspections are not required during an idle period.
- RECERT shall perform required tests and inspections prior to returning the LD to service.

2.3.2.4 Lifting Equipment

- The Certified Operator shall perform Daily Inspections prior to use.
- Recertification inspections shall be performed once per year by RECERT
- Rated load tests for recertification for critical lifting equipment shall be performed annually (Hydrasets every 2 years); for noncritical lifting equipment, every 4 years.

2.3.3 Rerating

Owner organizations may request that RECERT rerate their lifting devices. Rerating of lifting devices and subsequent recertification shall be accomplished as follows:

- Engineering analyses shall be performed in accordance with OSHA requirements and those of the Crane Manufacturers Association of America to validate that the lifting device can be used at the new rerated load. Building structural support system(s) shall also be validated by FMD in terms of the new rerated load. Rerating resulting in higher equipment rated capacity shall require RECERT Manager approval prior to modification.
- Certify lifting device and retag/mark with rerated capacity.

2.3.4 Transfer of LDE and MPJ

- LDE, MPJ, and associated certification documentation transferred to GSFC shall be reviewed for certification by RECERT.
- Certification documentation shall accompany LDE and MPJ permanently transferred from GSFC to other locations.

2.3.5 Tagging

Certification tags shall indicate the Certification and NDT status of all LDE and MPJ. The tagging shall be done in accordance with a Work Instruction(s) describing the Tags for each application.

- One load test Recertification tag is applied to a lift assembly for (re)certification where the individual items are color-coded, tethered, or otherwise controlled as an assembly, and there are no plans to disassemble the assembly or rearrange the configuration. The assembly is load tested as a unit with each item NDT'd.
- Load test Recertification tags are applied to each component for an assembly that will be disassembled and where the individual items are not color-coded, tethered, or otherwise controlled as an

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assembly. The assembly may be load tested as a unit or each component load tested individually with each item NDT'd.

c. One load test Recertification tag per configuration is applied to a lift assembly for (re)certification where the configuration will be rearranged. The assembly is load tested in all applicable configurations with each item NDT'd. Note that there may be variations in the number of tags depending upon the similarities among the different configurations.

d. For loose, individual components, each component is NDT'd and load test Recertification tagged.

2.4 LDE and MPJ Testing

2.4.1 Load Testing

New or extensively modified lifting devices and MPJ shall be proof load tested in accordance with the applicable requirements. For periodic recertification, lifting devices shall be tested to 100% of their rated load. New or extensively modified lifting equipment shall be tested in accordance with Table 1 and inspected in accordance with Section 2.4.2.

Certified test weights or calibrated load cells/test equipment shall be used for all LDE and MPJ load-testing activities. Unless specifically noted otherwise, load-testing tolerances shall be +5%, -0% of the applied load.

2.4.2 Nondestructive Testing

a. All LE designated for Noncritical Lifts shall be subject to visual NDT subsequent to initial proof load test, and after each periodic load test.

b. All LE designated for Critical Lifts shall be subject to NDT in accordance with Table 1.

3. Personnel Qualification and Certification Requirements

3.1 Personnel Performing Nondestructive Testing (NDT)

Personnel performing LDE and MPJ NDT, including visual inspections, shall be qualified and certified by their employer in accordance with written practices meeting the requirements contained in American Society for Nondestructive Testing (ASNT) *Recommended Practice No. SNT-TC-1A*, Personnel Qualification and Certification in Nondestructive Testing. (Note: This does not apply to daily tests and inspections of LDE and MPJ performed by Certified Operators.)

3.2 LDE Operators

3.2.1 LDE Operator Certification Requirements

All LDE Operator candidates shall obtain formal training in lifting device operations and rigging as specified in NASA-STD-8719.9. Such formal training may be available through the GSFC RECERT

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Program and other recognized sources and includes classroom instructions, written examination, and hands-on proficiency demonstration. The RECERT Manager shall evaluate and determine the acceptability of the syllabus of all training courses for which Operator candidates claim credit. In addition, all LDE Operator candidates shall pass the physical examinations. The following training

course topics shall be included as a minimum:

- a. NASA-specific requirements
- b. GSFC-specific requirements
- c. Safe rigging procedures
- d. Safe crane operations
- e. Safety and emergency procedures
- f. General performance standards
- g. Pre-operational checks
- h. Safety-related defects and symptoms
- i. Specific hazards
- j. Special procedures associated with critical lifts
- k. Use of standard hand signals

Upon successful completion of the required training, the certification records are updated and an individual license, or in some instances a roster of Certified LDE Operators, is prepared. The licenses or the Operator roster shall be signed by the RECERT Manager and issued to the Operator, or, in the case of the Operator roster, to appropriate supervisory personnel.

3.2.2 Categories of LDE Operator Licenses. There are three categories of LDE Operator Permits and Licenses:

- a. **Apprentice Permit:** Apprentice permits are issued with a required minimum number of hours of noncritical lift operation and rigging to be attained under the direction of a licensed LDE Operator. Both the licensed operator and the candidate's supervisor shall attest to the attainment of these hours. The candidate must complete the required hours of operation within 12 months from Apprentice Permit issuance to prevent expiration of the Apprentice Permit. Upon completion of the required hours and attendance at a Noncritical Lift Operator refresher class, the apprentice will be certified as a Noncritical Lift Operator.
- b. **Noncritical Lift Operator License:** This license authorizes the Operator to operate LDE and rigging for noncritical lifts only, excluding Hydra-sets.
- c. **Critical Lift Operator License:** This license authorizes the operator to operate LDE and rigging for noncritical and critical lifts, including Hydra-sets. The prerequisite for obtaining a Critical Lift Operator License is that the candidate possesses a Noncritical Lift Operator License. Exceptions to the prerequisite may be reviewed and granted by the RECERT Manager on a case-by-case basis.

The operation of remote radio-controlled LD requires specific training and authorization. Specific radio-controlled LD operator training is only provided to licensed LDE Operators. Rosters listing

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trained and authorized radio-controlled LDE Operators are posted at the applicable LD. Annual radio control refresher training is required.

3.2.3 LDE Operator Recertification

All Certified LDE Operators shall be recertified on an annual basis by providing evidence of completion of refresher training, including written examination and hands-on training, and evidence of continuing satisfactory physical examination. A new license will be issued to the Operator, or, in the case of the Operator roster update, to appropriate supervisory personnel.

3.3 MAP, PIT and Critical Jack Operator Certification Requirements

3.3.1 MAP Operator Certification Requirements. All MAP Operator candidates shall obtain formal training in mobile aerial platform operations as specified in NASA-STD-8719.9. The RECERT Manager shall evaluate and determine the acceptability of the syllabus of all training courses for which Operator candidates claim credit. In addition, all MAP Operator candidates shall pass the physical examinations.

3.3.2 PIT Operator Certification Requirements. All PIT Operator candidates shall obtain formal training in powered industrial truck operations as specified in NASA-STD-8719.9. The RECERT Manager shall evaluate and determine the acceptability of the syllabus of all training courses for which Operator candidates claim credit. In addition, all PIT Operator candidates shall pass the physical examinations.

3.3.3 Licensing. Upon successful completion of the required training, the certification records are updated and an individual license, or in some instances a roster of Certified MAP or PIT Operators is prepared. The licenses or the Operator roster shall be signed by the RECERT Manager and issued to the Operator, or, in the case of the Operator roster, to appropriate supervisory personnel.

3.3.4 Critical Jack Operators. Operators of Critical Jacks shall be instructed in their proper use by their supervisor. Critical Jack Operators shall be designated and authorized to operate by their supervisor.

3.3.5 MAP and PIT Operator Recertification

3.3.5.1 All Certified MAP Operators shall be recertified every four (4) years by providing evidence of completion of refresher training, including written examination and hands-on training, and evidence of continuing satisfactory physical examination. A new license will be issued to the Operator, or, in the case of the Operator roster update, to appropriate supervisory personnel.

3.3.5.2 All Certified PIT Operators shall be recertified every three (3) years by providing evidence of completion of refresher training, including written examination and hands-on training, and evidence of continuing satisfactory physical examination. A new license will be issued to the Operator, or, in the case of the Operator roster update, to appropriate supervisory personnel.

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3.4 Critical Lift Coordinators

3.4.1 CLC Certification Requirements

All CLC candidates shall attend a classroom training session equivalent to the training for critical lift crane operators (reference Section 3.2.1). All CLC candidates shall pass a written examination equivalent to that for critical lift operator certification but are excluded from hands-on proficiency demonstration. Upon successful completion of CLC training and examination requirements, the RECERT Manager shall certify CLCs by issuance to the CLC of a signed license or a signed roster of certified CLCs.

3.4.2 CLC Recertification

Recertification shall be granted upon successful completion of refresher training and applicable examinations on an annual basis.

3.5 Reciprocity with Other NASA Licensing Authorities. At the RECERT Manager's discretion, a temporary LDE, MAP, or PIT Operator License may be issued to personnel on temporary assignment to GSFC provided that the candidate:

- a. Possesses a valid LDE, MAP, or PIT operator license or equivalent issued by another NASA Center in compliance with requirements contained in NASA-STD-8719.9; and
- b. The candidate's license or equivalent remains valid and in force for the duration of the candidate's assignment at GSFC.

Temporary LDE, MAP, or PIT Operator Licenses will be valid for the duration of the candidate's assignment at GSFC, but shall not exceed 90 days. Thereafter, a GSFC LDE, MAP, or PIT Operator License will be required.

3.6 License Suspension or Revocation

The RECERT Manager may suspend or revoke LDE Operator Licenses, CLC Licenses, MAP Operator Licenses, or PIT Operator Licenses for any of the following reasons:

- (1) Proof of negligence or abuse of Government equipment as determined by an appointed panel of inquiry or Mishap Investigation Board.
- (2) Violations of, or noncompliance with, any of the safety requirements in the documented procedures.
- (3) Failure to meet RECERT-required physical examination requirements.

4. Processing of Safety Variances

- a. Safety variances to the requirements of this directive shall be prepared and approved as outlined in NPR 8715.3 prior to operation.

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b. If a mandatory requirement of this directive cannot be met, a detailed safety variance request package shall be prepared by the requesting organization in accordance with NPR 8715.3. The safety variance request package shall be reviewed and the risk accepted by the initiating Division Office and forwarded to the RECERT Manager for review and concurrence.

c. The RECERT Manager will submit the safety variance request package to the GSC Chair, who will forward the safety variance request for risk acceptance and approval by the Center Director. Safety variance requests approved by the Center Director shall be forwarded to NASA HQ/QS within 14 days.

5. LDE Committee

A Center LDE Committee shall be established by the RECERT Manager via the GSC to ensure LDE and MPJ-governing standards are understood and applied across all organizational elements at GSFC. In addition, the LDE Committee shall resolve LDE and MPJ-related issues and provide a forum to exchange information.

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TABLE 1
Nondestructive Testing and Load Testing Requirements for
Lifting Equipment Certification and Recertification

EQUIPMENT	PROOF LOAD TEST FACTOR	PERIODIC LOAD TEST FACTOR	POST- PROOF NDT⁴	POST- PERIODIC NDT⁴
Alloy Steel Chain Slings	2.0	1.0	Visual	Visual
Wire Rope Slings	2.0	1.0	Visual	Visual
Metal Mesh Slings	2.0	1.0	Visual	Visual
Synthetic Rope Slings	2.0	1.0 ²	Visual	Visual
Synthetic Web Slings	2.0	1.0	Visual	Visual
Linear Fiber Slings	2.0	1.0	Visual	Visual
Structural Slings	2.0 ¹	1.0	Critical Welds: Surface Noncritical Welds: Visual	Critical Welds: Surface Noncritical Welds: Visual
Shackles, D-rings, Turnbuckles, Lifting Lugs, Safety Hoist Rings, etc. ^{3,5,6}	2.0 ³	1.0	Single and Non-Single Failure Load Path: Surface	Single and Non- Single Failure Load Path: Surface

1. Unless otherwise specified by design, due to material characteristics, geometry, safety factors, etc., but in any case, at least 125 percent of the sling's rated capacity.
2. Critical lift rope slings of synthetic material shall not be used beyond 50% of the manufacturer's rating to maintain an equivalent safety factor in the load system.
3. Lifting lugs, including eyebolts, which are permanently affixed to the load are considered to be part of the load and are exempt from load testing and NDT, but must be qualified by calculation by the owning organization.
4. "POST-PROOF" = After the initial, first-time proof load test of new or extensively modified items. "POST-PERIODIC" = After the annual rated load test of the item.
5. Certain restrictions on the use of turnbuckles may apply. Contact the RECERT Manager for guidance.
6. With the exception of thimbles and tapered end fittings, metallic fittings that are integral to slings are included. Thimbles and tapered end fitting are subject to visual NDT only.

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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	11/23/04	Initial Release
Baseline	10/27/05	Administratively changed to reflect responsible office change from Code 540, Mechanical Systems Division, to Code 250, Safety and Environmental Division.

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