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PREFACE

P.1 PURPOSE

a. This Langley Procedural Requirement (LPR) sets forth qualification and training requirements for certification of personnel to handle engineering models, ground support equipment, space flight test and research articles, test and qualifications articles, facility equipment hardware, chemicals, radiation, lasers, explosives and other hazardous materials. It specifies the certification processes to be followed to obtain the worker certification and recertification.

b. Personnel who perform or control hazardous operations or use or transport hazardous material must be trained and certified as having the necessary knowledge, skill, judgment, and physical ability (if specified in the job classification) to do the job safely as per NASA Procedural Requirement (NPR) 8715.3B and NPR 1800.1.

c.

P.2 APPLICABILITY

a. These requirements apply to all permanently badged persons performing work at LaRC, including civil servants, on-site contractors, research associates, students and others.

b. Temporary badged contractors are required to meet all appropriate state and OSHA requirements.

c. Noncompliance with the requirements of this LPR may result in appropriate disciplinary action against civil service employees or sanctions against contractors in accordance with the terms of their contracts.

d. Throughout the rest of this document, the term “contractor employees” refers to all permanently badged contractor employees working at LaRC.

P.3 AUTHORITY

a. 10 CFR Part 20, "Occupational Radiation Protection."

b. 29 CFR Part 1910, "Occupational Safety and Health Standards."


d. 49 CFR 171, “General Information, Regulations, and Definitions”


f. NPR 1800.1, "NASA Occupational Health Program Procedures."

P.4 APPLICABLE DOCUMENTS

Verify the correct version before use by checking the LMS Website.
a. LPR 1710.4, "Personnel Protective Clothing and Equipment."
b. LRP 1710.5, "Ionizing Radiation."
c. LPR 1710.7, "Use and Handling of Explosive and Explosives."
d. LPR 1710.8, "Non-ionizing Radiation."
e. LPR 1710.10, "Energy Control Program (LOTO)."
f. LPR 1710.12, "Potentially Hazardous Materials."
g. LPR 1710.17, "Respiratory Protection Program."
h. LPR 1710.50 “Certification and Recertification of Lifting Devices and Equipment, and Operators.”
i. LPR 1740.2, "Facility Safety Requirements."
j. NASA Langley Form 29, "Safety Permit Request."
k. NASA Langley Form 34 "Welders Concurrency Log Entry".
l. NASA Langley Form 38, "Safety Permit Request - Radioactive Material."
m. NASA Langley Form 48, "Safety Permit Request - Radiation Machine."
n. NASA Langley Form 49, "Safety Permit Request - Laser/Microwave."
o. NASA Langley Form 56, "Radioactive Material Transfer."
p. NASA Langley Form 60, "Confined Space Entry Permit."
q. NASA Langley Form 61, "Lifting Certification Card."
r. NASA Langley Form 62, "Chemical Worker's Certification Card."
s. NASA Langley Form 65, "Worker Certification Card."
t. NASA Langley Form 66, "Worker Appointment and Certification Form."
u. NASA Langley Form 185, "Certification of Operators to Perform Lifting Operations."
v. NASA Langley Form 318, “Explosives Safety Permit Request.”
w. NASA Langley Form 319, “Explosives Safety Permit.”
y. NASA Langley Form 402, "Civil Service Employee Shop Machine Lockout Appointment Form."
z. NASA Langley Form 403, “Craft Specific (CS) Authorization Card (Blue).”
bb. NASA Langley Form 451, "Non-Personal Service (NPS) Contract Employee Safety Operator Appointment Form.”
cc. NASA Langley Form 452, "Civil Service Employee Safety Operator Appointment Form."

dd. NASA Langley Form 453, "NASA Langley Safety Operators Permit.”
e. NASA Langley Form 471, “Welding Procedure Specification” (WPS) (restricted)
f. NASA Langley Form 472, “Welder Performance Qualification” (WPQ) (restricted)
g. NASA Langley Form 473, “Procedure Qualification Record” (PQR) (restricted)
h. NASA Langley Form 492, "Radiation Worker’s Certification Card."
ii. NASA Langley Form 498, “Safety Permit.”
jj. NASA Langley Form 519, "Safety Operator Field Verifier Appointment Form.”
kk. NASA Langley Form 520, "Non-personal Services Contract Employee Safety Operator Field Verifier Form.”
mm. NSS-1740.12, "Explosives Safety."
nn. ASME Boiler and Pressure Vessel Code Section IX
P.5 MEASUREMENT/VERIFICATION

None

P.6 CANCELLATION

LPR 1740.6 dated February 18, 2011
LPR 1740.7D dated January 18, 2012

/s/ Clayton Turner
Deputy Director

DISTRIBUTION:
Approved for public release via the Langley Management System; distribution is unlimited.
1. INTRODUCTION

1.1 PURPOSE

1.1.1 This document specifies the certification requirements for personnel who perform selected functions on LaRC, not defined under other procedural requirements which require unique occupational safety qualifications.

1.1.2 Specifically, it addresses responsibilities, qualifications, training standards, credentials, and medical surveillance issues surrounding those specific functions.

1.1.3 In addition, it specifies the certification processes to be followed to obtain the worker certifications and re-certifications.

1.1.4 These functions are performed by civil servants, contractors, research associates or others on LaRC.

1.2 SCOPE

1.2.1 This document defines the specific requirements of civil service and contract employees, as well as research associates and others who require certification. This document addresses the following:

1.2.1.1 Training requirements for certification,
1.2.1.2 Responsibilities and qualifications,
1.2.1.3 Documentation required to authorize certification,
1.2.1.4 Certification card requirements, and
1.2.1.5 Medical examination and surveillance requirements.

1.3 GENERAL

1.3.1 LaRC has established personnel safety certification standards to ensure that individuals performing specified functions are trained to:

1.3.1.1 Perform their work in accordance with applicable safety and health standards,
1.3.1.2 Ensure that required high-risk operations are conducted in a safe and healthful environment, and
1.3.1.3 Ensure that the highest standards of safety and performance are maintained while accomplishing the Center's mission.

1.4 RESPONSIBILITY

Verify the correct version before use by checking the LMS Website.
1.4.1 The personnel safety certification process shall be managed by the first-line supervisor where the function is being performed.

1.4.2 The first-line supervisor shall:

1.4.2.1 Ensure that personnel performing the functions are properly trained and certified.

1.4.2.1.1 Supervisor shall take possession of employee certification card(s) when notified by Head, SFAB or representative that employee failed to meet the recertification requirements.

1.4.2.1.2 Supervisor shall inform employee that he/she is not allowed to perform the job/task(s) related to the certification until it meet the recertification requirements.

1.4.2.2 Ensure that any task requiring a safety certification is defined by a work process, a Job Hazard Analysis (JHA) or other procedures (such as a safety permit, standard operating procedures, etc.).

1.4.2.3 For Civil Servants workers – complete and submit LF66 to the LaRC Occupational Health Clinic 2 weeks before appointment.

1.4.2.4 For Contractors workers – process a LF66 equivalent in accordance with your contract and company policies.

1.4.3 Facility Safety Heads can verify that personnel performing work within their facility are certified.

1.5 APPLICABILITY

These personnel safety certification guidelines and procedures shall apply to civil servants, contractors, research associates, and others (hereafter, contractors, research associates, and others will be referred to as contractors in this document) who perform these functions.

1.6 WAIVERS

Request for waivers to any of the requirements in this LPR shall be submitted to SFAB in writing and processed in accordance with LMS-CP-7151, “Obtaining Waivers for Langley Management System (LMS) Requirements.”

1.7 CERTIFICATION DOCUMENTATION
1.7.1 The official documents to be used in processing individuals for safety certification are outlined in each chapter of this LPR.

1.7.2 All contracts/agreements awarded by LaRC shall require that contractor employees also comply with the safety certification processes identified in this LPR.

1.7.3 The contracting company shall establish their safety certification process using forms that are equivalent to the forms identified in each chapter of this LPR.

1.8 MEDICAL SURVEILLANCE REQUIREMENTS

Some of the functions governed by the LaRC personnel safety certification process require medical surveillance. To expedite the process, the Center has established a series of LaRC Occupational Medicine Examination Protocols (OMEPs) for the positions, which require such surveillance. The medical examinations required for certification is outlined in LMS-OP-1800.1. Each chapter of this LPR will identify if a medical surveillance is required to obtain a certification.
2. FLIGHT CREW MEMBER CERTIFICATION

2.1 NASA REQUIREMENT NPR 8715.3

2.2 CERTIFICATION

2.2.1 The certification of flight crew members is defined in LPR 1710.16 "Aviation Operations and Safety Manual."

2.3 RESPONSIBILITY

2.3.1 The Chief of Research Flight Operations (CRFO) and the Research Services Director shall ensure that all flight crew members are appropriately trained and certified to perform their assigned flight duties. Pilot designations and qualifications will be documented and signed by the CRFO. Pilots will fly subject to the authority of the CRFO. LaRC pilots may be qualified LaRC civil service employees or qualified contractor employees hired in accordance with a contract providing piloting services.

2.3.2 It is the responsibility of the Chief Pilot to ensure that research pilots have appropriate experience, training, and expertise to perform satisfactorily in their project pilot roles (for both flight and simulation experiments). The Chief Pilot, with concurrence of the Chief of Research Flight Operations, may approve waivers to these requirements where appropriate and justified, for qualified military or civilian detailes from other government organizations.

2.4 MEDICAL SURVEILLANCE

2.4.1 Employees required Flight Crew Member Certification shall undergo a medical examination.

2.4.2 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

2.4.3 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

2.4.3.1 The contractor is responsible for implementing these examination requirements through a medical provider of their choosing.
3. **FIREFIGHTER AND RESCUE PERSONNEL CERTIFICATION**

3.1 **NASA REQUIREMENT NPR 8715.3**

3.2 **CERTIFICATION**

The Fire Fighters and Emergency Medical Technicians (EMT) are City of Hampton Employees. Under the agreement between NASA and the City of Hampton, the city is to provide certified Fire Fighters and EMT under the state and local regulations.

3.3 **RESPONSIBILITY**

3.3.1 The LaRC Fire Chief shall have the overall management responsibility for the fire protection program.

3.3.2 Under the process in LAPD 1050.2, the Center and the Fire Chief will maintain or enter into agreements with Hampton, Virginia and Langley Air Force Base emergency services and fire departments.

3.3.2.1 The objective of these agreement(s) is to provide fully staffed, trained and equipped fire response forces for fire suppression, aircraft emergencies, emergency medical services, pre-fire planning, inspection services, and specialized fire safety training.
4. CERTIFIED EXPLOSIVES WORKER

4.1 NASA REQUIREMENT NPR 8715.3

4.2 CERTIFICATION

4.2.1 A Certified Explosives Worker is a person who has the training, knowledge, and experience necessary to perform assigned explosives work in a competent and safe manner.

4.2.2 A Certified Explosives Worker is an individual who is responsible for conducting explosives activities at LaRC in accordance with all applicable policies and requirements. The appearance of a person’s name in the “Certified Explosives Workers” section of a signed LF 319; “Explosives Safety Permit (ESP)” indicates that their supervisor has reviewed and approved their training and qualifications as a Certified Explosives Worker for explosive work performed in accordance with the approved operating procedures for that permit.

4.2.3 Certified Explosives Workers shall have a basic knowledge of the state, federal, and local regulations and laws that apply to the transportation, storage, use, and disposal of explosive materials and devices.

4.2.4 Certified Explosives Workers and their supervisors shall have training on the requirements of NASA-STD-8719.12, Safety Standard for Explosives, Propellants, and Pyrotechnics and LPR 1710.7, Safety Program for the Handling and Use of Explosives at Langley Research Center.

4.2.5 Security and law enforcement personnel who use explosive materials and/or devices (including small arms ammunition) are not included in this designation.

4.2.5.1 These personnel will be trained and certified per the Agency and other Law enforcement requirements.

4.2.6 Personnel who are to work with explosives materials or devices shall be provided training and information regarding the standards, regulations, policies, and procedures that are applicable to the explosives operations they will be performing.

4.3 RESPONSIBILITY

4.3.1 First-line supervisor shall ensure that personnel within their organization who operate, manipulate, or who have any other type of physical control over the use of explosive equipment or material are trained and certified for that purpose.

4.3.2 FSH shall ensure that only personnel who possess a current LF 65, are operating, manipulating, or controlling explosive equipment within their facility.

4.4 QUALIFICATIONS
4.4.1 Certified Explosives Workers shall successfully complete the NASA Basic Explosives Safety training program and any other training that is specific to the work to be performed in accordance with the requirements in NASA STD-8719.12; “Safety Standard for Explosives, Propellants, and Pyrotechnics” and LPR 1710.7; “Safety Program for the Handling and Use of Explosives at Langley Research Center.” Equivalent training may be approved by the Explosives Safety Officer.

4.4.2 Newly trained Certified Explosives Workers shall receive hands-on experience under the direct supervision of a knowledgeable, experienced Certified Explosives Worker. Direct supervision shall continue until the new worker demonstrates the ability to work without supervision in the opinion of the Certified Explosives Worker and the Explosive Safety Officer.

4.4.3 All Certified Explosives Workers shall receive annual refresher training. The length of the training and the topics covered shall be relevant to the worker and based on the type(s) of explosives work performed and shall include any project-specific information.

4.4.4 Certified Explosives Workers shall be able to identify and understand the potential hazards involved in their assigned tasks.

4.4.5 Certified Explosives Workers shall demonstrate a basic knowledge and understanding of explosives transportation, storage, and handling, and use, the level of which is commensurate with their explosives-related duties.

4.4.6 Certified Explosive Workers who have not worked with explosives for one year shall be re-trained, including hands-on training, before being permitted to work without direct supervision of a current Certified Explosives Worker.

4.4.7 Personnel engaged in explosives work shall possess the knowledge, experience, skills, work practices, and attitude necessary to perform all work safely and effectively. Failure to demonstrate safe practices or display of a poor attitudes when working with explosives will result in removal from explosives work.

4.5 DOCUMENTATION

4.5.1 Supervisors of Civil servants shall complete and submit an LF 66 to the LaRC Occupational Health Clinic 2 weeks prior to the appointment date.

4.5.2 The appointment shall be documented on a LF 65, “Worker Certification Card.”

4.5.3 The certification is valid for 4 years from the date of issue.

4.6 MEDICAL QUALIFICATIONS
4.6.1 All explosives workers shall undergo and pass a medical examination

4.6.2 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

4.6.3 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

4.6.3.1 The contractor is responsible for implementing these examination requirements through a medical provider of their choosing.
5. RESPIRATOR USER

5.1 NASA REQUIREMENT LPR 1710.17

5.2 CERTIFICATION

5.2.1 The City of Hampton firefighters are authorized to wear self-contained breathing apparatus in accordance with the support agreement between City of Hampton and LaRC.

5.2.2 All personnel authorized to wear respiratory protection equipment, with the exception of voluntary use of disposable single use filtering face piece, shall be certified as Respirator User.

5.3 RESPONSIBILITY

5.3.1 Each first-line supervisor shall ensure that personnel within their organization who use respiratory protective equipment are trained and certified for that purpose.

5.3.2 SFAB shall provide to the user the basic respirator training or ensure that a similar training has been received by the user.

5.4 QUALIFICATIONS

Respirator users shall have qualitative or quantitative fit tests which shall be performed only by qualified individuals specifically trained and assigned responsibility for providing respirator fit tests in accordance with 29 CFR 1910.134.

5.5 DOCUMENTATION

5.5.1 Civil Servants shall apply to be Respirator User by completing and submitting an LF 66.

5.5.2 Contactors applying to be Respirator User shall complete and submit an appropriate comparable form provided by their company.

5.5.3 The contractor’s form shall provide information equivalent to that required by LF 66, and it shall contain an approval process.

5.5.4 Upon completion of fit testing and verification of employees’ medical certifications, each civil service employee shall be issued an LF 65 certification card by the SFAB designated IH. LF 65 shall identify the employee and the manufacturer(s),
model(s), size(s), of respirator and a card expiration date. Contractors shall be issued an equivalent certification by their company.

5.5.5 SFAB shall maintain a list of civil service employees who are authorized to use respirators on LaRC.

5.5.6 Contractor employees who are authorized to use respirators shall be listed on a contractor company authorization list.

5.6 MEDICAL SURVEILLANCE

5.6.1 Employees required to use respiratory protective equipment shall undergo a medical examination.

5.6.2 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

5.6.3 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

5.6.3.1 The contractor is responsible for implementing these examination requirements through a medical provider of their choosing.
6. SELF-CONTAINED UNDERWATER BREATHING APPARATUS
(SCUBA) USER (DIVER)

6.1 NASA REQUIREMENT NPR 8715.3

6.2 CERTIFICATION

6.2.1 There are currently no SCUBA activities at LaRC.

6.2.2 In the case that a SCUBA activity is required for a project, LaRC personnel shall follow JSC SCUBA guidelines and requirements.
7. QUALIFIED ELECTRICAL PERSON (600V AND ABOVE)

7.1 NASA REQUIREMENT LPR 1710.6

7.2 CERTIFICATION

Personnel who work on electrical equipment or systems 600V and above shall be required to be trained and understand the requirements in LPR 1710.6

7.3 RESPONSIBILITY

Each first-line supervisor shall ensure that personnel within their organization who work on electrical equipment 600 volts and above are trained and qualified.

7.4 QUALIFICATIONS

7.4.1 Qualified workers shall be technically trained and experienced in the work methods required by their electrical work assignments and shall have safety training on the operation of the equipment and the use of safe work practices.

7.4.2 Technical training commensurate with the assignments of the qualified electrical person shall be documented and shall meet the requirements of the person’s job description.

7.4.3 Refresher technical training shall be taken by the qualified electrical person to maintain their job certification requirements.

7.4.4 An individual who is undergoing on-the-job electrical technical training and who has demonstrated competence in performing work safely shall be considered qualified if the individual is under the direct supervision of a qualified electrical person.

7.4.5 The qualified individual shall have completed safety training on the hazards involved prior to performing the work.

7.4.6 Any person who works with electrical equipment or systems 600V and above shall completed the following minimum electrical safety training:

7.4.6.1 Attend NFPA 70E training at a frequency of every 3 years. This training will be a minimum length of 8 hours of instructor led training.

7.4.6.2 Attend High Voltage/ 1910.269 training at a frequency of every 3 years. This training will be a minimum length of 2 hours of instructor led training.

7.4.6.3 Attend CPR/AED training at the frequency of the certifying organization (e.g, American Heart Association). This training will be a minimum length of 2 hours of instructor led training.

7.5 DOCUMENTATION

The supervisor will maintain qualified electrical person qualification records.
7.6 MEDICAL SURVEILLANCE

Employees who perform work as a Qualified Electrical Person shall not be required to undergo a medical examination prior to safety certification.
8. QUALIFIED ELECTRICAL PERSON (600V AND BELOW)

8.1 NASA REQUIREMENT- LPR 1710.6

8.2 CERTIFICATION

Personnel who work on electrical equipment or systems 600V and below shall be required to be trained and understand the requirements in this LPR.

8.3 RESPONSIBILITY

Each first-line supervisor shall ensure that personnel within their organization who work on electrical equipment 600 volts and below are trained and qualified.

8.4 QUALIFICATIONS

8.4.1 Qualified workers shall be technically trained and experienced in the work methods required by their electrical work assignments and shall have safety training on the operation of the equipment and the use of safe work practices.

8.4.2 Technical training commensurate with the assignments of the qualified electrical person shall be documented and shall meet the requirements of the person’s job description.

8.4.3 Refresher technical training shall be taken by the qualified electrical person to maintain their job certification requirements.

8.4.4 An individual who is undergoing on-the-job electrical technical training and who has demonstrated competence in performing work safely shall be considered qualified if the individual is under the direct supervision of a qualified electrical person.

8.4.5 The qualified individual shall have completed safety training on the hazards involved prior to performing the work.

8.4.6 Any person who works on electrical equipment or systems 600V and below shall have completed the following minimum electrical safety training:

8.4.6.1 Attend NFPA 70E training at a frequency of every 3 years. This training will be a minimum length of 8 hours of instructor led training.

8.4.6.2 Attend CPR/AED training at the frequency of the certifying organization (e.g., American Heart Association). This training will be a minimum length of 2 hours of instructor led training.

8.5 DOCUMENTATION

The supervisor will maintain qualified electrical person qualification records.

8.6 MEDICAL SURVEILLANCE

Employees who perform work as a Qualified Electrical Person shall not be required to undergo a medical examination prior to safety certification.
9. QUALIFIED INDUSTRIAL PERSON

9.1 NASA REQUIREMENT- LPR 1710.10

9.2 CERTIFICATION

Personnel who work on industrial equipment and are required to become the second person for a Qualified Electrical Person shall be required to be trained and understand the requirements in this LPR.

9.3 RESPONSIBILITY

Each first-line supervisor shall ensure that personnel within their organization who works on industrial equipment and is required to become the second person for a Qualified Electrical Person is trained and qualified.

9.4 QUALIFICATIONS

9.4.1 The qualified individual shall have completed safety training on the hazards involved prior to performing the work.

9.4.2 Any person who works on industrial equipment and is required to become the second person for a Qualified Electrical Person shall completed the following minimum electrical safety training:

9.4.2.1 Attend NFPA 70E training at a frequency of every 3 years. This training will be a minimum length of 8 hours of instructor led training.

9.4.2.2 Attend CPR/AED training at the frequency of the certifying organization (e.g., American Heart Association). This training will be a minimum length of 2 hours of instructor led training.

9.5 DOCUMENTATION

The employee shall maintain copies of his/her NFPA 70E and AED/CPR certifications.

9.6 MEDICAL SURVEILLANCE

Employees who perform work as a Qualified Industrial Person shall not be required to undergo a medical examination prior to safety certification.
10. MECHANICAL WITH ELECTRICAL 600V AND BELOW SAFETY OPERATOR (SO)

10.1 NASA REQUIREMENT- LPR 1710.10

10.2 CERTIFICATION

10.2.1 All individuals who are going to perform Lockout/Tagout (LOTO) procedures on mechanical equipment must be trained, qualified, and certified to perform these functions.

10.2.1.1 This certification includes performing LOTO of electrical isolation devices for non-electrical work.

10.2.2 Candidates for the SO (both civil servants and on site-contractors) shall be recommended by their supervisor by completing a LF 451.

10.2.3 The candidate shall understand the requirements in LPR 1710.10, LPR 1710.6 and LPR 1710.40.

10.2.4 The Supervisor shall ensure the recommendation provides sufficient detail defining type of energy, the maximum energy level, the building(s)/facility(s), and the machine/equipment/or system that the employee will be authorized to lockout by thoroughly filling out the top section of LF 451.

10.2.5 The Supervisor shall review and document the candidate’s qualifications on LF 451 and maintain a record of the candidates training and experience with the machine, equipment or system they are seeking to obtain LOTO certification.

10.2.6 Candidates seeking authorization for SO shall:

10.2.6.1 Meet the qualification requirements

10.2.6.2 Complete the LF 566 “Lockout/Tagout Hands-on Proficiency”.

10.2.6.3 Successfully demonstrate to both a Mechanical and an Electrical (600 volts and below) Field Verifier (FV) their knowledge of both this LPR and their ability to control and lockout energy on the equipment/systems for which they are seeking authorization.

10.2.6.4 Pass a written test administered by the Safety and Facility Assurance Branch.

10.2.7 Upon satisfying Paragraph 10.2.6.4 above, the LaRC Safety Manager shall issue a LF 453, "NASA Langley Safety Operator's Permit," that is valid for 4 years from the date on the permit.

10.2.8 The LaRC Safety Manager and Field Verifier shall ensure SO’s understand that their safety and the safety of the Protected Employee’s depends on their ability to lockout a system safely, and they have the authority and responsibility to refuse to
lockout a system if they feel they are not qualified to do so or for any reason they think
their safety or anyone else’s safety will be compromised.

10.2.9 The LaRC Safety Manager or his/her designee (with supervisory level) shall keep
the LF 451 packet, along with the results of the written test on file.

10.3 RESPONSIBILITY

10.3.1 Each first-line supervisor shall ensure that personnel within their organization
who perform servicing or maintenance on mechanical equipment or systems by LOTO
electrical isolation devices are trained, qualified and certified to be a Mechanical with
Electrical SO.

10.3.2 Mechanical Safety Operator with Electrical designation shall attend the annual
Safety Operator Refresher Training offered by SFAB. Mechanical Safety Operator with
Electrical designation shall attend NFPA 70E training at a frequency of every 3 years.

10.3.3 Mechanical with Electrical SO shall re-apply for certification every 4 years per
this document.

10.4 QUALIFICATIONS

10.4.1 A SO shall be a civil servant or an on-site contractor who has experience on the
equipment or type of equipment to which RL/RT (Red Lock/Red Tag) lockout may be
performed. The experience shall be acceptable to the Contract Manager for on-site
contractor employees or the appropriate Director or his/her designee (with supervisory
level) for civil servants. Evidence to support qualification as a SO shall be by one of the
following:

10.4.1.1 Licensed as a Journeyman Tradesman in the Commonwealth of Virginia
or other governmental jurisdiction with licensing requirements equivalent to the
Commonwealth of Virginia. In addition to the Journeyman License, a SO shall have one
year of relevant experience after the date of first licensing on equipment or type of
equipment to which LOTO will be performed.

10.4.1.2 Completion of a United States Department of Labor apprenticeship as
evidenced by a Certificate of Completion of Apprenticeship. In addition to the Certificate
of Completion of Apprenticeship, a SO shall have one year of relevant experience after
the date of completion of the apprenticeship on equipment or type of equipment to
which LOTO will be performed.

10.4.1.3 Six years of relevant practical experience on the equipment or type of
equipment to which LOTO will be performed.

10.4.1.4 Direct involvement in the development and construction or assembly of a
particular research apparatus or facility with appropriate knowledge of the research
apparatus or facility that would allow the individual to safely perform LOTO on the particular research apparatus or facility

10.4.2 Demonstrate knowledge of the characteristics, operation, and hazards of the specific facility, system(s), or class of equipment for which the individual will be authorized to perform LOTO.

10.4.3 The supporting evidence shall be documented on LF 451 and signed by the candidate’s supervisor to confirm that the candidate has demonstrated the listed knowledge and abilities.

10.4.4 Any person who locks and tags electrical equipment for non-electrical work shall attend NFPA 70E training at a frequency of every 3 years. This training will be a minimum length of 8 hours of instructor led training.

10.5 DOCUMENTATION

10.5.1 The documents associated with the authorization are

10.5.1.1 LF 451, "Safety Operator Appointment Form"
10.5.1.2 LF 566, “Lockout/Tagout Hands-on Proficiency” Certification”
10.5.1.3 LF 567, “Field Verifier Checklist” and
10.5.1.4 LF 453, “Safety Operators Permit”

10.6 MEDICAL SURVEILLANCE

Employees who perform work as a Mechanical SO shall not be required to undergo a medical examination prior to safety certification.
11. MECHANICAL SAFETY OPERATOR

11.1 NASA REQUIREMENT- LPR 1710.10

11.2 CERTIFICATION

11.2.1 All individuals who are going to perform Lockout/Tagout (LOTO) procedures on mechanical equipment must be trained, qualified and certified to perform these functions.

11.2.2 Candidates for the SO (both civil servants and on site-contractors) shall be recommended by their supervisor by completing a LF 451.

11.2.3 The candidate shall understand the requirements in LPR 1710.10 and LPR 1710.40.

11.2.3.1 The Supervisor shall ensure the recommendation provides sufficient detail defining type of energy, the maximum energy level, the building(s)/facility(s), and the machine/equipment/or system that the employee will be authorized to lockout by thoroughly filling out the top section LF 451.

11.2.4 Supervisor shall review and document the candidate’s qualifications on LF 451 and maintain a record of the candidates training and experience with the machine, equipment or system they are seeking to obtain LOTO certification.

11.2.5 Candidates seeking authorization for SO shall:

11.2.5.1 Meet the qualification requirements

11.2.5.2 Complete the LF 566 “Lockout/Tagout “Hands-on Proficiency”

11.2.5.3 Successfully demonstrate to a Mechanical Field Verifier (FV) their knowledge of both this LPR and their ability to control and lockout energy on the equipment/systems for which they are seeking authorization.

11.2.5.4 Pass a written test administered by the Safety and Facility Assurance Branch.

11.2.6 Upon satisfying Paragraph 11.2.5.4 above, the LaRC Safety Manager shall issue a LF 453, "NASA Langley Safety Operator's Permit," that is valid for 4 years from the date on the permit.

11.2.7 The LaRC Safety Manager and FV shall ensure SO’s understand that their safety and the safety of the Protected Employee’s depends on their ability to lockout a system safely and they have the authority and responsibility to refuse to lockout a system if they feel they are not qualified to do so or for any reason they think their safety or anyone else’s safety will be compromised.

11.2.8 The LaRC Safety Manager or his/her designee shall keep the LF 451 packet, along with the results of the written test on file.

11.3 RESPONSIBILITY
11.3.1 Each first-line supervisor shall ensure that personnel within their organization who conduct LOTO on mechanical equipment are trained, qualified and certified.

11.3.2 Mechanical SO shall attend the annual Safety Operator Refresher Training offered by SFAB.

11.3.3 Mechanical SO shall re-apply for certification every 4 years per this document.

11.4 QUALIFICATIONS

11.4.1 A SO shall be a civil servant or an on-site contractor who has experience on the equipment or type of equipment to which RL/RT lockout may be performed. The experience shall be acceptable to the Contract Manager for on-site contractor employees or the appropriate Director or his/her designee (with supervisory level) for civil servants. Evidence to support qualification as a SO shall be by one of the following:

11.4.1.1 Licensed as a Journeyman Tradesman in the Commonwealth of Virginia or other governmental jurisdiction with licensing requirements equivalent to the Commonwealth of Virginia. In addition to the Journeyman License, a SO shall have one year of relevant experience after the date of first licensing on equipment or type of equipment to which LOTO will be performed.

11.4.1.2 Completion of a United States Department of Labor apprenticeship as evidenced by a Certificate of Completion of Apprenticeship. In addition to the Certificate of Completion of Apprenticeship, a SO shall have one year of relevant experience after the date of completion of the apprenticeship on equipment or type of equipment to which LOTO will be performed.

11.4.1.3 Six years of relevant practical experience on the equipment or type of equipment to which LOTO will be performed.

11.4.1.4 Direct involvement in the development and construction or assembly of a particular research apparatus or facility with appropriate knowledge of the research apparatus or facility that would allow the individual to safely perform LOTO on the particular research apparatus or facility.

11.4.2 Demonstrated knowledge of the characteristics, operation, and hazards of the specific facility, system(s), or class of equipment for which the individual will be authorized to perform LOTO.

11.4.3 The supporting evidence shall be documented on LF 451 and signed by the candidate’s supervisor to confirm that the candidate has demonstrated the listed knowledge and abilities.

11.5 DOCUMENTATION
11.5.1 The documents associated with the authorization are:
11.5.1.1 LF 451, "Safety Operator Appointment Form"
11.5.1.2 LF 566, “Lockout/Tagout “Hands-on Proficiency” Certification”
11.5.1.3 LF 567, “Field Verifier Checklist” and
11.5.1.4 LF 453, “Safety Operators Permit”

11.6 MEDICAL SURVEILLANCE

Employees who perform work as a Mechanical SO shall not be required to undergo a medical examination prior to safety certification.
12. ELECTRICAL SAFETY OPERATOR (600 VOLTS AND BELOW)

12.1 NASA REQUIREMENT- LPR 1710.10

12.2 CERTIFICATION

12.2.1 All individuals who are going to perform Lockout/Tagout (LOTO) procedures on electrical equipment 600 volts and below must be trained, qualified and certified to perform these functions.

12.2.2 Candidates for the SO (both civil servants and on site-contractors) shall be recommended by their supervisor by completing a LF 451.

12.2.3 The candidate shall understand the requirements in LPR 1710.10 and LPR 1710.6.

12.2.4 The Supervisor shall ensure the recommendation provides sufficient detail defining type of energy, the maximum energy level, the building(s)/facility(s), and the machine/equipment/or system that the employee will be authorized to lockout by thoroughly filling out the top section of LF451.

12.2.5 The Supervisor shall review and document the candidate’s qualifications on LF 451 and maintain a record of the candidates training and experience with the machine, equipment or system they are seeking to obtain LOTO certification.

12.2.6 Candidates seeking authorization for Electrical (600 volts and below) SO shall:

12.2.6.1 Meet the qualification requirements of a Qualified Electrical Person (600 volts and below)

12.2.6.2 Complete the LF 566 “Lockout/Tagout “Hands-on Proficiency”

12.2.6.3 Successfully demonstrate to an Electrical (600 volts and below) Field Verifier (FV) their knowledge of both this LPR and their ability to control and lockout energy on the equipment/systems for which they are seeking authorization.

12.2.6.4 Pass a written test administered by the Safety and Facility Assurance Branch.

12.2.7 Upon satisfying Paragraph 12.2.6.4 above, the LaRC Safety Manager shall issue a LF 453, "NASA Langley Safety Operator's Permit," that is valid for 4 years from the date on the permit.

12.2.8 The LaRC Safety Manager and FV shall ensure SO’s understand that their safety and the safety of the Protected Employee’s depends on their ability to lockout a system safely and they have the authority and responsibility to refuse to lockout a system if they feel they are not qualified to do so or for any reason they think their safety or anyone else’s safety will be compromised.

12.2.9 The LaRC Safety Manager or his/her designee shall keep the LF 451 packet, along with the results of the written test on file.
12.3 RESPONSIBILITY

12.3.1 Each first-line supervisor shall ensure that personnel within their organization who conduct LOTO on electrical equipment 600 volts and below are trained, qualified and certified.

12.3.2 Electrical SO shall attend the annual SO Refresher Training offered by SFAB.

12.3.3 Electrical Safety Operator shall re-apply for certification every 4 years per this document.

12.4 QUALIFICATIONS

12.4.1 A SO shall be a civil servant or an on-site contractor who has experience on the equipment or type of equipment to which RL/RT lockout may be performed. The experience shall be acceptable to the Contract Manager for on-site contractor employees or the appropriate Director or his/her designee (with supervisory level) for civil servants. Evidence to support qualification as a SO shall be by one of the following:

12.4.1.1 Licensed as a Journeyman Tradesman in the Commonwealth of Virginia or other governmental jurisdiction with licensing requirements equivalent to the Commonwealth of Virginia. In addition to the Journeyman License, a SO shall have one year of relevant experience after the date of first licensing on equipment or type of equipment to which LOTO will be performed.

12.4.1.2 Completion of a United States Department of Labor apprenticeship as evidenced by a Certificate of Completion of Apprenticeship. In addition to the Certificate of Completion of Apprenticeship, a SO shall have one year of relevant experience after the date of completion of the apprenticeship on equipment or type of equipment to which LOTO will be performed.

12.4.1.3 Six years of relevant practical experience on the equipment or type of equipment to which LOTO will be performed.

12.4.1.4 Direct involvement in the development and construction or assembly of a particular research apparatus or facility with appropriate knowledge of the research apparatus or facility that would allow the individual to safely perform LOTO on the particular research apparatus or facility.

12.4.2 Demonstrated knowledge of the characteristics, operation, and hazards of the specific facility, system(s), or class of equipment for which the individual will be authorized to perform LOTO.

12.4.3 The supporting evidence shall be documented on LF 451 and signed by the candidate’s supervisor to confirm that the candidate has demonstrated the listed knowledge and abilities.
12.5 DOCUMENTATION

12.5.1 The documents associated with the authorization are:
12.5.1.1 LF 451, "Safety Operator Appointment Form"
12.5.1.2 LF 566, Lockout/Tagout “Hands-on Proficiency” Certification,
12.5.1.3 LF 567, “Field Verifier Checklist” and
12.5.1.4 LF 453, “Safety Operators Permit”

12.6 MEDICAL SURVEILLANCE

Employees who perform work as an Electrical SO shall not be required to undergo a medical examination prior to safety certification.
13. ELECTRICAL SAFETY OPERATOR (600V AND ABOVE)

13.1 NASA REQUIREMENT- LPR 1710.10

13.2 CERTIFICATION

13.2.1 All individuals who are going to perform Lockout/Tagout (LOTO) procedures on electrical equipment 600 volts and above must be trained, qualified and certified to perform these functions.

13.2.2 Candidates for the SO (both civil servants and on site-contractors) shall be recommended by their supervisor by completing a LF 451.

13.2.3 The candidate shall understand the requirements in LPR 1710.10 and LPR 1710.6.

13.2.3.1 The Supervisor shall ensure the recommendation provides sufficient detail defining type of energy, the maximum energy level, the building(s)/facility(s), and the machine/equipment/or system that the employee will be authorized to lockout by thoroughly filling out the top of section of LF 451.

13.2.4 The Supervisor shall document the candidate’s qualifications on LF 451 and maintain a record of the candidates training and experience with the machine, equipment or system they are seeking to obtain LOTO certification.

13.2.5 Candidates seeking authorization for SO shall:

13.2.5.1 Meet the qualification requirements of a Qualified Electrical Person (600 V and above).

13.2.5.2 Meet the qualification requirements describe in section 13.4.

13.2.5.3 Successfully demonstrate to an Electrical (600V and above) Field Verifier (FV) their knowledge of both this LPR and their ability to control and lockout energy on the equipment/systems for which they are seeking authorization.

13.2.5.4 Pass a written test administered by the Safety and Facility Assurance Branch.

13.2.6 Upon satisfying Paragraph 13.2.5.4 above, the LaRC Safety Manager shall issue a LF 453, "NASA Langley Safety Operator's Permit," that is valid for 4 years from the date on the permit.

13.2.7 The LaRC Safety Manager and FV shall ensure SO’s understand that their safety and the safety of the Protected Employee’s depends on their ability to lockout a system safely and they have the authority and responsibility to refuse to lockout a system if they feel they are not qualified to do so or for any reason they think their safety or anyone else’s safety will be compromised.

13.2.8 The LaRC Safety Manager or his/her designee shall keep LF 451, along with the results of the written test on file.
13.3 RESPONSIBILITY

13.3.1 Each first-line supervisor shall ensure that personnel within their organization who conduct LOTO on electrical equipment 600 volts and above are trained, qualified and certified.

13.3.2 Electrical SO shall attend the annual SO Refresher Training offered by SFAB.

13.3.3 Re-apply for certification every 4 years per this document.

13.4 QUALIFICATIONS

13.4.1 A SO shall be a civil servant or an on-site contractor who has experience on the equipment or type of equipment to which RL/RT lockout may be performed. The experience shall be acceptable to the Contract Manager for on-site contractor employees or the appropriate Director or his/her designee (with supervisory level) for civil servants. Evidence to support qualification as a SO shall be by one of the following:

13.4.1.1 Licensed as a Journeyman Tradesman in the Commonwealth of Virginia or other governmental jurisdiction with licensing requirements equivalent to the Commonwealth of Virginia. In addition to the Journeyman License, a SO shall have one year of relevant experience after the date of first licensing on equipment or type of equipment to which LOTO will be performed.

13.4.1.2 Completion of a United States Department of Labor apprenticeship as evidenced by a Certificate of Completion of Apprenticeship. In addition to the Certificate of Completion of Apprenticeship, a SO shall have one year of relevant experience after the date of completion of the apprenticeship on equipment or type of equipment to which LOTO will be performed.

13.4.1.3 Six years of relevant practical experience on the equipment or type of equipment to which LOTO will be performed.

13.4.1.4 Direct involvement in the development and construction or assembly of a particular research apparatus or facility with appropriate knowledge of the research apparatus or facility that would allow the individual to safely perform LOTO on the particular research apparatus or facility.

13.4.2 Demonstrated knowledge of the characteristics, operation, and hazards of the specific facility, system(s), or class of equipment for which the individual will be authorized to perform LOTO.

13.4.3 The supporting evidence shall be documented on LF 451 and signed by the candidate’s supervisor to confirm that the candidate has demonstrated the listed knowledge and abilities.
13.5 DOCUMENTATION

13.5.1 The documents associated with the authorization are:
13.5.1.1 LF 451, "Safety Operator Appointment Form"
13.5.1.2 LF 566, “Lockout/Tagout “Hands-on Proficiency” Certification”
13.5.1.3 LF 567, “Field Verifier Checklist” and
13.5.1.4 LF 453, “Safety Operators Permit”

13.6 MEDICAL SURVEILLANCE

Employees who perform work as an Electrical SO shall not be required to undergo a medical examination prior to safety certification.
14. SAFETY OPERATOR FIELD VERIFIER (FV)

14.1 NASA REQUIREMENT- LPR 1710.10

14.2 CERTIFICATION

14.2.1 Individuals who are going to be certified as FV shall demonstrate they understand and can convey specifics of the Lockout/Tagout (LOTO) process to potential Safety Operators in their specific field.

14.2.2 They shall be recommended by their supervisor through the submittal of a LF 519.

14.2.3 They shall be vetted by the appropriate Systems Committee (i.e. Electrical Systems or Pressure Systems Committee’s) that they have the technical knowledge for the position.

14.3 RESPONSIBILITY

14.3.1 Verify that the candidate seeking authorization as an SO has a working knowledge of the system(s), energy sources and hazards of those systems and the controls required for effective LOTO, using the LF567, in line with their expected SO duties.

14.3.2 Ensure the SO understands that:

14.3.2.1 Their safety and the safety of others depend on their ability to LOTO a system safely; and

14.3.2.2 They have the authority and responsibility to refuse to LOTO a system if they feel they are not qualified to do so or for any reason they think their safety or anyone else’s safety will be compromised.

14.3.3 Attend the annual Safety Operator Refresher Training offered by SFAB.

14.3.4 Re-apply for certification every 4 years per this document.

14.4 QUALIFICATIONS

14.4.1 A FV shall be a technical subject matter expert in the field in which the SO Candidates are to be certified.

14.4.2 A FV shall be a NASA LaRC Safety Operator or must have meet all the requirements to be a SO.

14.4.3 FV shall attend the annual SO Refresher Training offered by SFAB.

14.4.4 A FV shall have 3 years of relevant experience after completion of the apprenticeship on equipment for the type of equipment on which SO candidates will be certified to perform RL/RT lockout.
14.5 DOCUMENTATION

LF 519, Safety Operator Field Verifier (FV) Appointment Form
LF 451, Safety Operator Appointment Form

14.6 MEDICAL SURVEILLANCE

14.6.1 Employees who perform work as a FV shall not be required to undergo a medical examination prior to safety certification
15. CRAFT SPECIFIC SAFETY OPERATOR (CSSO)

15.1 NASA REQUIREMENT- LPR 1710.10

15.2 CERTIFICATION

15.2.1 All individuals who are going to be certified as a Craft Specific Safety Operator (CS) shall be a certified SO first.

15.2.2 All individuals who are going to perform Lockout/Tagout (LOTO) procedures as a CSSO must be trained, qualified and certified to perform these functions.

15.2.3 Candidates for the CSSO (both civil servants and on site-contractors) shall be recommended by their supervisor by completing LF 451.

15.2.4 The candidate shall understand the requirements in LPR 1710.10 and other relevant programs (i.e., LPR 1710.6 and/or LPR 1710.40).

15.2.5 The Supervisor shall ensure the recommendation provides sufficient detail of the building(s)/facility(s), and the machine/equipment/or system that the employee will be authorized to lockout by thoroughly filling out the top section of the LF 451.

15.2.6 Supervisor shall document the candidate’s qualifications on LF 451 and maintain a record of the candidates training and experience with the machine, equipment or system they are seeking to obtain LOTO certification.

15.2.7

15.3 RESPONSIBILITY

15.3.1 Ensure that no other employee works under their CS certification tag.

15.3.2 Craft Specific Safety Operator shall attend the annual Safety Operator Refresher Trainer offered by SFAB.

15.3.3 Re-apply for certification every 4 years per this document.

15.3.4 Possess a current CS certification card, LF 403.

15.4 QUALIFICATIONS

15.4.1 A CSSO shall be a SO in the field in which they are being certified.

15.5 DOCUMENTATION

15.5.1 LF 403, Craft Specific (CS) Authorization Card

15.5.2 LF 451, Safety Operator Appointment Form
15.6 **MEDICAL SURVEILLANCE**

Employees who perform work as a CSSO shall not be required to undergo a medical examination prior to safety certification.
16. SHOP MACHINE SAFETY OPERATORS (SMSO)

16.1 NASA REQUIREMENT- LPR 1710.10

16.2 CERTIFICATION

16.2.1 All individuals who are going to perform Lockout/Tagout (LOTO) procedures on Shop Machine equipment must be trained, qualified and certified to perform these functions.

16.2.2 Candidates for the SMO (both civil servants and on site-contractors) shall be recommended by their supervisor by completing a LF 571.

16.2.3 The candidate shall understand the requirements in LPR 1710.10.

16.2.4 The Supervisor shall ensure the recommendation provides sufficient detail of the building(s)/facility(s), and the machine/equipment/or system that the employee will be authorized to lockout.

16.2.5 Supervisor shall document the candidate’s qualifications on LF 571 and maintain a record of the candidates training and experience with the, equipment or system they are seeking to obtain LOTO certification.

16.3 RESPONSIBILITY

16.3.1 Possess a current SMO certification card, LF 425.

16.3.2 Ensure that no other employee works under their SMSO certification tag.

16.3.3 Attend the annual SMO Refresher Training offered by SFAB.

16.3.4 Re-apply for certification every 4 years per this document.

16.4 QUALIFICATIONS

16.4.1 A SMSO shall be technically trained and certified by their management for the machine(s)/equipment which they will be applying LOTO.

16.5 DOCUMENTATION

16.5.1 LF 425, Shop Machine (SM) Authorization Card

16.5.2 LF 571, Shop Machine Safety Operator Appointment Form

16.6 MEDICAL SURVEILLANCE

Employees who perform work as a SMSO shall not be required to undergo a medical examination prior to safety certification.
17. PROCESS SYSTEMS OPERATOR

17.1 NASA REQUIREMENT NPR 8715.3

17.2 CERTIFICATION

17.2.1 Process Systems Operator certification shall be required for personnel who operate a medium or high risk facility such as ones containing wind tunnels, flight simulators, high energy equipment/systems or equipment/systems under configuration control that requires a trained operator.

17.2.2 All LaRC pressure systems, new, existing, temporary, and permanent shall be operated by a certified Process Systems Operator unless the pressure system meets the exclusion listed in LPR 1710.40.

17.2.3 Personnel training shall be determined and structured according to the job being performed and the number of users required to operate the facility.

17.2.4 The Supervisor shall be responsible for ensuring the overall implementation of a training and certification program that is consistent with this LPR.

17.2.5 Three levels of certification shall exist. The criteria for each certification level are identified as follows:

17.2.5.1 **Level 3** (lowest level of certification) - The individual shall be capable of operating, monitoring, and servicing the system or equipment during facility operations.

17.2.5.1.1 The individual shall be able to detect an unsafe condition or incorrect action.

17.2.5.1.2 The individual shall be capable of recovering or safely bringing the system or equipment off-line.

17.2.5.1.3 The individual shall have a Level 2 technician available but not necessarily working in an over-the-shoulder situation.

17.2.5.1.4 The Level 2 technician shall be within the operational area.

17.2.5.2 **Level 2** (medium level of certification) - The individual shall meet all the requirements of Level 3.

17.2.5.2.1 The individual shall be skillful in inspecting hardware prior to facility operation and after operation.

17.2.5.2.2 The individual shall be able to bring the system or hardware from a secured or off state to an operating mode.

17.2.5.2.3 The individual shall be able to secure the system or equipment and bring them down to an off or safe state.
17.2.5.3 **Level 1** (highest level of certification) - The individual shall be capable of operating and trouble-shooting facility systems/equipment.

17.2.5.3.1 The individual shall meet all of the requirements of Level 2 certification

17.2.5.3.2 The individual shall be capable of identifying hardware or software malfunctions and performing minor system repair.

17.2.6 An individual shall initially be trained to meet the minimum requirements to perform Level 3 certification activities.

17.2.7 For an individual to obtain a Level 2 or Level 1 certification, the facility training/certification requirements shall specify a structured review process that includes the FSH, individual’s Supervisor/Tech Lead and at least another individual at the same or higher certified level knowledgeable of the system operations.

17.2.8 For an individual to maintain a Level 2 or Level 1 certification, the facility training/certification requirements shall specify a structured review process that includes the FSH, individual’s Supervisor and at least another individual at the same or higher certified level knowledgeable of the system operations.

17.2.9 Annual Training

17.2.9.1 Refresher training shall be performed annually or as technology advances, equipment fails, operating errors, or changes at the facility dictate.

17.2.9.2 Annual refresher training for certified individuals shall be documented using LF121 and LF 122 include review of the current safety handbooks, safety interlocks, and emergency response procedures.

17.2.10 Certification Renewals

17.2.10.1 Recertification training for certified individuals shall be required.

17.2.10.2 Renewal certification shall require demonstration of proficiency and operating skill.

17.2.10.3 Certified individuals shall undergo recertification during a period not to exceed 4 years.

17.2.11 Break-inService/Return to Service

17.2.11.1 Each facility shall have a method of information exchange to inform a certified operator of equipment and/or procedural modifications that have occurred during a break-in service.

17.2.11.2 When a certified operator returns to operate a facility after a break-in service of 90 days or more, the facility training/certification requirements shall specify a structured review process that includes the FSH, individual’s Supervisor/Tech Lead and
at least one other individual at the same or higher certified level knowledgeable of the system operations prior to facility operation.

17.2.11.3 Disqualification of the individual shall be declared when knowledge and understanding of facility operations cannot be demonstrated.

17.3 RESPONSIBILITY

17.3.1 Each first-line supervisor shall ensure that personnel within their organization who operate, manipulate, or who have any other type of physical control over the use of process systems equipment are trained and certified for that purpose.

17.3.2 It is the responsibility of each FSH to ensure that only personnel who are listed on a current LF 159, are operating, manipulating, or controlling process systems equipment within their facility.

17.4 QUALIFICATIONS

17.4.1 As a minimum, and prior to receiving certification, the operator shall successfully complete the specific training developed by the facility to operate process systems.

17.4.2 As a minimum, the individual shall:

17.4.2.1 Review and understand the applicable safety–related documents in the Langley Management System (LMS).

17.4.2.2 Show a working knowledge, paying particular attention to safety awareness, of the hardware associated with their respective areas of responsibility,

17.4.2.3 Show a working knowledge of written operating procedures/checklists for proper operation of the pressure system.

17.4.3 The initial training for all individuals shall consist of classroom and/or on-the-job.

17.4.4 The required training shall be tailored to the specific system and/or equipment and developed by the FSH, the Supervisor and the Team Lead if the facility has one.

17.4.5 The FSH and Supervisor shall identify applicable documentation (i.e., Safety Analysis Report (SAR) or pressure systems documents, facility emergency procedures, Lockout/Tagout program, etc.) required for the certification on the following Langley Forms:

17.4.5.1 LF 121 - “LaRC Safety Review for Certified Operators,” provides a list of safety-related documents.

17.4.5.2 LF 122 - “Facility Safety Awareness and Procedures Review for Certified Operators.”
17.5 DOCUMENTATION

17.5.1 The appointment shall be documented on a NASA LF 159, “Appointment for Operator Certification”.

17.5.2 The appointment shall identify the equipment involved and the area and certification level for each individual. Upon successful completion of testing and evaluation, the individual can operate the pressure system for which training and certification has occurred.

17.5.3 The FC shall document the Facility systems certification training program as part of the Facility Documentation (i.e., Facility Resume or other documentation that is easily accessible) under the FSH control.

17.5.4 The certification shall be valid for 4 years from the date of issue.

17.5.5 Facility Modifications; The following minimum training requirements, prior to qualifying/certifying an operator, shall be achieved after the Critical Design Review (CDR) and prior to the Integrated Systems Review (ISR):

17.5.5.1 Review redlined P&IDs, SOPs, SAR, Drawings, Checklists, SCMPs, etc.

17.5.5.2 Review any new Operator/Instructional manuals.

17.5.5.3 Review and perform a procedural walk through of new systems with redlined operating procedures or checklists.

17.5.5.4 The FSH and Supervisor are responsible for the implementation of these requirements.

17.6 MEDICAL SURVEILLANCE

Employees who perform work as a Process Systems Operator shall not be required to undergo a medical examination prior to safety certification.
18. WELDER/BRAZER CERTIFICATION

18.1 NASA REQUIREMENT NPR 8715.3

18.2 CERTIFICATION

18.2.1 All personnel who perform welding/brazing operations are required to meet the certification of ASME Boiler and Pressure Vessel Code Section IX.

18.2.2 Certification as to the type welding the worker is authorized to make is documented in the LF 34.

18.3 RESPONSIBILITY

18.3.1 Each first-line supervisor shall ensure that personnel within their organization who perform welding operations are trained and certified for that purpose.

18.3.2 The LaRC welding Standard Practice Engineer (SPE) shall:

18.3.2.1 Be responsible for welding quality and shall track the results of all welding tests conducted under their authority.

18.3.2.2 Maintain the LF 34.

18.4 QUALIFICATIONS

18.4.1 As a minimum, and prior to working as a welder, welding operator or brazer, candidate personnel shall be required to:

18.4.1.1 Successfully complete an intensive on the job training or apprentice program.

18.4.1.2 Successfully demonstrate the ability to complete a sound weldment in accordance to the invoked welding code.

18.4.1.3 Submit to periodic retests as deemed necessary by the Welding SPE.

18.5 DOCUMENTATION

13.5.1 Welder/Brazer Workers on LaRC include both civil service and contract employees.
18.5.1 Worker Appointment and Certification Forms

18.5.1.1 All work conducted is annotated in the LF 34 to document that welder/brazer has performed that operation within a 6 month period.

18.5.2 Civil Service Workers

18.5.2.1 Supervisors of Civil servants shall complete and submit an LF 66.

18.5.3 Contractors.

18.5.3.1 Contract personnel shall complete and submit an appropriate comparable form provided by their company.

18.5.3.2 The contractor’s form shall provide for equivalent information as required by the LF 66.

18.5.3.3 The contractor’s form shall contain an approval process.

18.6 MEDICAL SURVEILLANCE

18.6.1 All welding/brazing workers shall be required to undergo and pass a baseline and annual eye examination.

18.6.2 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

18.6.3 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

18.6.3.1 The contractor is responsible for implementing these examination requirements through a medical provider of their choosing.
19. NON-IONIZING RADIATION (LASER) WORKER

19.1 NASA REQUIREMENT NPR 8715.3

19.2 CERTIFICATION

19.2.1 All personnel who operate, manipulate, or who have any other type of physical control over the use of non-ionizing radiation-producing equipment or material shall be required to be trained and safety certified as Non-ionizing Radiation Workers and be issued an LF492.

19.2.2 In addition, all non-ionizing radiation-producing equipment or material shall be specifically authorized by the issuance of an LF 498.

19.2.3 Application for that LF 498 shall be initiated by submission of LF 49.

19.2.3.1 Questions concerning this certification requirement shall be directed to the Radiation Safety Officer (RSO).

19.3 RESPONSIBILITY

19.3.1 Each first-line supervisor shall ensure that personnel within their organization who operate, manipulate, or who have any other type of physical control over the use of non-ionizing radiation-producing equipment or material are trained and certified for that purpose.

19.3.2 It is the responsibility of each FSH to ensure that only personnel who possess a current LF 492, are operating, manipulating, or controlling non-ionizing radiation-producing equipment within their facility.

19.4 QUALIFICATIONS

19.4.1 As a minimum, and prior to working with non-ionizing radiation, candidate personnel shall be required to:

19.4.1.1 Attend non-ionizing safety training (provided by RSO or contracting company),


19.4.1.3 Review emergency procedures (provided by FSH), and

19.4.1.4 Review radiation safety procedures relevant to duties associated with non-ionizing radiation work (provided by each FSH).
19.5 DOCUMENTATION

19.5.1 Laser Workers on LaRC include both civil service and contract employees. The specific documents that these workers shall complete and, in some cases, possess, that identifies them as Laser Workers are identified in this chapter.

19.5.2 Worker Appointment and Certification Forms

19.5.2.1 Applicants shall complete and submit the appropriate Appointment and Certification Forms which stipulates that the training and safety certification requirements of a Non-ionizing Radiation Worker have been fulfilled.

19.5.2.2 Revalidation of Certification

19.5.2.2.1 LF 492 or contractor equivalent are valid for three year from the date of issuance.

19.5.2.2.2 It is the responsibility of each Laser worker to have the LF 492 or contractor equivalent revalidated by the RSO prior to the card’s expiration date.

19.5.2.3 Termination of Certification

19.5.2.3.1 Upon termination of employment, or when the worker no longer needs to be certified to perform non-ionizing radiation work, the worker shall immediately surrender the LF 492 to the RSO or contractor equivalent to the contracting company.

19.6 MEDICAL SURVEILLANCE

Employees who perform work as a Non-Ionizing Radiation (Laser) Worker shall not be required to undergo a medical examination prior to safety certification.
20. RANGE SAFETY OFFICER

20.1 NASA REQUIREMENT NPR 8715.37

20.2 CERTIFICATION

20.2.1 The Range Safety Officer (RSO) shall be a qualified NASA employee, such as an Aerospace Engineer for Uninhabited Aerial Systems (UAS) in the Research Services Directorate (RSD). Once certified and appointed, the RSO shall take direction from RSD and report as necessary to the Director of the Safety and Mission Assurance Office (SMAO).

20.2.2 Typical duties of a Range Safety Officer.

20.2.2.1 For each range operation, the Range Safety Officer conducts simulation scenarios (i.e., emergency of the day); develops and implements operational range safety requirements, plans, procedures, and checklists; and provides an independent safety assessment and ensures that all range safety flight commit criteria are satisfied prior to flight initiation. The RSO or Designated Range Safety Officer (DSRO), trained and certified by the RSO, shall be present during all UAS range operations conducted under the authority of Langley Research Center.

20.2.2.2 For any vehicle that has a Flight Termination System (FTS), the Range Safety Officer:

20.2.2.2.1 Develops flight termination activation criteria

20.2.2.2.2 Performs real-time monitoring of the vehicle flight path/trajectory, vehicle systems, range safety systems, and the performance of the FTS; and

20.2.2.2.3 Makes a flight termination decision when performance of the vehicle violates preplanned termination criteria or presents an unplanned, unacceptable hazard to the public, personnel, or property

20.3 RESPONSIBILITY

20.3.1 It is the responsibility of the RSD supervisor to ensure that personnel within their organization who fall under the parameters outlined in section 22.2.1 are trained and certified under the safety certification requirements for a Range Safety Officer.
20.4 QUALIFICATIONS

20.4.1 Qualifications for personnel who perform a range safety function (including RSOs and personnel responsible for range safety systems and range safety analysis) shall include:

20.4.1.1 Successful completion of knowledge-based training (self-study and/or classroom) applicable to the range safety function.

20.4.1.2 Successful completion of instructor-led, hands-on training on how to perform the range safety function followed by satisfactory on-the-job performance as a trainee, as applicable.

20.4.1.3 Proficiency demonstrated to a qualified range safety professional during simulation scenarios that exercise hands-on operations of range safety systems and use of safety decision-making tools or processes, as applicable.

20.4.1.4 Proficiency demonstrated to a qualified range safety professional during exercises of nominal and contingency actions, as applicable.

20.4.2 The training program for range safety personnel shall:

20.4.2.1 Provide qualified personnel to support nominal and contingency range operations.

20.4.2.2 Include a recurring training process to ensure personnel retain their qualifications.

20.4.2.3 Include a requalification process for personnel who lose qualification status, such as, someone who exhibits substandard performance or has temporary health problems.

20.4.3 Include a documentation process that captures the qualification, recurring training, and requalification status of all range safety personnel.

20.5 DOCUMENTATION

20.5.1 The LaRC Range Safety Officer shall be appointed in writing by the Center Director.

20.6 MEDICAL SURVEILLANCE

20.6.1 Employees who perform work as Range Safety Officer shall not be required to undergo a medical examination prior to safety certification.
21. AERIAL LIFT OPERATOR

21.1 NASA REQUIREMENT NPR 8715.3

21.2 CERTIFICATION

21.2.1 Aerial Lift Operators shall be trained and safety certified to operate the man-lift equipment that is authorized for use on the Center. This certification is documented on an LF 65, Worker Certification Card.

21.2.2 Workers will be separately certified to operate any equipment defined by OSHA 1926.453: Aerial Lifts.

21.2.3 Workers undergoing safety certification training shall be assisted by one additional safety certified operators, during the operation/use of any aerial man-lift equipment.

21.2.4 A separate safety certification shall be required to operate each individual type of equipment.

21.3 RESPONSIBILITY

21.3.1 It is the responsibility of the supervisor of each organization that uses the aerial man-lift equipment to ensure that personnel who operate the equipment are trained and certified in compliance with this document.

21.3.2

21.4 QUALIFICATIONS

21.4.1 As a minimum, and prior to working as an Aerial Lift Operator, individuals shall successfully complete the appropriate training and safety certification authorizing them to operate the equipment.

21.4.2 Testing Requirements

21.4.2.1 Testing of Aerial Lift Operators shall include written examinations that contain appropriate questions addressing the work to be performed.

21.4.2.2 The questions shall address, as a minimum, the subject areas listed below.

21.4.2.2.1 Safety applications, Knowledge of equipment limitations and capabilities,

21.4.2.2.2 Knowledge of equipment operations and control systems,

21.4.2.2.3 Equipment care and damage reporting requirements,

21.4.2.2.4 High voltage and electrical operational restrictions,

21.4.2.2.5 Use of required safety equipment,
21.4.2.2.6 Wind restrictions, Ground conditions restrictions, Ground slope restrictions,
21.4.2.2.7 Emergency operation procedures,
21.4.2.2.8 Safety zone requirements,
21.4.2.2.9 Lifting restrictions,
21.4.2.2.10 Weight restrictions,
21.4.3 Successfully pass the appropriate written test that establishes the worker has safety and operational knowledge of the aerial manlift equipment they are certified to operate.

21.4.4 Proficiency Examination Requirements
21.4.4.1 Proficiency testing for Aerial Manlift Operators shall include, as a minimum, demonstrated performance of work functions listed below:

21.4.4.1.1 Aerial lift buckets operations,
21.4.4.1.2 Full-range of operation of the bucket from ground and bucket stations,
21.4.4.1.3 Knowledge of safety rules and regulations, and
21.4.4.1.4 Positioning of bucket.
21.4.4.1.5 Equipment inspection procedures, and
21.4.4.1.6 Outrigger deployment (if applicable).
21.4.4.2 High Reach Bucket Truck Operators shall be required to acquire a Commercial Driver’s License - Class B with an air brake endorsement.
21.4.4.3 Aerial Manlift Operator and Supervisor shall document that an informal annual review by their organization on equipment operation and safety procedures was conducted.

21.4.4.4 Experience Requirements
21.4.4.5 Workers requiring safety certification as an Aerial Manlift Operator shall complete a two-hour classroom training program on the following:

21.4.4.5.1 Safety,
21.4.4.5.2 Emergency procedures,
21.4.4.5.3 General performance standard and requirements,
21.4.4.5.4 Pre-operational checks,
21.4.4.5.5 Don in & doffing a Fall Protection harness and understand selection of restrain landyards

21.4.4.5.6 Safety related defects and symptoms for manlift devices, and

21.4.4.5.7 Complete sufficient hands on training to be able to demonstrate proficiency to a certified operator on the specific type of equipment.

21.5 DOCUMENTATION

21.5.1 Supervisors of Civil servant employees who require safety certification on LaRC as an Aerial Lift Operator shall complete and submit LF 66.

21.5.2 The certification is documented on an LF 65, Worker Certification Card. This form is used to document and certify that the qualifications of the worker, required in section 22.4 have been satisfied.

21.5.3 Contract personnel who require certification shall use a comparable form provided by their company for certification.

21.5.4 The contractor’s form shall provide for equivalent information LF 66 and shall contain an approval process.

21.5.5 The LF 65 or contractor equivalent shall be issued to certified workers.

21.5.6 The LF 65 or contractor equivalent shall list, on the reverse side of the card, the specific manlift equipment the worker is certified to use.

21.5.7 The worker shall have the card on-hand or readily accessible, as proof of his/her certification, while performing applicable tasks.

21.5.8 Recertification shall be required once every four years and shall follow the same process as the original certification process.

21.6 MEDICAL SURVEILLANCE

21.6.1 Personnel requiring certification as Aerial Manlift Operator shall first undergo and pass a medical examination in compliance with the LaRC OMEP’s.

21.6.2 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

21.6.3 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

21.6.3.1 The contractor is responsible for implementing these examination requirements through a medical provider of their choosing.
22. LIFTING OPERATOR (CRANE OPERATOR)

22.1 NASA REQUIREMENT NPR 8715.3

22.2 CERTIFICATION

22.2.1 Lifting Operators are defined as individuals who operate overhead or mobile and/or permanently installed cranes, derricks, portable or fixed hoisting assemblies, winches, and general equipment such as wire ropes, slings, hooks, bridles, riggings, and other fittings critical to handling/lifting operations.

22.2.2 These examples are not all inclusive; and, additional equipment operators may require safety certification at the discretion of SFAB.

22.3 RESPONSIBILITY

22.3.1 Supervisor shall ensure that personnel under his/her responsibility are trained and certified in compliance with this document to operate special handling equipment or perform critical lifting.

22.4 QUALIFICATIONS

22.4.1 As a minimum, and prior to working as a Lifting Operator, personnel shall successfully complete the training to be safety certified for the position.

22.4.2 Testing Requirements

22.4.2.1 Testing of Lifting Operators shall include written examinations that contain questions addressing the work to be performed.

22.4.2.1.1 The test shall have questions that as a minimum, the following subject areas are covered:

a. Determination of center of gravity (CG)

b. Determination of load weight

a. Calculation of lifting-line strength such as cable and rope and margin of safety

b. Calculation of sling tension loads

c. Use of common slings and hitches

d. Selection of sizes and use of chocks

e. Use of hydra-set

f. Use of proof-loading specifications
g. Use of hand signals
h. Use of and determining strength of knots
k. Distortion of loads (blocking)
l. Safety applications
m. Knowledge of quality assurance requirements

22.4.2.2 Proficiency Examination Requirements

22.4.2.2.1 Proficiency testing for Lifting Operators shall include, as a minimum, performance of the work functions listed below:

22.4.2.2.2 Conducting a series of difficult load attachments involving a determination of weight and CG,

22.4.2.2.3 Selecting method of attachment,

22.4.2.2.4 Selecting hooks, bridles, slings, and so forth,

22.4.2.2.5 Hand signaling a typical lift, move, and relocation of load, crane boom, and pendant line assembly,

22.4.2.2.6 Demonstrating knowledge of hand signals used with mobile and lifting equipment as defined in Lifting Program Hardware Class I Certification.

22.4.2.2.7 Operating mobile cranes,

22.4.2.2.8 Operating overhead or gravity cranes,

22.4.2.2.9 Operating portable lifting cranes,

22.4.2.2.10 Operating industrial truck cranes,

22.4.2.2.11 Operating Hy-Ranger vehicles,

22.4.2.2.12 Operating all types of bucket trucks, and

22.4.2.2.13 Demonstrating operational proficiency in:
(1) Equipment inspection procedure,
(2) Positioning crane for lift,
(3) Outrigger deployment,
(4) Full-range boom and cab travel (empty),
(5) Hand-signal motions (empty),
(6) Lifting and braking with load,
(7) Hand-signal motions (loaded), and
(8) A series of load placements.

22.4.3 This classification of Lifting Operators shall be restricted to operating the specific equipment listed on their Langley Form (LF) 61.

22.4.4 Certification of Class II Lifting Operators is based upon the following:

22.4.4.1 Related experience,
22.4.4.2 Appropriate testing requirements,
22.4.4.3 Appropriate proficiency examinations,
22.4.4.4 Approved training course, and
22.4.4.5 Acceptable period of on-the-job training.

22.4.5 Testing of Lifting Operators shall include written examinations that contain appropriate questions addressing the work to be performed.

22.4.5.1 The questions shall address, as a minimum, the subject areas listed below:

a. Determination of center of gravity (CG)
b. Determination of load weight
c. Calculation of lifting-line strength such as cable and rope and margin of safety
d. Calculation of sling tension loads
e. Use of common slings and hitches
f. Selection of sizes and use of chocks
g. Use of proof-loading specification
h. Use of hand signals
i. Use of and determining strength of shackles and hooks
j. Distortion of loads (blocking)
k. Safety applications
l. Knowledge of quality assurance requirements

22.4.6 Lifting Operators shall be required to pass a proficiency examination before they are safety certified.

22.4.6.1 The examinations shall include:

a. Conducting a series of typical load attachments (i.e., location of CG, weight determination, and selecting lifting devices such as hooks, bridles, slings, and so forth)
b. Hand signaling a lift operation
c. Demonstrating operational proficiency in special pieces of lifting equipment (i.e., lifting, braking, load placement, etc.) with and without hand signals
22.5 DOCUMENTATION

22.5.1 Supervisors of Civil servant employees shall complete and submit on LF 66, and LF 185.

22.5.2 These forms shall be used to document and certify that the qualifications required in section 27.4 have been satisfied.

22.5.3 Contract personnel who require certification shall use an appropriate comparable form for certification.

22.5.3.1 The contractor’s form shall provide information equivalent to that on LF 66 and shall contain an approval process.

22.5.3.2 LF 61, "Lifting Certification Card," shall be issued to certified civil service lifters who are qualified to perform lifts with specific equipment.

22.5.3.2.1 LF 61 shall list, on its reverse side, the specific equipment the individual is certified to operate.

22.5.3.2.2 The worker shall have the card on-hand or readily accessible, as proof of his/her certification, while performing applicable tasks.

22.5.3.3 Contractors shall issue a certification card equivalent to LF 61 to all of their certified lifters.

22.5.3.4 Recertification shall be required every four years and shall follow the same process as the original certification process.

22.6 MEDICAL SURVEILLANCE

22.6.1 Lifting Operators shall undergo and pass a medical examination at the time of their certification, in accordance with LaRC OMEP's.

22.6.1.1 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

22.6.1.2 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

22.6.1.3 Examination requirements for contract employees, however, shall be the responsibility of the contracting company.
23. RIGGERS FOR HOISTING OPERATIONS

23.1 NASA REQUIREMENT NPR 8715.3

23.2 CERTIFICATION

23.2.1 A rigger is a person who is trained and certified specializing in the lifting and moving of extremely large or heavy objects, often with the assistance of a crane or derrick. They also determine weight & balance of items that do not have fixed or known fixed lifting points.

23.2.2 At LaRC we do not certify Riggers for hoisting operations. To perform rigging operations a Rigger needs to attend a training course from an accredited company.

23.3 RESPONSIBILITY

23.3.1 Supervisors shall ensure that personnel under his/her responsibility are trained and certified in compliance with this document to operate special handling equipment or perform critical lifting.

23.4 QUALIFICATIONS

23.4.1 Certified as a LaRC Crane Operator.

23.4.2 A Certification from an accredited Training Company. The training course shall cover, as a minimum, the following:

23.4.2.1 On Hands Training
23.4.2.2 Estimate load weight and center of gravity calculations
23.4.2.3 Identify lifting points
23.4.2.4 Determine and select the appropriate rigging devices to be used based on loading and work requirements
23.4.2.5 Perform pre-use inspection of rigging and lift points
23.4.2.6 Identify and attach rigging with knowledge of hitch configurations and load angle factors, rigging capacities, and load integrity
23.4.2.7 Understand load dynamics and associated hazards
23.4.2.8 Selection of rigging components
23.4.2.9 Develop rigging procedures
23.5 DOCUMENTATION

23.5.1 A Rigger Certification from an accredited Training Facility/Company.

23.5.2 SFAB shall issue a LF 61 (Civil Servants) or the contractor equivalent certifies that the holder has successfully completed the course work and physical requirements in accordance with section 25.4 of this LPR.

23.6 MEDICAL SURVEILLANCE

23.6.1 Employees who perform work as Riggers at LaRC shall follow the same medical surveillance requirements that a Lifting Operator (Crane Operator).
24. FORKLIFT OPERATORS

24.1 NASA REQUIREMENT NPR 8715.3

24.2 CERTIFICATION

24.2.1 Hardware Handlers at LaRC are classified as Lifting Operators or Forklift Operators.

24.3 RESPONSIBILITY

24.3.1 Supervisor shall ensure that personnel under his/her responsibility are trained and certified in compliance with this document to operate special handling equipment or perform critical lifting.

24.4 QUALIFICATIONS

24.4.1 Workers requiring safety certification as a Forklift Operator shall be required to complete the following:

24.4.1.1 Attend a classroom training program addressing the following issues as they relate to forklift utilization:

24.4.1.1.1 Safety,
24.4.1.1.2 Emergency procedures,
24.4.1.1.3 General performance standard,
24.4.1.1.4 Requirements,
24.4.1.1.5 Pre-operational checks, and
24.4.1.1.6 Safety related defects and symptoms for forklifts.

24.4.1.1.7 Testing requirements for Forklift Operators shall include written examinations that contain appropriate questions addressing the demands of the work to be performed. The questions shall address, but are not limited to, the subject areas listed below.

24.4.1.1.7.1 Safety applications and safety inspections
24.4.1.1.7.2 Knowledge of equipment limitations, capabilities, and design considerations
24.4.1.1.7.3 Knowledge of equipment operations and control systems
24.4.1.1.7.4 Equipment care and damage reporting requirements
24.4.1.1.7.5 Use of required safety equipment
24.4.1.7.6  Ground slope restrictions

24.4.1.7.7  Emergency operation procedures

24.4.1.7.8  Lifting, moving, and setting-down load restrictions

24.4.1.7.9  Weight restrictions

24.4.1.1.1.10  Approved accessories

24.4.1.2  Forklift Operators shall successfully pass the appropriate written test establishing that the worker has operational safety and knowledge of forklift use.

24.4.2  Complete sufficient hands on training to be able to demonstrate proficiency to a certified operator on the specific type of equipment.

24.4.2.1  Hands-on proficiency testing for Forklift Operators shall be required before they can be safety certified. This hands-on examination shall include, as a minimum:

24.4.2.1.1  Demonstrating proper use of forklift controls

24.4.2.1.2  Following proper procedures for unattended forklift

24.4.2.1.3  Demonstrating competency in basic maneuvering skills

24.4.2.1.4  Demonstrating competency in picking up a load

24.4.2.1.5  Demonstrating competency in driving with a load

24.4.2.1.6  Demonstrating competency in stacking a load

24.4.2.1.7  Demonstrating competency in loading/unloading a trailer, rail car, or other vehicle

24.4.2.2  Forklift Operator and Supervisor shall document that an informal annual review by their organization on equipment operation and safety procedures was conducted.

24.5  DOCUMENTATION

24.5.1  Civil servant employees

24.5.1.1  Supervisor shall complete and submit LF 66 requesting a forklift medical protocol for their employee.

24.5.1.2  A LF 113 shall be used to document and certify that worker qualifications required in section 26.4.2 have been satisfied.

24.5.1.3  Once all requirements are completed by the employee, SFAB shall issue a LF65 to certify the employee as a Forklift Operator.

24.5.1.3.1  The LF 65 shall show the specific forklift equipment that the operator is certified to operate on the reverse side of the card.
24.5.1.4 The operator shall have the card on-hand or readily accessible, as proof of his/her certification, while performing applicable tasks, with an expiration date not to exceed 3 years.

24.5.2 Contractor personnel

24.5.2.1 Contractor personnel shall be issued a certification card equivalent to the LF 65.

24.5.2.1.1 The LF 65 shall show the specific forklift equipment that the operator is certified to operate on the reverse side of the card.

24.5.2.2 The operator shall have the card on-hand or readily accessible, as proof of his/her certification, while performing applicable tasks, with an expiration date not to exceed 3 years.

24.6 MEDICAL SURVEILLANCE

24.6.1 Forklift Operators shall undergo and pass a medical examination in accordance with LaRC OMEP's.

24.6.2 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

24.6.3 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

24.6.3.1 The contractor is responsible for implementing these examination requirements through a medical provider of their choosing.
25. HEAVY EQUIPMENT OPERATOR

25.1 NASA REQUIREMENT NPR 8715.3

25.2 CERTIFICATION

25.2.1 Only individuals pre-qualified to operate heavy equipment may do so. This qualification is documented on an LF 65.

25.2.2 Operators of equipment that can be used on public highways must have a valid driver’s license.

*Note: includes specialized maintenance and construction equipment such as backhoes, bulldozers, excavators, skid steers, wheel loaders, dump trucks, etc.*

25.3 RESPONSIBILITY

Managers and supervisors shall ensure that only qualified and authorized employees are assigned to use heavy equipment.

25.4 QUALIFICATION

25.4.1 Employees who are to operate heavy equipment shall be qualified and certified.

25.4.2 Training shall include both a classroom portion and a hands-on skills demonstration element under the guidance of a certified heavy equipment operator.

25.5 DOCUMENTATION

The supervisor will maintain equipment operator qualification records.

25.6 MEDICAL SURVEILLANCE

25.6.1 Heavy Equipment Operators shall undergo and pass a medical examination in accordance with LaRC OMEP’s.

25.6.2 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

25.6.3 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

25.6.3.1 The contractor is responsible for implementing these examination requirements through a medical provider of their choosing.
26. CONFINED SPACE WORKER

26.1 NASA REQUIREMENT NPR 8715.3

26.2 CERTIFICATION

26.2.1 All individuals who participate in the entry of permit required confined spaces shall be properly trained and safety qualified as confined space workers.

26.2.2 This includes all personnel that will be entrants, attendants and/or entry supervisors.

26.2.3 The safety certification shall be completed in accordance with this document.

26.2.4 A "permit-required confined space (permit space)" means a confined space that has one or more of the following characteristics:

26.2.4.1 Contains or has a potential to contain a hazardous atmosphere;

26.2.4.2 Contains a material that has the potential for engulfing an entrant;

26.2.4.3 Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or

26.2.4.4 Contains any other recognized serious safety or health hazard.

26.2.5 Confined spaces normally include, but are not limited to, boilers, furnaces, degreasers, storage tanks, test chambers, vessels, tunnels, compartments, pits, vats, sewers, underground utility vaults, manholes, certain locations within aircraft and spacecraft when not in flight, and any other location not specifically defined that is designated a confined space (see LPR 1740.2).

26.3 RESPONSIBILITY

26.3.1 It is the responsibility of each first-line supervisor to ensure that personnel within their organization who function as Confined Space Workers are trained and qualified.

26.4 QUALIFICATIONS
26.4.1 As a minimum and prior to working as a confined space worker, individuals shall receive training covering the following subjects:

26.4.1.1 Hazard recognition,
26.4.1.2 Proper respiratory protection for confined spaces,
26.4.1.3 Use of atmospheric testing devices to include training on the manufacturers’ specified field checks, normal use, and specific limitations of the equipment,
26.4.1.4 Lockout and tagging procedures,
26.4.1.5 Use of special equipment and tools,
26.4.1.6 Emergency and rescue methods and procedures, and
26.4.1.7 Emergency entry and exit procedures.

26.5 DOCUMENTATION

26.5.1 LF 60 shall be used to document the certification of Confined Space Workers.
26.5.2 LF 60 shall be used by both government and contract personnel to certify that the qualifications and training required to become safety certified have been satisfied.
26.5.3 LF 60 shall require the signature of the entry supervisor to approve the certification of a worker as a Confined Space Worker. The entry supervisor may not be the employee’s supervisor.

26.6 MEDICAL SURVEILLANCE

26.6.1 Employees who perform work as Confined Space Workers shall not be required to undergo a medical examination prior to safety certification.
27. DOT HAZMAT HANDLER

27.1 NASA REQUIREMENT NPR 8715.3

27.2 CERTIFICATION

27.2.1 All individuals who handle, transport, or package hazardous materials but do not otherwise disturb the integrity of the basic properly-packaged shipping container that holds the hazardous material must be trained and certified to perform these functions.

27.2.2 Employees who transport HAZMAT over public roads (off-Center) that requires placards, per state and federal requirements, shall have a commercial driver's license (CDL) with a hazardous materials endorsement to drive a vehicle carrying hazardous materials.

27.3 RESPONSIBILITY

27.3.1 Each first-line supervisor shall ensure that personnel within their organization who function as DOT HAZMAT handlers are trained and qualified.

27.4 QUALIFICATIONS

27.4.1 Prior to working as a HAZMAT Handler, personnel must be trained in accordance with 49 CFR 171 and 49 CFR 172 and meet the minimum requirements below:

27.4.1.1 Employees DOT function-specific duties;
27.4.1.2 General awareness/familiarization
27.4.2 Safety
27.4.2.1 Security awareness
27.4.2.2 Facility specific security plan training
27.4.3 Training
27.4.3.1 Employees who transport/ship hazardous materials by highways shall have proper training per DOT every 3 years.

27.4.3.2 Employees who transport/ship materials by air shall have proper training per DOT every 2 years and follow the Air Transport Association Dangerous Goods Regulations (IATA).

27.4.3.3 Training Records shall be kept by the hazmat employer for each hazmat employee and include the following:

27.4.3.4 Hazmat employee’s name

27.4.3.5 Completion date of the most recent training

27.4.3.6 Training materials used (copy, description, or locations)

27.4.3.7 The name and address of the hazmat trainer

27.4.3.8 Certification that the employee has been trained and tested

27.4.3.9 Training records shall be retained for each hazmat employee for 3 years from the date of the last training and for 90 days after the employee leaves the company/organization.

27.5 DOCUMENTATION

27.5.1 Employees who transport hazardous materials listed on the DOT table of Hazardous Materials and requires placarding over public roads (off-Center) must have a valid state commercial driver’s license (CDL), with an endorsement H for hazardous materials.

27.6 MEDICAL SURVEILLANCE

27.6.1 Employees who perform work as a HAZMAT handler shall not be required to undergo a medical examination unless they are a driver transporting hazardous materials over public roads and have a CDL with the hazmat endorsement.
28. IONIZING RADIATION WORKER

28.1 NASA REQUIREMENT NPR 1800.1

28.2 CERTIFICATION

28.2.1 All personnel who operate, manipulate, or who have any other type of physical control over the use of ionizing radiation-producing equipment or material shall be required to be trained and safety certified as Ionizing Radiation Workers and be issued an LF 492.

28.2.2 Most hazardous operations at LaRC are defined by an LF 498. An LF 498 shall be initiated by the submission of either an LF 38, LF 38 or LF 48.

28.2.3 Additionally, personnel who are likely to receive a radiation dose in excess of 10 percent of the limits specified in LPR 1710.5, “Ionizing Radiation,” Chapter 6, as a result of exposure to radiation-producing equipment on LaRC, shall also be trained and certified as Ionizing Radiation Workers.

28.2.4 Questions concerning this certification requirement shall be directed to the Radiation Safety Officer (RSO).

28.3 RESPONSIBILITY

28.3.1 It is the responsibility of each FSH to ensure that personnel within their facility, who fall under the parameters outlined in section 23.2.1, shall be trained and certified under the safety certification requirements of an Ionizing Radiation Worker.

28.3.2 It is the responsibility of the supervisor of each organization that works with ionizing radiation to ensure that personnel who work with ionizing radiation are trained and certified in compliance with this document.

28.4 QUALIFICATIONS

28.4.1 As a minimum, and prior to working with ionizing radiation, candidate personnel shall be required to specify the radiation experience and training they have received in the following areas:

28.4.1.1 General description of radiation and radiation hazards (provided by RSO or contracting company),

28.4.1.2 Basic principles of radiation safety (provided by RSO or contracting company),

28.4.1.3 Appropriate Federal regulations and LPR 1710.5,

28.4.1.4 Emergency procedures (provided by FSH), and

28.4.1.5 Radiation safety procedures relevant to duties associated with employment (provided by each FSH).
28.5 DOCUMENTATION

28.5.1 Ionizing Radiation Workers on LaRC include both civil service and contract employees. The specific documents that these workers shall complete and, in some cases, possess that identify them as Ionizing Radiation Workers are identified in this chapter.

28.5.2 Worker Appointment and Certification Forms

28.5.2.1 Applicants shall complete and submit the appropriate Appointment and Certification Form which stipulates that the training and safety certification requirements of an Ionizing Radiation Worker have been fulfilled.

28.5.3 Supervisors of Civil Service Workers shall complete and submit LF 66.

28.5.4 Contractors

28.5.4.1.1 Contract personnel shall complete and submit an appropriate comparable form provided by their company to the RSO.

28.5.4.1.2 The contractor’s form shall provide for equivalent information as required by LF 66.

28.5.4.1.3 The contractor’s form shall contain an approval process.

28.5.5 Radiation Worker’s Certification Card

28.5.5.1 Upon receipt and approval of an LF 66 the RSO shall issue the civil service requester an LF 492.

28.5.5.2 Contractor employees shall be issued an equivalent certification card by their contracting company, upon receipt and approval of the contracting company’s comparable form.

28.5.5.3 The worker shall have the card on-hand or readily accessible, as proof of his/her certification, while performing applicable tasks.

28.5.5.4 Revalidation of Certification

28.5.5.4.1 LF 492s or contractor equivalent are valid for two years from the date of issuance.

28.5.5.4.2 Each radiation worker shall have the LF 492 or contractor equivalent revalidated by the RSO or contracting company prior to the card expiration date.

28.5.5.5 Termination of Certification

28.5.5.5.1 Upon termination of employment, or when the worker no longer needs to be certified to perform ionizing radiation work, the worker shall immediately surrender the LF 492 to the RSO or contractor equivalent to the contracting company.
28.6 MEDICAL SURVEILLANCE

Employees who perform work as an Ionizing Radiation Worker shall not be required to undergo a medical examination prior to safety certification.
29. CHEMICAL WORKER

29.1 NASA REQUIREMENT NPR 1800.1, LPR 1710.13, AND LPR 1710.12

29.2 CERTIFICATION

29.2.1 LaRC civil service and contract employees who handle specified potentially hazardous materials (PHM) shall be classified as Chemical Workers and be issued an LF 62, Chemical Worker’s Certification Card.

29.2.2 LaRC civil service and contract employees who conduct operations or perform functions using materials listed on LF 498, “Safety Permit”, shall be classified as Chemical Workers and be issued an LF 62, Chemical Worker’s Certification Card.

29.2.3 LaRC civil service and contract employees who conduct operations or perform functions under a LF 381, “Laboratory Specific Chemical Hygiene Plan (CHP)”, shall be classified as Chemical Workers and be issued an LF 62, Chemical Worker’s Certification Card.

29.3 RESPONSIBILITY

29.3.1 Supervisor shall ensure that their personnel who handle potentially hazardous materials, or under a safety permit, or under a chemical hygiene plan are trained and certified in compliance with this document.

29.3.2 Supervisors shall discuss yearly with their employee the need to continue being classified as a Chemical Worker.

29.3.2.1 If employee needs to continue being a Chemical Worker then the Supervisor shall fill and submit a LF66.

29.3.3 SFAB is responsible to provide the Chemical Worker safety training and issue the LF 65.

29.3.4 The SFAB IH staff shall perform assessments of site PHM Health Risks and provide copy of the report to the FSHs and the LaRC Safety Manager.

29.3.5 FSHs and their designated representatives shall establish procedures for periodic reviews of their at-risk employee population for the use of PHMs.

29.4 QUALIFICATIONS

Review and initialize PHM Safety Permits
Review and sign CHP

29.5 DOCUMENTATION

LF66
LF65
29.6 MEDICAL SURVEILLANCE

29.6.1 Chemical Worker shall undergo and pass a medical examination in accordance with LaRC OMEP’s.

29.6.2 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

29.6.3 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

29.6.3.1 The contractor is responsible for implementing these examination requirements through a medical provider of their choosing.
30. FALL PROTECTION AUTHORIZED USER

30.1 NASA REQUIREMENT NPR 8715.3 CHAPTER 3.18.1

30.2 CERTIFICATION

30.2.1 Personnel whose normal or periodic duties or assignments require them to function at any walking/working surface where fall protection is required, shall be certified as a fall protection authorized user.

30.2.2 Personnel who work on walking/working surfaces where OSHA compliant guardrails have been installed are not required to be certified.

30.2.3 Personnel who are certified as an aerial lift worker are not Fall Protection certified user.

30.3 RESPONSIBILITY

30.3.1 Supervisors shall refer all questions relative to working at elevated levels to the LaRC Safety Manager, or designee, for advice and guidance.

30.3.2 Supervisors shall ensure that all personnel under their supervision designated as Fall Protection Authorized Users are, and remain, certified.

30.3.2.1 For Civil Servants workers – complete and submit LF66 to the LaRC Occupational Health Clinic 2 weeks before appointment.

30.3.2.2 For Contractors workers – process a LF66 equivalent in accordance with your contract and company policies.

30.4 QUALIFICATIONS

30.4.1 As a minimum, and prior to working as a Fall Protection Authorized User, candidate personnel shall receive formal classroom training in fall protection from a competent person or qualified person before they use fall protection systems, or are exposed to a fall hazard.

30.4.2 Training for Fall Protection Authorized Users shall include:

30.4.2.1 How to inspect, anchor, assemble and use the fall protection equipment commonly used;

30.4.2.2 Physical demonstration by trainee on how to inspect, anchor, assemble and use fall protection equipment commonly used in location where they work.

30.4.2.3 Fall hazard recognition;

30.4.2.3.1 Fall hazard elimination and control methods;

30.4.2.3.2 Their responsibilities under applicable fall protection regulations;

30.4.2.3.3 How to use written fall protection procedures;
30.4.2.3.4 Inspection of equipment components and systems before use;

30.4.2.3.5 Fall protection rescue procedures;

30.5 DOCUMENTATION

30.5.1 Personnel performing work on LaRC as a Fall Protection Authorized User shall be required to complete specific documentation and request certification to perform their duties.

30.5.2 Fall Protection Authorized Users on LaRC may be either civil service employees or contract employees. The specific documents that shall be required to be processed and issued for both of these classes of workers identified in this chapter.

30.5.3 Worker's Certification Card

30.5.3.1 Upon receipt and approval of an LF 66 the LaRC Safety Manager, or designee shall issue the civil service requester an LF 65.

30.5.3.2 Contractor employees shall be issued an equivalent certification card by their contracting company, upon receipt and approval of the contracting company’s comparable form.

30.5.3.3 Employees shall have the card on-hand or readily accessible, as proof of his/her certification, while performing applicable tasks.

30.5.3.4 LF 65 or contractor equivalent are valid for two years from the date of issuance.

30.5.4 Termination of Certification

30.5.4.1 Upon termination of employment, or when the worker no longer needs to be certified as a Fall Protection Authorized User:

30.5.4.1.1 Civil Service employees shall immediately surrender the LF 65 to the LaRC Safety Manager, or designee.

30.5.4.1.2 Contractor employees shall surrender their equivalent certification card to their contracting company safety representative.
30.6 **MEDICAL SURVEILLANCE**

30.6.1 Fall Protection Users shall undergo and pass a medical examination in accordance with LaRC OMEP’s.

30.6.2 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

30.6.3 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

30.6.3.1 The contractor is responsible for implementing these examination requirements through a medical provider of their choosing.
31. SCAFFOLD ASSEMBLERS/ INSPECTORS

31.1 NASA REQUIREMENT NPR 8715.3

31.2 CERTIFICATION

31.2.1 Personnel whose normal or periodic duties or assignments require them to erect or inspect scaffolding shall complete the following Center training requirements:

31.2.1.1 Classroom instruction
31.2.1.2 Hands on demonstration accompanied by a Class I Instructor
31.2.1.3 26.2.2 Upon completion of the above, an LF 347 will be issued for the appropriate level.

31.3 RESPONSIBILITY

31.3.1 Supervisors shall ensure that all personnel under their supervision who assemble or inspect scaffolding are provided training appropriate to their level of involvement.

31.4 QUALIFICATIONS

31.4.1 Prior to work assembling or inspecting scaffolding, employees must have the appropriate training. Personnel shall receive formal classroom training from a competent person before they assemble/inspect scaffolding systems.

31.5 DOCUMENTATION

31.5.1 Worker Appointment and Certification Forms

31.5.2 Applicants shall complete and submit the appropriate Appointment and Certification Form which stipulate that the training and safety certification requirements of a Scaffold Class I - Verifier, Class II – General (assemble & Inspector), or Class III – Inspector only, have been fulfilled.

31.5.2.1 Supervisors of Civil servants workers shall complete and submit LF 66.
31.5.2.2 Contract personnel shall complete and submit an appropriate comparable form provided by their company.

31.5.2.2.1 The contractor’s form shall provide for equivalent information as required by the LF 66.
31.5.2.2.2 The contractor’s form shall contain an approval process.
31.5.3 Worker's Certification Card

31.5.3.1 Upon completion of training and receipt and approval of an LF 66, the LaRC Safety Manager, or designee shall issue the civil service requester an LF 347.

31.5.3.2 Contractor employees shall be issued a certification card equivalent to LF 66 by their contracting company, upon receipt and approval of the contracting company's comparable form.

31.5.3.3 Employees shall have the card on-hand or readily accessible, as proof of his/her certification, while performing applicable tasks.

31.5.3.4 LF 347 or contractor equivalent are valid for four years from the date of issuance.

31.5.4 Termination of Certification

31.5.4.1 Upon termination of employment, or when the worker no longer needs to be certified as a Scaffold User:

31.5.4.1.1 Civil Service employees shall immediately surrender the LF 347 to the LaRC Safety Manager, or designee.

31.5.4.1.2 Contractor employees shall surrender their equivalent certification card to their contracting company safety representative.

31.6 MEDICAL SURVEILLANCE

Employees who perform work as Scaffold User shall not be required to undergo a medical examination prior to safety certification.
32. FACILITY SAFETY HEADS AND FACILITY COORDINATORS FOR HIGH AND MEDIUM RISK FACILITIES

32.1 NASA REQUIREMENT LAPD 1700.2

32.2 CERTIFICATION

32.2.1 RISK CLASSIFICATION

32.2.1.1 LaRC facilities have been classified within four risk levels, High (FR1), Medium (FR2), Low (FR3), and Very Low (FR4) Risk in accordance with NASA-STD-8719.7, Facility System Safety Handbook. See Appendix C for each risk level definition.

32.2.1.2 Each Facility classified as a High and Medium Risk Facility shall develop a detailed Facility Certification Program Training to certify new FC and FSH and alternates. See Appendix D for guidance for a Facility Certification Program Training.

32.2.2 The Facility Certification Program Training shall be signed by the Facility Owner (Director Level) appointed representative, the supervisor(s)/facility manager responsible for the operation of the facility, and the Safety Manager.

32.2.3 The required Facility Certification Program Training shall be tailored to the specific systems and/or equipment and developed by the Facility Owner (Director Level) appointed representative, FC, FSH, the Supervisor and other facility personnel.

32.2.4 The Facility Certification Program Training program shall identify applicable documentation (i.e., Safety Analysis Report (SAR), pressure systems documents, facility emergency procedures, Lockout/Tagout program, LaRC and Agency requirements, OSHA regulations, etc.) required for the certification.

32.2.5 The FC shall document the Facility Certification Program Training program as part of the Facility Documentation (i.e., Facility Resume, Configuration Management,
Langley Management System or other documentation that is easily accessible) under the Facility Owner control.

32.2.6 The Certification process shall require the FC/FSH candidate to:

32.2.6.1 Demonstrate working knowledge of the specific systems, equipment, work activities, and materials associated with the facility.

32.2.6.2 Demonstrate working knowledge of the facility safety risks/hazards, their mitigation measures/practices.

32.2.6.3 Demonstrate working knowledge of the written operating procedures/checklists for proper operation of the facility high risk systems.

32.2.7 CERTIFICATION PROCESS

32.2.7.1 The Facility Owner (Director Level) shall appoint a person (Review Board/Panel Chairperson) to oversee the certification process.

32.2.7.1.1 The Review Board/Panel shall consist at least of the following members: Review Board/Panel Chairperson, a FSH and FC (if still available from the same facility), a representative from the Safety and Facility Assurance Branch, a supervisor from the facility that is familiar with the facility operations.

32.2.7.2 The Facility Owner appointed representative shall appoint a mentor(s) for the FSH/FC candidate to provide guidance in the training and certification process.

32.2.7.2.1 Upon completion of the training identified in the Facility Certification Training Program, the review board/panel shall conduct an oral interview to ascertain the candidate’s level of knowledge and understanding of his/her responsibilities and functions in the facility.

32.2.7.3 After successful completion of the prescribed Facility Certification Training Program, the candidate shall be recommended to their Organization Director, Program Manager, if contractor, and the Safety and Mission Assurance Office Director by the Review Board/Panel Chairperson to be appointed to the FSH or FC position through processing Langley Form 1 (LF1).

32.2.7.3.1 The Alternate FSH and FC positions will required to follow the same certification process

32.2.7.3.2 In case there is not an appointed FSH or FC, the FSH or FC candidate shall be appointed on a temporary basis (6 months) so he/she can complete the necessary training certification requirements.
32.3 RESPONSIBILITY

32.3.1 The new FC/FSH candidate shall complete all the Facility Certification Training Program and demonstrate his/her knowledge and completion of the on-the-job training to the Review Board.

32.3.2 The facility owner appointed representative shall appoint a representative to sign the Facility Certification Training Program and the Review Board/Panel Chairperson.

32.3.3 The Chair of the Review Board/Panel shall ensure the new FC/FSH candidate demonstrate his/her knowledge and understanding towards satisfactorily discharging his/her duties.

32.3.4 The Facility Safety Head is responsible for activities within his/her facility as defined in LAPD 1700.2.

32.4 QUALIFICATIONS

32.4.1 Candidate has an appropriate engineering, science, or technical background demonstrated through education and/or experience.

32.4.2 Successful completion of the respective Facility Certification Training Program.

32.4.3 Successful demonstration of his/her knowledge and understanding towards discharging duties to the Review Board consisting of Center and facility personnel.

32.4.4 Other requirements

32.4.4.1 Attend the yearly training conducted by SMAO.

32.4.4.2 Attend one-time training on safety related databases conducted by SMAO.

32.4.4.3 Attend a 30-Hour OSHA Training for General Industry prior to or within 1 year of being appointed as a FC or FSH or alternate.

32.5 DOCUMENTATION

32.5.1 The FSH and FC shall be appointed by processing Langley Form 1 (LF 1).

32.5.2 The signed off training documents and a LF 1 form signed by the Review Board/Team Chairperson, the Facility Owner Director, Program Manager, if contractor, and by SMAO Director.

32.5.3 Safety and Facility Assurance Branch shall keep the documentation for each respective candidate in the FSPL database.

32.6 MEDICAL SURVEILLANCE

Employees who perform work as Facility Safety Heads and Facility Coordinators for High and Medium Risk Facilities shall not be required to undergo a medical examination prior to safety certification.
33. FACILITY SAFETY HEADS AND FACILITY COORDINATORS FOR LOW AND VERY LOW RISK FACILITIES

33.1 NASA REQUIREMENT LAPD 1700.2

33.2 CERTIFICATION

33.2.1 Risk Classification - Low Risk (LR) facilities: Each facility classified as a Low or Very Low Risk shall develop a Facility Certification Training Program for FC and FSH.

33.2.2 The training program shall be documented on Langley Forms LF260 and LF261.

33.2.3 The training program shall be filed in the Facility Resume.

33.2.4 After notification from SFAB of an appointment to be FSH or FC the candidate shall:

33.2.4.1 Meet with SFAB personnel to received training regarding different safety databases necessary with their daily functions.

33.2.4.2 Complete the training documented on the Facility Certification Training Program within 6-months

33.2.5 SFAB shall appoint the FSH or FC on a temporary basis (6 months) so he/she can complete the required training.

33.3 RESPONSIBILITY

33.3.1 The Facility Safety Head is responsible for activities within his/her facility as defined in LAPD 1700.2.

33.4 QUALIFICATIONS

33.4.1 Qualifications for personnel who perform FSH and FC functions shall include a technical background demonstrated through education and/or experience as required by the Facility Owner.

33.4.2 The FSH and FC shall:

33.4.2.1 Attend the yearly training conducted by SMAO

33.4.2.2 Attend a 30-Hour OSHA Training for General Industry prior to or within 1 year of being appointed as a FC or FSH.

33.5 DOCUMENTATION

33.5.1 The FSH and/or FC shall be appointed by processing Langley Form 1 (LF 1) and signed by Facility Owner Director, Program Manager, if contractor, and by SMAO Director.
33.6 MEDICAL SURVEILLANCE

Employees who perform work as Facility Safety Heads and Facility Coordinators for Low Risk Facilities shall not be required to undergo a medical examination prior to safety certification.
34. INTERIM RESPONSE TEAM (LARC INTERNAL OR LARC PROJECTS)

34.1 NASA REQUIREMENT NPR 8621.1

34.2 CERTIFICATION

Personnel assigned to be part of the Center or a Program/Project Interim Response Team shall complete the following training:

34.2.1 SMA-002-07: Overview of Mishap Investigations

NOTE: This course is one of four needed to fulfill the requirements for introductory training on NASA mishap investigations in accordance with NPR 8621.1. By itself, this course does NOT fulfill NPR 8621.1 training requirements. You must also successfully complete all of the following courses to comply:

34.2.2 SMA-002-08 Mishap Investigation Roles and Responsibilities

34.2.3 SMA-002-09 Completing the Investigation and Mishap Report

34.2.4 SMA-002-10 Root Cause Analysis

34.2.5 SHE 204: Bloodborne Pathogens Exposure Control

34.2.6 SHE 209B: Confined Space Entry Refresher

34.2.7 SHE 224: Working With Hazardous Materials

34.2.8 FEMA – 100: Introduction to the Incident Command System

34.2.9 SMA-SAFE-OSMA-4005: NASA Preliminary IRT Training

34.2.10 Participate in an annual IRT Refresher Training or in a mishap/incident simulation

34.3 RESPONSIBILITY
34.3.1 The IRT member(s) shall:

34.3.1.1 Assist Incident Commander as requested.

34.3.1.2 Accept responsibility of the incident site from Incident Commander until relieved by the Investigative authority.

34.3.1.3 Preserve evidence, document the scene, identify witnesses and collect debris.

34.3.1.4 Only Federal Employees on the IRT can support the center Safety Office in impounding data and collecting witness statements (written statements when possible).

34.3.1.5 For mishaps at contractor or sub-contractor sites, the IRT will work through the Contracting Officer, with the guidance from the Legal Advisor, to obtain and impound data.

34.3.1.6 Advise the Supervisor/COR or CO if drug testing is required per the NPR 3792.1, Plan for a Drug Free Workplace.

Note: Per NPR 3792.1 the Supervisor shall initiate drug testing after mishap if the mishap results in a fatality or personal injury requiring immediate hospitalization or in damage estimated to be in excess of $10,000 to Government or private property.

34.3.1.7 Adhere to the PPE requirements as defined by the Center safety office personnel or incident commander.

34.3.1.8 Provide all available mishap data and evidence to the investigative authority.

34.4 QUALIFICATIONS

34.4.1 The IRT members shall meet the requirements in section 35.2 and shall have specific training to perform specific tasks (i.e. take pictures of the scene, impound data, interview witnesses)

34.5 DOCUMENTATION

34.5.1 For Center IRT Members - Appointment letter from the Safety and Facility Assurance Branch Head.

34.5.2 For Programs/Projects IRT Members - Appointment letter from the Program/Project Manager.
34.6 MEDICAL SURVEILLANCE

34.6.1 The IRT members shall have a wellness physical exam every year

34.6.2 The IRT members shall have the following vaccinations

34.6.2.1 Tetanus and Diphtheria immunization within 10 years

34.6.2.2 Hepatitis A immunization within 10 years

34.6.2.3 Hepatitis B immunization within 10 years

34.6.2.4 Other immunizations when traveling to foreign countries, as required.
35. HAZARDOUS WASTE OPERATOR

35.1 NASA REQUIREMENT NPR 1800.1 AND 29 CFR (OSHA) 1910.120

35.2 CERTIFICATION

35.2.1 The Center does not train or certify Hazardous Waste Operators.

35.2.2 The organization (civil servant or contractor) shall send employee(s) to a certified training facility that meet or exceed the 29 CFR 1910.120 training requirements.

35.2.2.1 The training shall include hands-on performance of the work tasks.

35.2.2.2 Annual 8 hour refresher training is required each year to maintain certification.

35.3 RESPONSIBILITY

35.3.1 First-line supervisor shall ensure that personnel within their organization who perform hazardous waste operations on the Center are trained and certified for that purpose.

35.4 QUALIFICATIONS

35.4.1 OSHA requirements

35.5 DOCUMENTATION

35.5.1 Certificate of completion from 3rd party training facility

35.5.2 Training documentation must be maintained by the employee’s organization.

35.6 MEDICAL SURVEILLANCE

35.6.1 Hazardous Waste Operators shall undergo and pass a medical examination in accordance with LaRC OMEP’s.

35.6.2 Civil servants shall receive examinations at the occupational medicine clinic in accordance with LaRC OMEPs.

35.6.3 Contracts issued by LaRC shall require the same level of examinations for contract employees in accordance with LaRC OMEPs.

35.6.3.1 The contractor is responsible for implementing these examination requirements through a medical provider of their choosing.
APPENDIX A - ACRONYMS

A.1. AGE – Arterial gas embolism
A.2. CDL – Commercial Driver’s License
A.3. CG – Center of Gravity
A.4. CPR – Cardiopulmonary resuscitation
A.5. DCS – Decompression sickness
A.6. DOT – Department of Transportation
A.7. ECG – Electrocardiogram
A.8. FSH – Facility Safety Head
A.9. FTS – Flight Termination System
A.10. HAZMAT – Hazardous Materials
A.11. JHA – Job Hazard Analysis
A.12. LaRC – Langley Research Center
A.13. LF – Langley Form
A.14. LMS – Langley Management System
A.15. LOTO – Lockout Tagout
A.16. LPR – Langley Procedural Requirement
A.17. NPR – NASA Procedural Requirement
A.18. NPS – Non-Personal Service
A.19. OMC – Occupational Medicine Clinic
A.20. OMEP - Occupational Medicine Examination Protocol
A.21. OSHA – Occupational Safety and Health Administration
A.22. OUM – Organizational Unit Manager
A.23. PHM – Potentially Hazardous Materials
A.24. RL/RT – Red Lock/Red Tag
A.25. RSO – Radiation Safety Officer, Range Safety Officer
A.26. SDS – Safety Data Sheet
A.27. SCMP – Software Configuration Management Plan
A.28. SCUBA – Self-Contained Underwater Breathing Apparatus
A.29. SFAB – Safety and Facility Assurance Branch
A.30. SPE – Standard Practice Engineer
A.31. UAS – Uninhabited Aerial System
APPENDIX B - OTHER CERTIFICATIONS PER NPR 8715.3

The following certifications are identified in NPR 8715.3 but are not currently used/required at LaRC:

a) Altitude Chamber Operator
b) Hyperbaric Chamber Operator
c) Tank Farmer Worker
d) Centrifuge Operator
APPENDIX C – FACILITY RISK INDEX

C.1 LaRC facilities have been classified within four risk levels, High (FR1), Medium (FR2), Low (FR3), and Very Low (FR4) Risk in accordance with NASA-STD-8719.7, Facility System Safety Handbook.

C.1.1 FRI 1 (High Risk) Definition – There is a HIGH risk that identified potential hazards in this facility could cause loss of life, permanent disability, the hospitalization of three or more people, a lost-time injury to one or more people, an occupational injury or illness resulting in a restricted workday or OSHA recordable incident, a first aid incident, damage to equipment or property in excess of $1,000,000, or any injury/property damage to the public.

C.1.2. FRI 2 (Moderate Risk) Definition – There is a MODERATE risk that identified potential hazards in this facility could cause loss of life, permanent disability, the hospitalization of three or more people, a lost-time injury to one or more people, an occupational injury or illness resulting in a restricted workday or OSHA recordable incident, a first aid incident, or damage to equipment or property from $250,000 to $1,000,000.

C.1.3. FRI 3 (Low Risk) Definition – There is a LOW risk that identified potential hazards in this facility could cause loss of life, permanent disability, the hospitalization of three or more people, a lost-time injury to one or more people, an occupational injury or illness resulting in a restricted workday or OSHA recordable incident, a first aid incident, or damage to equipment or property from $1,000 to $250,000.

C.1.4. FRI 4 (Very Low Risk) Definition – There is a VERY LOW risk that identified potential hazards in this facility could cause loss of life, permanent disability, the hospitalization of three or more people, a lost-time injury to one or more people, an occupational injury or illness resulting in a restricted workday or OSHA recordable incident, a first aid incident, or damage to equipment or property less than $1,000.
APPENDIX D FACILITY CERTIFICATION PROGRAM TRAINING GUIDELINES

D.1 THIS APPENDIX PROVIDE THE GUIDELINES TO DEVELOP A FACILITY CERTIFICATION PROGRAM
### FC/FSH Documentation Reading Requirements to be incorporate in the Facility Training Plan

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<td>Safety Certification</td>
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<td>Electrical Safety</td>
<td>LPR 1710.6</td>
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<td>Fire Protection Program</td>
<td>LPR 1710.11</td>
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<tr>
<td>Potentially Hazardous Materials</td>
<td>LPR 1710.12</td>
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<tr>
<td>Acquisition of Hazardous Materials</td>
<td>LMS-CP 4759</td>
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<tr>
<td>Signs and Directory Boards</td>
<td>LAPD 1500.5</td>
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<tr>
<td>Engineering Drawing System</td>
<td>LPR 7320.1</td>
<td>✔</td>
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<tr>
<td>Asbestos Configuration Management Program</td>
<td>ACMP</td>
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<tr>
<td>Facility Configuration Management</td>
<td>LPR 7123.2</td>
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<tr>
<td>Facility Change Request Process</td>
<td>LMS-CP-4710</td>
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<tr>
<td>Langley Research Center Noise and Hearing Conservation Program</td>
<td>LPR 2710.1</td>
<td>✔</td>
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<tr>
<td>LaRC Environmental Compliance, Restoration, and Pollution Prevention Program</td>
<td>LAPD 8500.1</td>
<td>✔</td>
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<tr>
<td>Environmental Program Manual</td>
<td>LPR 8500.1</td>
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<td>Computerized Maintenance Management System (CMMS) Change Request</td>
<td>CP-5616</td>
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<td>Use and Handling of Explosives and Pyrotechnics</td>
<td>LPR 1710.7</td>
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<td>Physical Security Requirements for NASA Facilities and Property</td>
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<td>Safeguarding NASA Resource Protection and Mission Essential Infrastructure Assets</td>
<td>CP-4810</td>
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<tr>
<td>Standard Description</td>
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<td>Langley Research Center Standards for Acquisition or Use of Threaded Fasteners</td>
<td>LAPD 5330.3</td>
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<td>CS Facility Baseline Drawing List</td>
<td>CMOL-FBL</td>
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<td>Langley Research Center Policy for Controlling Keys, Combinations and Locks</td>
<td>LAPD 1600.6</td>
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<td>Ionizing Radiation</td>
<td>LPR 1710.5</td>
<td>✓</td>
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<td>Non-ionizing Radiation</td>
<td>LPR 1710.8</td>
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<td>Conducting a Facility Safety Head Monthly Inspection</td>
<td>CP-4709</td>
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</table>
FC/FSH Facility Training Plan
Guideline/Strawman
Minimum Required Signatures
Signature Page

Facility Owner (Director Level) representative

Supervisor/Facility Manager responsible for facility operations

Safety and Facility Assurance Branch representative
Facility Coordinator/Facility Safety Head Training Program  
The {Facility}, Langley Research Center

The Overview of the FC Training Program

The Details of the FC Training Program

FC/FSH Training Syllabus
{Depending the complexity of the Facility systems it is recommended that the training and testing by the Review Board/Team is break in Phases}

<table>
<thead>
<tr>
<th>Document:</th>
<th>Document Identifier:</th>
<th>Read:</th>
<th>Trainer Review:</th>
<th>Knowledge Test:</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>
CS FC/FSH Training Syllabus

{Depending the complexity of the Facility systems it is recommended that the training and testing by the Review Board/Team is break in Phases}

Facility Specific Training:
Demonstrate proficiency in the facility systems and subsystems listed for this phase in the following areas:

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<tr>
<th>FUNCTION</th>
<th>SYSTEM COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCATION</td>
<td>CONTROLS AND CONTROL LOGIC</td>
</tr>
<tr>
<td>OPERATING LIMITS</td>
<td>INSTRUMENTATION</td>
</tr>
<tr>
<td>INTERLOCKS</td>
<td>HAZARDS</td>
</tr>
<tr>
<td>SPECIAL CONSIDERATION</td>
<td>PREVENTIVE MAINTENANCE</td>
</tr>
</tbody>
</table>

Facility Systems:
See Note 1

Note 1: Consult SAR, SOPs, Drawings, CCR/CNS Archives, and knowledgeable facility personnel as required to facilitate learning these systems.

Practical Application of Training
Upon satisfactory completion of the Training items delineated above, the FC/FSH candidate will assume responsibility for performing the following tasks:

<table>
<thead>
<tr>
<th>Task</th>
<th>Transfer Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>None for this Phase-I Panel Review</td>
<td></td>
</tr>
</tbody>
</table>

Bold print indicates that while the FC/FSH in Training is responsible for this task, the trainee will follow facility procedure (signature requirement) for implementation.
Example of an Existing FC Training Plan
Facility Coordinator (FC) Training Program
The High Pressure Air Compressor Station, Langley Research Center

The Overview of the FC Training Program

This document provides the guidelines to train, test, and certify personnel for the Facility Coordinator position at the High Pressure Air Compressor Station. A trainee is expected to have sound engineering background and should learn the systems and subsystems of the facility by interacting with facility personnel and referring to facility drawings, Langley Procedural Requirements (LPR), Langley Policy Directives (LAPD), Center Procedures (CP), Standard Operating Procedures (SOP), and Emergency Operating Procedures (EOP) pertinent to the facility.

The duration of the training program is approximately eight months. The training material is divided into four phases. The respective trainers will review the trainee’s knowledge and sign off the relevant areas in each phase. On completion of a particular phase, the trainee will be interviewed by a Review Board consisting of experts to test and certify the trainee on a particular phase. The recommendations of the Review Board will be documented and areas of deficiencies identified. Satisfactory completion of the training requirements is necessary to proceed to the next phase of the training program.

The Details of the FC Training Program

The FC coordinates facility operations. He works with facility personnel, subcontractors, and outside vendors and coordinates facility activities while ensuring safety of people and equipment. He closely interacts with Facility Safety Head in conducting facility activities in accordance with the center policies and directives. Guides such as LPR 1740.4 ("Facility System Safety Analysis and Configuration Management"), LPR 1740.2 ("Facility Safety Requirements"), LPR 1710.40 ("Safety Regulations Covering Pressurized Systems"), and LAPD 1150.2 ("Boards Panels, Committees, Councils, and Teams") are strictly followed by the FC.
The FC must demonstrate a working knowledge and proficiency of the items listed below to the satisfaction of the current Facility Safety Head, Facility Manager, and the Safety and Facility Assurance Office. The FC trainee must demonstrate proficiency in:

1) Hazards
   i. Potential hazards
      1. LPR 1740.4, "Facility System Safety Analysis and Configuration Management"
         - Identifies credible hazards associated with the operation of the facility
         - Defines the hazards in terms of severity and probability
         - Assesses the controls for those hazards
         - Makes recommendations toward reduction of the severity and/or probability of occurrence
         - Identifies documentation to place under configuration control
      2. Cognizant of limits for support systems
      3. Facility operational limits

   ii. System Readiness
      1. Functional Checks for the facility
         - Compressors
         - Dryers
         - Cooling systems and filters
         - System pre-start inspection

      b. Developing and assuring adherence to preventative maintenance schedules and programs for all facility systems and equipment.

      c. Engineering principles and standard practices as related to the safe and efficient operation of the facility.

      d. A broad understanding of:

         i. System functionality
         ii. Instrumentation
         iii. System maintenance

   e. A detailed understanding of the system safety procedures, policies, and guidelines and understanding their application in operating, maintaining, and upgrading

   f. A sound working knowledge of integrated systems including the following

      i. Facility systems
         1. Compressors
2. Dryers
3. Air Storage Systems
4. Air Distribution Systems
5. Cooling Towers
6. Closed-Loop Water Systems
7. Oil Separator
8. Building Steam
9. Vent System
10. Service air system
11. Process Instrumentation, Control & Interlocking
12. Condition Monitoring System

1) Facility Configuration Controlled Documentation. The trainee must read and demonstrate satisfactory knowledge of the following:

- CMOL (Configuration Management On-Line System)
- Facility Operating Procedures, Fire Safety, Roof top Access control Preventive maintenance and schedule
- Process & Instrumentation Drawings (P&ID)
- PSCM, “Pressure Systems Configuration Management”
- ACMP, “Asbestos Configuration Management Program”
- Facility Resume
- Facility Baseline Drawing List
- Document Archive

i The Compressor Station FC performs safety related duties as delineated in prescribing document LPR 1740.2, “Facility Safety Requirements.” These policies are supported by the regulations and standards established by the American National Standards Institute (ANSI), the Occupational Safety and Health Administration (OSHA), and the National Aeronautics and Space Administration (NASA).

V. Venkat

4910
### CS FC Training Syllabus – Phase I

<table>
<thead>
<tr>
<th>Document:</th>
<th>Document Identifier:</th>
<th>Read:</th>
<th>Trainer Review:</th>
<th>Knowledge Test:</th>
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<tr>
<td>Safety Program</td>
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<tr>
<td>Safety Assignments</td>
<td>LAPD 1700.2</td>
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<td>Facility Safety Requirements</td>
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<tr>
<td>Facility System Safety and Configuration Management</td>
<td>LPR 1740.4</td>
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<tr>
<td>Configuration Management for Facilities</td>
<td>LMS-CP 4710</td>
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<tr>
<td>Councils, Boards, Panels, Committees, Teams, and Groups</td>
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<td>Reporting Injuries, Illnesses, Compensation Claims and Unsafe Working Conditions</td>
<td>LMS-CP 4760</td>
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<tr>
<td>CCR/CNS Process</td>
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<tr>
<td>Facility Resume</td>
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<td>Safety Analysis Report (SAR)</td>
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CS FC Training Syllabus – Phase I (Continued)

Facility Specific Training:
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<th>SYSTEM COMPONENTS</th>
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<td>CONTROLS AND CONTROL LOGIC</td>
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<tr>
<td>OPERATING LIMITS</td>
<td>INSTRUMENTATION</td>
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<tr>
<td>INTERLOCKS</td>
<td>HAZARDS</td>
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<td>SPECIAL CONSIDERATION</td>
<td>PREVENTIVE MAINTENANCE</td>
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Facility Systems:
See Note 1

<table>
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<th>Read:</th>
<th>Trainer Review:</th>
<th>Knowledge Test:</th>
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<tr>
<td>1) High Pressure Air</td>
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<td>● Top Level P&amp;ID (710278)</td>
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<td>● Vent System P&amp;ID (1263786)</td>
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</table>

Note 1: Consult SAR, SOPs, Drawings, CCR/CNS Archives, and knowledgeable facility personnel as required to facilitate learning these systems.

Practical Application of Training

Upon satisfactory completion of the Training items delineated above, the FC in training will assume responsibility for performing the following tasks:

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CS FC Training Syllabus – Phase II

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<td>Process Systems Certification Program</td>
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<td>NASA Langley Research Center Emergency Plan</td>
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<td>Safety Regulations Covering Pressurized Ground Systems</td>
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Facility Specific Training:
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<td>INSTRUMENTATION</td>
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Facility Systems:
See Note 1

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<td>Compressors #1, #2, &amp; #3</td>
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<td>01-SOP-COMP-1</td>
<td>Compressor 1 SOP</td>
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<tr>
<td>01-SOP-COMP-2</td>
<td>Compressor 2 SOP*</td>
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<tr>
<td>01-SOP-COMP-3</td>
<td>Compressor 3 SOP</td>
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<td>Dryers #1 &amp; #2</td>
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<td>Dryer 1 SOP</td>
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<td>01-SOP-Dryer-2</td>
<td>Dryer 2 SOP</td>
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Verify the correct version before use by checking the LMS Website.
Verify the correct version before use by checking the LMS Website.

Note 1: Consult SAR, SOPs, Drawings, CCR/CNS Archives, and knowledgeable facility personnel as required to facilitate learning these systems. *Compressor 2 procedure still in development.

CS FC Training Syllabus – Phase III

<table>
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<th>Trainer Review:</th>
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<tr>
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<td>Personnel Safety Certification</td>
<td>LPR 1740.6</td>
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<tr>
<td>Personnel Protection-Clothing and Equipment</td>
<td>LPR 1710.4</td>
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</tr>
<tr>
<td>Electrical Safety</td>
<td>LPR 1710.6</td>
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<tr>
<td>Fire Protection Program</td>
<td>LPR 1710.11</td>
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<td>Potentially Hazardous Materials</td>
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<tr>
<td>Acquisition of Hazardous Materials</td>
<td>LMS-CP 4759</td>
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<td>Signs and Directory Boards</td>
<td>LAPD 1500.5</td>
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<tr>
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<td>LPR 7320.1</td>
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<tr>
<td>Asbestos Configuration Management Program</td>
<td>ACMP</td>
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<tr>
<td>Facility Configuration Management</td>
<td>LPR 7123.2</td>
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<tr>
<td>Facility Change Request Process</td>
<td>LMS-CP-4710</td>
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<tr>
<td>Langley Research Center Noise and Hearing Conservation Program</td>
<td>LPR 2710.1</td>
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<tr>
<td>LaRC Environmental Compliance, Restoration, and Pollution Prevention Program</td>
<td>LAPD 8500.1</td>
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<td>Environmental Program Manual</td>
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</table>
CS FC Training Syllabus – Phase III (Continued)

Facility Specific Training:
Demonstrate proficiency in the facility systems and subsystems listed for this phase in the following areas:

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<th>FUNCTION</th>
<th>SYSTEM COMPONENTS</th>
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<tbody>
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</table>

<table>
<thead>
<tr>
<th>Facility Systems:</th>
<th>Read:</th>
<th>Trainer Demo:</th>
<th>Knowledge Test:</th>
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</thead>
<tbody>
<tr>
<td>Compressors #4, #5, &amp; #6</td>
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Note 1: Consult SAR, SOPs, Drawings, CCR/CNS Archives, and knowledgeable facility personnel as required to facilitate learning these systems. *Procedure still being developed.
# CS FC Training Syllabus – Phase IV

<table>
<thead>
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<th>Document Identifier</th>
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<th>Trainer Review:</th>
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CS FC Training Syllabus – Phase IV – (Continued)

Facility Specific Training:
Demonstrate proficiency in the facility systems and subsystems listed for this phase in the following areas:

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<tr>
<th>FUNCTION</th>
<th>SYSTEM COMPONENTS</th>
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<td>LOCATION</td>
<td>CONTROLS AND CONTROL LOGIC</td>
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<td>OPERATING LIMITS</td>
<td>INSTRUMENTATION</td>
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<td>INTERLOCKS</td>
<td>HAZARDS</td>
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<tr>
<td>SPECIAL CONSIDERATION</td>
<td>PREVENTIVE MAINTENANCE</td>
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Facility Systems:
See Note 1

- Cooling Tower Systems
- Closed-Loop water system
  - LD-1263787 - 1263791 Water System
  - P&I’s
- Air Storage System
- Air Distribution
- Condition Monitoring System
- Operator qualification proficiency questions

Practical Questions

Note 1: Consult SAR, SOPs, Drawings, CCR/CNS Archives, and knowledgeable facility personnel as required to facilitate learning these systems.