

The background of the slide features a large, semi-transparent NASA logo. The logo is circular with a blue field containing white stars and a white orbital path. A red and white swoosh, representing a spacecraft, cuts across the logo from the bottom left to the top right. The word "NASA" is written in large, white, serif capital letters across the center of the logo.

Transition to J-STD-001DS
a guide for implementation

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NASA Workmanship Standards Program

Traceability of Authority for Workmanship Standards

NPR 8730.5 NASA Quality Assurance Program Policy (<http://nodis3.gsfc.nasa.gov>)

- “a. This NPD applies to NASA Headquarters and Centers, including Component Facilities, and to the Jet Propulsion Laboratory and other NASA contractors and grantees as specified in their contracts or grants.
 - b. This NPD applies to all work associated with implementation of NASA acquisitions (e.g., design, development, manufacture, test, operations, maintenance, refurbishment, sustainment, disposal) and all acquisition products, processes, and services provided by NASA Government organizations, contractors, subcontractors, and grantees..”
- NASA-STD-8739.1, Staking and Conformal Coating of Printed Wiring Boards and Electronic Assemblies
 - NASA-STD-8739.2, Surface Mount Technology (primary emphasis is on automated, or “batch” soldering processes).
 - NASA-STD-8739.3, Soldered Electrical Connections (primary emphasis is on hand soldering processes).
 - NASA-STD-8739.4, Crimping, Interconnecting Cables, Harnesses, and Wiring
 - NASA-STD-8739.5, Fiber Optic Terminations, Cable Assemblies, and Installation
 - ANSI/ESD S20.20, Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices).

Current Status of Standards

Current NASA Workmanship Standards :

(<http://www.hq.nasa.gov/office/codeq/doctree/qa.htm>)

- NASA-STD-8739.1A, Change 1, July 23, 2009
- NASA-STD-8739.2, Change 1, August 31, 1999 (Revalidated in 2008)
- NASA-STD-8739.3, Change 3, December 15, 1997 (Revalidated in 2008)
- NASA-STD-8739.4, Change 4, February 8, 1998 (Revalidated in 2008)
- NASA-STD-8739.5, Change 1, February 9, 1998 (Revalidated in 2008)
- ANSI/ESD S20.20-2007, March 1, 2007

Standards Applicability

Cancelled or superseded standards may remain valid on contracts after the date of the standard's cancellation or supersession –

CSO's: Always use an up-to-date list in new MARs and new contracts.

Suppliers: Check the MAR or the Prime Contract to determine the applicability of a specific standard or revision.

What is changing?

NASA-STD-8739.2

(Surface Mount Technology)

and

NASA-STD-8739.3

(Soldered Electrical Connections)

Will be replaced by IPC J-STD-001DS

Am1 (2010?)

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Why are we changing?

OMB Circular A-119

**“Federal Participation in the
Development and Use of Voluntary
Consensus Standards and in
Conformity Assessment Activities”**

OMB CIRCULAR A-119 POLICY

- Establishes policy to be followed by Agencies in working with Voluntary Consensus Standards Development Bodies (non-Government) and in using Voluntary Consensus Standards (VCS), in accordance with Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (Public Law 104-113).
- Requires Agencies to use Voluntary Consensus Standards (VCS), both domestic and international, in preference to Government standards products except where inconsistent with law or otherwise impractical.
- Requires Agencies to provide support to VCS Development Bodies and encourage employees to participate in domestic and international VCS Development Bodies as Agency representatives in areas of the Agency's mission and responsibility.

What Are The Goals Of The Government In Using Voluntary Consensus Standards?

Many voluntary consensus standards are appropriate or adaptable for the Government's purposes. The use of such standards, whenever practicable and appropriate, is intended to achieve the following goals:

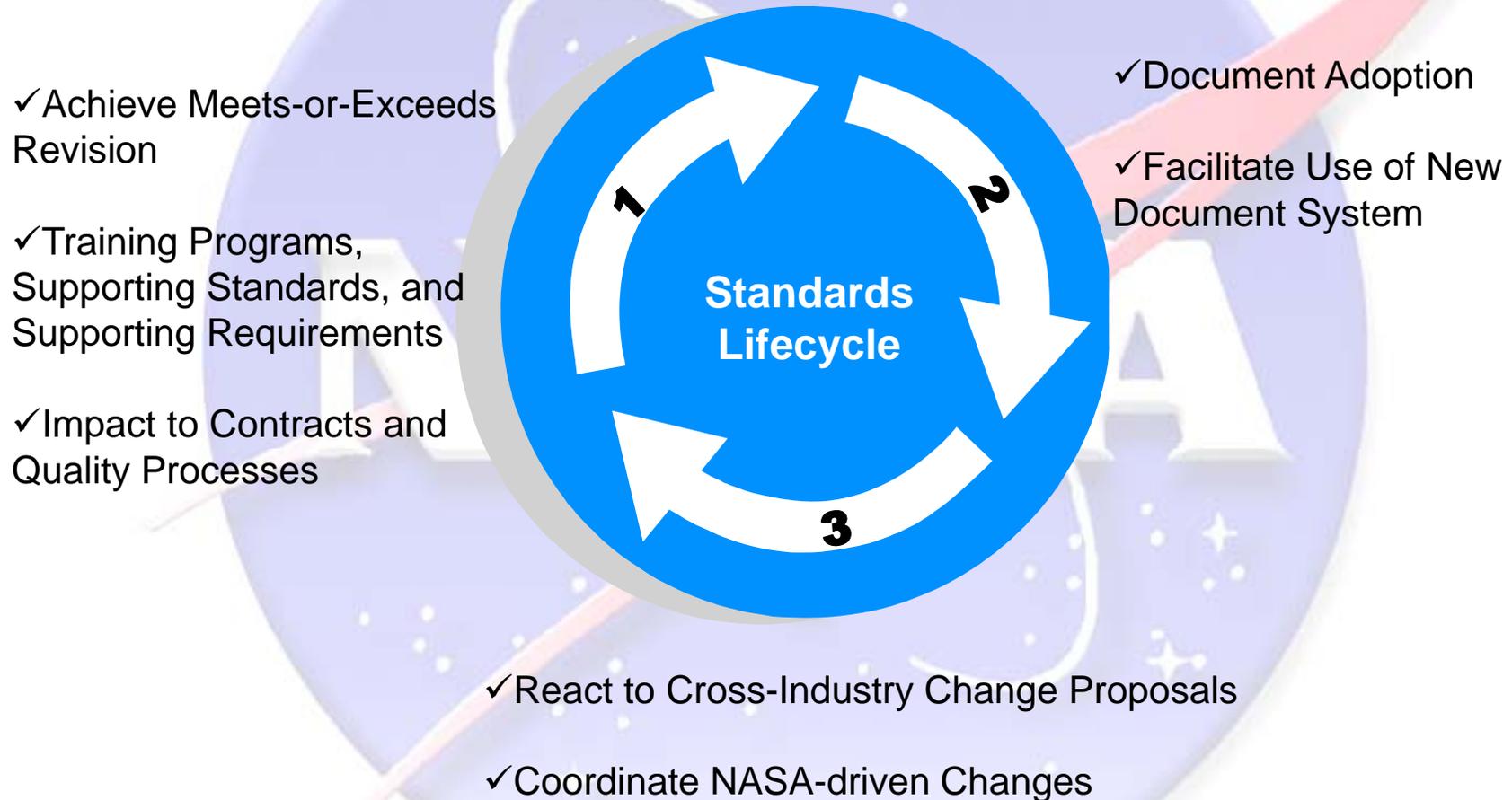
- Eliminate the cost to the Government of developing its own standards and decrease the cost of goods procured and the burden of complying with agency regulation.
- Provide incentives and opportunities to establish standards that serve national needs.
- Encourage long-term growth for U.S. enterprises and promote efficiency and economic competition through harmonization of standards.
- Further the policy of reliance upon the private sector to fill Government needs for goods and services.

NASA CENTER DIRECTORS' RESPONSIBILITY

In accordance with the Administrator's directions, as stated in NASA Policy Directive 8070.6A, "Technical Standards", NASA Centers have the responsibility to encourage, support and authorize the participation of employees in voluntary consensus standards (non-Government) activities that further NASA's missions

	Does Mean	Doesn't Mean
V = voluntary	Committee members participate voluntarily and are not compensated by the IPC	Compliance is voluntary
C = consensus	Document content is approved by consensus prior to publishing	Requirements apply based on local consensus of their applicability

Process for Adopting and Maintaining Industry Standards for Workmanship



Status of Industry Standards for Workmanship

J-STD-001 Space Addendum RevD, Am1 [STAGE 1, near to STAGE 2]:
NASA Proposal included in Final Draft.

2nd Ballot in process.

CxP Workmanship Requirements adapted to carry requirements in parallel (doc in coordination).

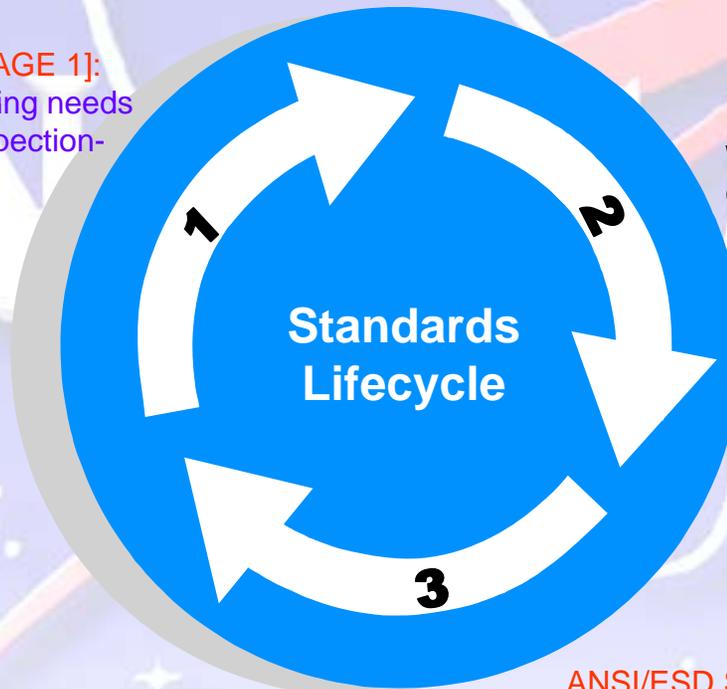
IPC will field Existing and Space-only Training programs. "Space" training Beta class held at GSFC in late August.

Draft policy wording ready for delivery to NASA HQ

IPC-A-620 Space Addendum [STAGE 1]:
Initial draft near ballot. Reassessing needs for process-based rather than inspection-based document.

Qtrly IPC coordination meetings

**Ensure Cohesive
Implement-able
Requirements Set**



**Widespread &
Consistent
Usage**

ANSI/ESD S20.20
[STAGE 2 & 3]: Implementation
Plan for Cross-Agency Use
(final draft in HQ review)

**Document
Stewardship**

ANSI/ESD S20.20 [STAGE 2 & 3]
Examining requirements for tools, gloves,
cables, new discharge models.

What is the impact?

IPC J-STD-001DS Am1 will be imposed on all future contracts in place of NASA-STD-8739.2 and .3

With some caveats (“the fine print”):

- ✓ NASA-STD-8739.1 (WORKMANSHIP STANDARD FOR POLYMERIC APPLICATION ON ELECTRONIC ASSEMBLIES) will not be retired. Chapter 10 of J-STD-001DS Am1 will not be used.
- ✓ IPC will certify trainers.
- ✓ Suppliers will certify operators and inspectors.
- ✓ Suppliers may use their own training programs but must use IPC-certified trainers.
- ✓ Vision screening for operators and inspectors is required.

Draft NPR 8730.5 Policy

b. Electrical, electronic, and electromechanical parts and workmanship standards (see paragraphs 4.g through 4.i of this NPD).

The applicable version of reference 4.h of this NPD shall be that which has been most recently released and published by the IPC regardless of the fact that the “D Amendment 1” revision is specifically named here.

Chapter 10 of reference 4.h shall not apply. Reference 4.g shall take precedence for all polymeric applications Workmanship requirements.

Training for reference 4.h shall be performed by an IPC certified instructor (Master Level or CIS Level).

Supplier certifications are required for all Workmanship operators and inspectors. IPC certifications may be prerequisites for supplier personnel certifications but are not direct substitutes for supplier personnel certifications.

Suppliers who choose to use internally developed training programs rather than using the IPC standard training courses as a basis for personnel certification, must make that course material available for review and approval.

Vision screening is required for all Workmanship operators and inspectors. Reference the applicable standard for the applicable tests and criteria.

J-STD-001D vs J-STD-001DS Am1

J-STD-001D contains requirements for “general service”, “dedicated service”, and “high performance” hardware (Class 1, Class 2, Class 3; Class 3 adopted for use by DoD)

J-STD-001DS Am1 =

J-STD-001D Class 3 as-is + J-STD-001D Class 3 modified +
New.

Training

Employees shall be trained in accordance with the specific standard identified in the contract:

- Training for NASA-STD-8739.2 and .3 will remain available through NASA trainers (Level A and Level B).
- Training for IPC J-STD-001DS Am1 will be available commercially or can be “home grown” but must be taken from an IPC certified trainer.

J-STD-Training Model

Traditional Course

2 ½ to 5 ½ day class depending on which modules are taken

All quality levels and all subject matter are taught (Class 1, 2 and 3) in whole day classes.

All practical exercises and tests are to Quality Level 3 (military).

½ day class covers “Space” requirements and Pb-free info.

Challenge testing is offered as alternative to attending course (not applicable to ½ day Space Module).

“Space” Course

4 day class. Class is not Modular (must take all four days)

Only Space Quality Level is taught. Includes Chapter 10 material.

All practical exercises and tests are to Quality Level 3 (military). Different rating method for operators and inspectors. Both will solder.

*Trainers Take Traditional Course
Can teach Traditional or Space
Course*

= IPC Certifies Students =
Who take either of these courses

More on J-STD-001 Training

- Module 1 Introduction, General Soldering
- Module 2 Wire terminals
- Module 3 Thru-hole
- Module 4 SMT, Inspection, Polymeric Applications, PCBs
- Module 5 Inspection (All)
- Module 6 Space Grade Requirements
- *Evidence of Visual Acuity is a prerequisite for Traditional and Space Course*

Traditional Course - Operator

Module 1 Module 2 Module 3 Module 4 Module 5 Module 6

Traditional Course - Inspector

Module 1 Module 2 Module 3 Module 4 Module 5 Module 6

Boxes checked off on
IPC certificate

More on J-STD-001 Training

- For Traditional Course:
 - Two modules are required (M1 + 2,3,4 or 5), others are optional for IPC Certification
 - Module 6 (Space) is optional following taking at least two others.
- IPC certification card records:
 - For Traditional Course: Certification to only the Modules taken
 - For Space Course: Certification as Operator or Inspector to all Modules.
- Training to J-STD-001DS Am1, using the Space-only class will be recognized as equivalent to the Traditional course and applicable to Class 1, 2 & 3.

Space Course - Operator

Module 1 Module 2 Module 3 Module 4 Module 5 Module 6

Traditional Course – Inspector (same class as operator, different boxes checked)

Module 1 Module 2 Module 3 Module 4 Module 5 Module 6

Boxes checked off on
IPC certificate

J-STD- 001DS Training Plan Options

Training may be obtained through IPC-licensed training centers or IPC-certified trainers (CITs).

Training may be accomplished by any of the following methods using a certified IPC CIT:

- The standard IPC J-STD-001 training program with the addition of Module 6
- IPC J-STD-001DS “Space” Training Course
- Company-specific training program for J-STD-001DS Am1

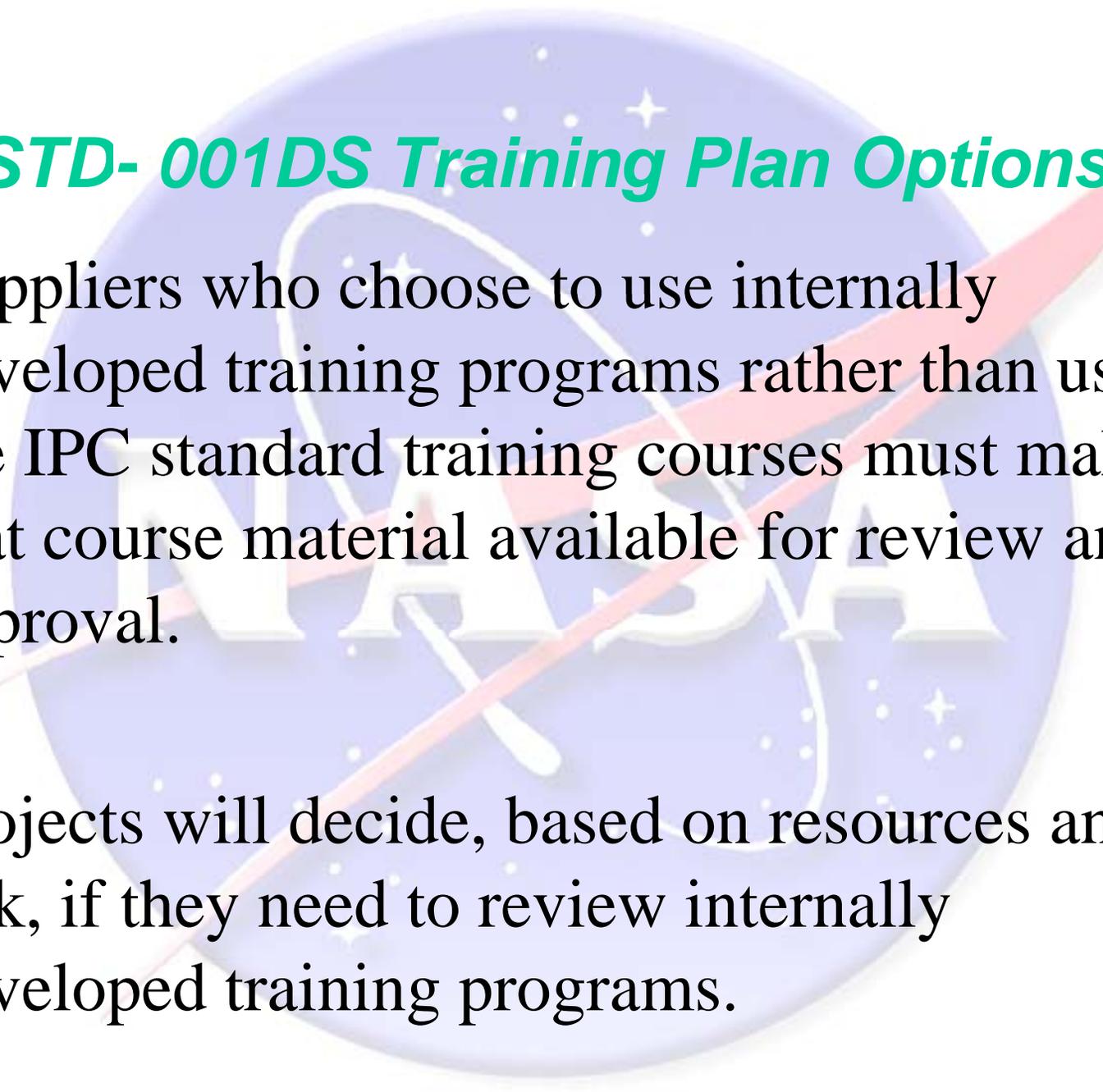
Space Course is highly recommended for GSFC in-house

NASA Training Centers expected to be able to offer J-STD-001DS Am1 Training for “in-house” – But Can’t Compete with Industry Training Companies

J-STD- 001DS Training Plan Options

If a Company-specific training program is utilized.

- The IPC will not provide certifications for such training
- The using organization must abide by copyright regulations when developing the in-house course

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J-STD- 001DS Training Plan Options

Suppliers who choose to use internally developed training programs rather than using the IPC standard training courses must make that course material available for review and approval.

Projects will decide, based on resources and risk, if they need to review internally developed training programs.

Supplier Certification

Supplier certifications are required for all Workmanship operators and inspectors. Inspectors and operators must carry evidence of Company's certification.

IPC certifications may be prerequisites for supplier personnel certifications but are not direct substitutes for supplier personnel certifications.

Multiple Certifications?

Some individuals may be required to maintain both NASA-STD-8739.2 and .3 certifications and J-STD-001DS Am1 certifications if working on a mixture of programs with “old” and “new” requirements.

Some inspection requirements are different and will be difficult to manage if operators/inspectors/DCMA are working from two different sets.

CxP Requirement

CxP 70165, February 13, 2008

Requirements for the Manufacture and Inspection of Electronic, Electrical, and Electro-mechanical Hardware for Aerospace and High Performance, Space Flight, and Mission Essential Support Equipment Applications

3.3 ELECTRONIC ASSEMBLY AND SOLDERING

For the assembly and manufacture of electrical and electronic assemblies, requiring soldering of discrete terminations, through-hole, and surface mount technology devices, using hand, wave, or reflow processes, the following NASA or industry soldering standards shall be applicable.

Suppliers are allowed to use either the NASA Standards NASA-STD-8739.2 – “Workmanship Standard for Surface Mount Technology” and NASA-STD-8739.3 - “Soldered Electrical Connections”, per section 3.3.1 of this document; or the industry soldering standard, J-STD-001DS, “Space Applications Electronic Hardware Addendum to Requirements for Soldered Electrical and Electronic Assemblies”, per section 3.3.2 of this document, as detailed below.

Summary

1. J-STD-001DS Am1 expected to replace NASA-STD-8739.2 & .3 at Agency level in late 2009 – early 2010.
2. Chapter 10 of J-STD-001DS Am1 will not be applicable, NASA-STD-8739.1 will continue to apply.
3. New MARs and Contracts after J-STD-001DS Am1 adoption must reflect this change
4. Training will have special caveats attached
5. Training will be taken from an IPC-certified trainer (Master or CIS level)
6. Training will be available to “in-house” at NASA Training Centers
7. Training may be IPC Traditional Course (Standard Modules + Space Module), IPC Space Course, or Homegrown Course
8. Space Course is highly recommended
9. Projects may choose to review and approve Homegrown Course. Supplier must make it available.
10. Employer must continue to certify operators and inspectors.
11. Operators and Inspectors working during “change-over” period may need to retain dual certifications. NASA Training Centers will continue to offer NASA-STD classes as long as students are registering for them.
12. Recertification for J-STD-001xS will be on same schedule as NASA Stds (2 yrs). Retraining class is in development (will also be one or two days).

Points of Contact

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