NIST IR 7241

NIST in the CFR:

A Report on References to NIST (and NBS) Products and Services in the Code of Federal Regulations

Ileana Martínez
Ajit Jillavenkatesa
Carmiña Londoño

National Institute of Standards and Technology
Technology Administration, U.S. Department of Commerce

NIST IR 7241

NIST in the CFR:

A Report on References to NIST (and NBS) Products and Services in the Code of Federal Regulations

Ileana Martínez
Ajit Jillavenkatesa
Carmiña Londoño
Global Standards and Information Group
Standard Services Division
Technology Services

July 2005

U.S. DEPARTMENT OF COMMERCE
Carlos M. Gutierrez, Secretary
TECHNOLOGY ADMINISTRATION
Michelle O'Neill, Acting Under Secretary of Commerce for Technology
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
William A. Jeffrey, Director

Table of Contents

List of Tables

Appendices

1. Listing of References to NIST and NBS in the Code of Federal Regulations (Martinez and DeVaux)
2. Federal Agencies Referencing NIST and NBS in the Code of Federal Regulations (Martinez and DeVaux)
3. Listing of References to NIST and NBS in the Code of Federal Regulations (Aanstoos)
4. References to NIST/NBS in the Code of Federal Regulations by title (Aanstoos)
5. References to NIST and NBS Traceability and Calibration in the Code of Federal Regulations
6. SRM References to NIST and NBS in the Code of Federal Regulations
7. References to NIST and NBS Special Publications in the Code of Federal Regulations
8. References to NIST and NBS Publications (assorted) in the Code of Federal Regulations
9. References to Weights and Measures Handbooks (Handbooks 44, 105-1 and 133) in the Code of Federal Regulations
10. References to Accreditation, National Voluntary Laboratory Accreditation Program (NVLAP) and the National Voluntary Conformity Assessment System Evaluation (NVCASE) in the Code of Federal Regulations
11. References to Voluntary Product Standards (VPS) and Commercial Standards (CS) in the Code of Federal Regulations
12. References to NIST and NBS Products on Computer Security in the Code of Federal Regulation
13. References to Circular 484 in the Code of Federal Regulations
14. References to Handbook 69 in the Code of Federal Regulations
15. References to Handbook 28 in the Code of Federal Regulations
16. References to Handbook 81 in the Code of Federal Regulations
17. References to the National Technology Transfer and Advancement Act (NTTAA) in the Code of Federal Regulations
18. References to Handbook 91 in the Code of Federal Regulations
19. References to Handbook 96 in the Code of Federal Regulations
20. References to Handbook 150 in the Code of Federal Regulations
21. References to Handbook 136 in the Code of Federal Regulations
22. Compiled list of NIST and NBS products and services in the Code of Federal Regulations (listed by CFR title)
23. Availability of NIST/NBS publications cited in the CFR

Acronyms Used

CFR	Code of Federal Regulations
CPSC	Consumer Product Safety Commission
DHS	Department of Homeland Security
DoC	Department of Commerce
DoD	Department of Defense
DoE	Department of Energy
DoL	Department of Labor
DoT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FCC	Federal Communication Commission
FDA	Food and Drug Administration
FERC	Federal Energy Regulatory Commission
FMCSA	Federal Motor Carrier Safety Administration
FSIS	Food Safety and Inspection Service
FTC	Federal Trade Commission
GIPSA	Grain Inspection, Packers and Stockyards Administration
HHS	Department of Health and Human Services
HUD	Housing and Urban Development
MSHA	Mine Safety and Health Administration
NBS	National Bureau of Standards
NHTSA	National Highway Traffic Safety Administration
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
NVCASE	National Voluntary Conformity Assessment System Evaluation
NVLAP	National Voluntary Laboratory Accreditation Program
OPM	Office of Personnel Management
OSHA	Occupational Safety and Health Administration
RSPA	Research and Special Programs Administration
USCG	United States Coast Guard
USDA	Department of Agriculture
WHD	Wage and Hourly Division

NIST in the CFR:
A Report on References to NIST (and NBS) Products and Services in the CFR

Executive Summary

Regulations promulgated by different federal government departments and agencies refer to various NIST (and NBS) products. These references can be found in the Code of Federal Regulations (CFR). This report examines the references to identify, categorize and analyze the various NIST/NBS products and services cited. Compiling this information, the report provides conclusions on the value of NIST products and services for regulatory purposes to other federal government agencies and, based on an analysis of the references, provides recommendations for follow-up actions.

NIST in CFR:
A Report on
References to NIST (and NBS) Products and Services in the Code of Federal Regulations

1. Objective

The purpose of this study is to: (1) identify and categorize explicit references to the National Institute of Standards and Technology (NIST) and its predecessor, the National Bureau of Standards (NBS), in the Code of Federal Regulations (CFR); (2) analyze the citations to NIST/NBS in order to highlight the value of NIST to the United States Government, industry and the public; and (3) help define NIST's role in the nation's measurement system (NMS).

A first step in identifying unmet measurement needs is to determine the NIST products and services that other federal agencies identify through regulations in the Code of Federal Regulations.

This study did not capture indirect CFR references to NIST/NBS products and services, such as any agency regulation that refers to a documentary standard developed by a standards development organization (SDO) which, in turn, refers to a NIST/NBS product such as a Standard Reference Material or calibration service. Similarly, administrative references to NIST, such as authorization to create programs, are not included in this report.

2. The Nation's Measurement System

The National Institute of Standards and Technology is presently evaluating its role in the nation's measurement system (NMS). NIST developed a White Paper for internal discussion which includes a working definition of the NMS as "the complex of all methods, instruments, entities, institutions, and standards that support measurements of products and processes of national significance to the economy, quality of life, or security of the nation, where measurement is the process of quantitatively comparing a variable characteristic, property, or attribute of a substance, object, or system to norm"[1]. The White Paper also lists a number of potential roles for NIST, concluding that NIST should take the lead in:

- Identifying unmet measurement needs of U.S. industry, commerce, regulatory agencies, and national defense
- Identifying needed de-facto national standards of measurement
- Initiating collaborations with and among government agencies and industrial institutions with unmet measurements needs and responding appropriately

[1] White Paper: Potential Roles for NIST in the Nation's Measurement System, NIST National Measurement System Task Group, June 11, 2004; https://www-i.nist.gov/director/WP_MeasSystems.htm

- Developing or collaborating with others on developing measurements, methods and standards to fill identified national measurement needs
- Supporting other government agencies with special measurement needs

3. The Code of Federal Regulations

As a compilation of permanent rules and regulations adopted by all executive departments and agencies of the United States Government, the Code of Federal Regulations (CFR) is the single resource for finding the complete listing of U.S federal government rules and regulations, as well as their administrative scope. The CFR differs from the Federal Register in that the latter, published daily, officially announces proposed and final rules, notices issued by Federal agencies and organizations, as well as executive orders and other presidential documents.

The CFR is organized in 50 titles, subdivided into chapters, parts, subparts and sections. Each title represents a broad area subject to federal regulation. In general, each chapter in the CFR provides the rules and regulations issued by a given agency, and each part in the chapter contains information pertaining to a single regulatory program. All titles are updated yearly in order to keep CFR information current. Hard copies of the CFR, published by the National Archives and Records Administration (NARA), can be purchased from the Government Printing Office; an electronic version is available without charge on-line at http://www.gpoaccess.gov/cfr/index.html and at http://www.gpoaccess.gov/ecfr. Certain chapters or texts thereof may be available on one website and not on the other.

4. National Institute of Standards and Technology

The mission of the National Institute of Standards and Technology (NIST), a non-regulatory federal agency within the U.S. Commerce Department's Technology Administration, is to develop and promote measurement, standards, and technology to enhance productivity, facilitate trade, and improve the quality of life. Founded in 1901 as the National Bureau of Standards (NBS), its name was changed to the National Institute of Standards and Technology and its mission was expanded under provisions of the Omnibus Trade and Competitiveness Act of 1988. NIST is the national metrology institute (NMI) of the United States, with core activities in metrology, measurement science, measurement services, and support for documentary standards. NIST offers numerous measurement- and metrology-related products and services that are used, adopted and/or mandated by other U.S. Government agencies and industry. For example, federal agency mandates in the Code of Federal Regulations include : (a) the use of NIST Standard Reference Materials (SRM) for calibration of equipment used in testing; (b) that equipment be calibrated through calibration services offered by NIST; (c) traceability to national physical standards realized by NIST; (d) accreditation of testing laboratories by the National Voluntary Laboratory Accreditation Program (NVLAP), administered by NIST; and (e) the use of weights and measures handbooks developed by NIST.

5. NIST in CFR Studies and Data

5.1. Previous studies

Two previous studies identified and compiled NIST/NBS references using two different approaches. In the first study, Martinez and DeVaux[2], searched the CFR to identify references to NIST/NBS and identified them with the keywords listed in Appendix 1. Martinez and DeVaux concluded that approximately 30 agencies reference NIST and/or NBS products or services, with citations falling into 4 broad categories: (a) references to NIST Handbooks; (b) references to other NIST/NBS publications; (c) references to NIST/NVLAP accreditation; and (d) references to traceability/calibration to NIST standards and to SRMs. Those authors also identified erroneous practices and misuse of terminology, such as: (a) interchangeable and incorrect use of the terms 'traceability' and 'calibration'; (b) references to documents from the 1950s, 60s and 70s, that are no longer valid, not available, or perhaps withdrawn; (c) references to NBS instead of the correct current name, NIST, and some references to both NBS and NIST in the same paragraph. Martinez and DeVaux identified a total of 240 citations. Those references, organized by federal agency, are summarized in Appendix 2.

In the second study, Aanstoos[3] used a commercial internet-based search engine (Lexis-Nexis Congressional Index) to search for references to NIST and NBS in electronic versions of the CFR (Appendix 3) and in the regulatory indices of California and Texas. He found 519 citations, but due to the nature of the search algorithm, many references were of an administrative nature; others were references that have been deleted or replaced, but still listed under their original citation. These results, organized by the number of citations per title, are provided in Appendix 4.

5.2. Data used for this study

References from the two studies cited above were combined to create an initial data set for the current study. The authors reviewed and eliminated from the combined data set any duplicated references, references that were administrative in nature, and references that have been deleted or replaced.

Table 1 summarizes the resulting data set, listing the title where the reference is found, the department or agency referring to NIST/NBS, and the number of references. After comparison and review, a total of 376 references to NIST/NBS products and services were identified. To facilitate accessing specific information, readers may consult Appendices 5 through 21 which provide information sorted by product or service. The full listing is presented, by CFR title, in Appendix 22.

---

[2] I. Martinez and C. DeVaux, "References to the National Institute of Standards and Technology, NIST, and/or the National Bureau of Standards, NBS, in the Code of Federal Regulations", NIST, Gaithersburg, 2003

[3] T. A. Aanstoos, "Standards Citations in the Code of Federal Regulations", Final Report, September 2003.

Table 1. References to NIST/NBS Products and Services by CFR Title and Department/Agency

CFR Title	Name of the CFR Title	Number of references
5	Office of Personnel Management	2
7	Department of Agriculture (Standards, Inspections, Marketing Practices)	1
7	Department of Agriculture / Grain Inspection, Packers and Stockyards Administration	4
9	Department of Agriculture / Grain Inspection, Packers and Stockyards Administration	1
9	Department of Agriculture / Food Safety and Inspection Service	13
10	Nuclear Regulatory Commission	4
10	Department of Energy	1
10	Department of Energy (Energy Efficiency)	2
10	Department of Energy (Energy Conservation)	2
14	Department of Transportation / Federal Aviation Administration	6
15	Department of Commerce / National Institute of Standards and Technology	7
16	Consumer Product Safety Commission	5
16	Federal Trade Commission	3
18	Department of Energy / Federal Energy Regulatory Commission	2
21	Dept. of Health and Human Services / Food and Drug Administration	14
22	Foreign Relations / International Boundary and Water Commission	1
24	Housing and Urban Development	13
25	Bureau of Indian Affairs	3
28	Judicial Administration	1
29	Department of Labor / Occupational Safety and Health Administration	13
29	Department of Labor (Wage and Hourly Division)	1
29	Department of Labor / Mine Safety and Health Administration	8
31	Treasury	1
32	Department of Defense	1
40	Environmental Protection Agency	198
41	Public Contracts and Property Maintenance	1
43	Department of the Interior	1
45	Department of Health and Human Services	2
46	Department of Homeland Security / US Coast Guard	40
46	Department of Transportation / Maritime Administration	1
47	Federal Communication Commission	12
48	Department of Energy	1
49	Department of Transportation / Research and Special Programs Administration	4
49	Department of Transportation / Federal Motor Carrier Safety Administration	2
49	Department of Transportation / National Highway Traffic Safety Administration	5

On review of the references and their context, the authors of this study classified the NIST/NBS products and services broadly identified in the CFR as:
(a) references related to traceability and calibration;
(b) Standard Reference Materials (SRM);
(c) NBS/NIST Special Publications;
(d) assorted publications;
(e) weights and measures handbooks;
(f) references to the National Voluntary Laboratory Accreditation Program (NVLAP) and the National Voluntary Conformity Assessment System Evaluation Program (NVCASE);
(g) Voluntary Product Standards (VPS) and Commercial Standards (CS);
(h) computer security;
(i) Circular 484;
(j) other handbooks; and
(k) the National Technology Transfer and Advancement Act (NTTAA).

Table 2 lists the number of references in each category in order of the number of times each product/service is cited. The majority of references are related to traceability and calibration services. It is important to note that some citations may be construed to refer to more than one NIST product or service; the authors of this study chose to classify those ambiguous references in what was judged the most important and pertinent category. For example, a citation requiring the use of SRM for calibration of an analytical instrument to ensure traceability to a NIST standard would be listed under the SRM category, rather than under traceability or calibration.

Table 2. Distribution of Citations by Category

Product/Service Category	**Number of Citations**	**Number of agencies referring**
Traceability and Calibration	188	10
Standard Reference Materials (SRM)	34	4
Special Publications (250, 260, 440, 442, 500-172)	31	5
Assorted Publications	28	8
Weights and Measures Handbooks (44, 105-1 and 133)	22	5
Accreditation, NVLAP & NVCASE	19	6
Voluntary Product Standards and Commercial Standards	12	4
Computer Security	12	10
Circular 484	7	1
Handbook 69	6	4
Handbook 28	5	2
Handbook 81	3	1
National Technology Transfer and Advancement	3	1

Act (NTTAA)		
Handbook 91	2	1
Handbook 96	2	2
Handbook 150	2	1
Handbook 136	1	1

Appendices 5 through 21 provide a complete listing of references as classified in the categories indicated above. The compiled list of all references can be seen in Appendix 22. The following section is a detailed analysis of these references.

6. Analysis of NIST in CFR references

This section provides an overview of the citations by category.

6.1. Traceability and Calibration

A majority of the citations to NIST in the CFR are to NIST/NBS products and services for establishing traceability or for calibration services. Appendix 5 indicates 188 references within this category, distributed among 10 departments/agencies, with 158 references by the EPA alone.

The scope of the references to NIST traceability and calibration services varies broadly among agencies. USDA/GIPSA refers to the NBS program for the Certification of Capability of State Measurement Laboratories regarding approval by the Grain Inspection, Packers and Stockyard Administration as qualified metrology labs and Type Evaluation Laboratories. The CPSC generically cites the NBS calibration service as a requirement for calibrating total flux meters used to measure critical radiant flux. The FDA requires microphone calibration to be traceable to the NBS as a requirement for audiometer calibration set for use with diagnostic devices, particularly Ear, Nose and Throat devices. Under the Mammography Quality Standards Act, the FDA defines an instrument being "traceable to a national standard" if it is calibrated either at NIST or at a calibration laboratory that participates in a proficiency program with NIST. HUD requires that each laboratory "provide a description of the applicable standards and calibration equipment being used and the calibration procedures followed, including National Bureau of Standards traceability, when applicable". The Bureau of Indian Affairs requires that all weights and measures shall "conform to standards set by the National Bureau of Standards and to standards, if any, set by the tribe and, if not in conflict with tribal regulations, to the standards set by the State".

OSHA mandates the use of the NBS 9A coupler for acoustic calibration of audiometers. It requires that test equipment for gear certification be tested for accuracy using calibration equipment whose "indications are traceable to the National Bureau of Standards". As part of the quality assurance requirements for testing by third party or applicants, instruments used for the inspection and testing of critical characteristics must be calibrated at least as frequently as, and according to, the instrument manufacturer's specifications, "using calibration standards traceable to those set by the National Bureau of Standards". For test equipment requirements of diesel engines intended for use in

underground coal mines, MSHA requires span gas and calibration gas values to be traceable to NIST SRMs. Similarly, MSHA requires that light measuring instruments shall be calibrated against standards traceable to the National Bureau of Standards. The U.S. Coast Guard requires that inspection, testing and retesting of deck coverings, structural insulation and bulkhead panels for merchant vessels be conducted at NBS or other laboratories designated by the Coast Guard. The FCC, in its regulations applicable to all broadcast stations for carrier frequency measurements, stipulates that "the primary standard of frequency for radio frequency measurements is the standard frequency maintained by the National Bureau of Standards or the standard signals of Stations WWV, WWVB, and WWVH of the National Bureau of Standards".

EPA references NIST/NBS traceability and calibration products over a broad spectrum of applications. Under the general provisions of the Air Program's Ambient Air Quality Surveillance, EPA defines traceable as "a local standard that has been compared and certified, either directly, or via not more than one intermediate standard, to a National Institute of Standards and Technology (NIST)-certified primary standard such as a NIST-Traceable Reference Material (NTRM) or a NIST-certified Gas Manufacturer's Intermediate Standard (GMIS)". EPA also refers to NIST to define a NIST-EPA approved Certified Reference Material, Research Gas Material, and Research Gas Mixture. Repeated references to these products indicate their importance in satisfying a critical requirement for the EPA. Calibration and span gases must be compared with NIST gas standards (with traceability) to ensure that the analytical gases used for testing or calibrating the test equipment meet accuracy and purity specifications. EPA defines a stock solution as one that is made with a reference material traceable to NIST. Some references require the traceability to specific standards, as in the National Primary and Secondary Ambient Air Quality Standards, requiring that the gases used in calibration procedures be traceable to a NBS carbon monoxide-in-air SRM. Other references are more general, as in the inspection/maintenance program requirements of Air Programs, which state that "span and zero gases should be traceable to National Bureau of Standards reference gases" whenever these reference gases are available. Similarly, other regulations require flow calibration devices to be traceable to NIST to ensure accuracy of the devices (Continuous Emissions Monitoring Program, Air Pollution Controls).

In addition to requiring traceability of gases to NIST standards, EPA regulations also require traceability of calibration weights to NIST standards, which are used for calibrating torque measuring devices. Under the National Emission Standards for Hazardous Air Pollutants for Source Categories Program, numerous citations require reference temperature monitors to be traceable to NIST standards used in sterilization facilities. Under the Primary and Secondary Ambient Air Quality Standards, EPA requires both traceability to NIST for measuring instruments, and the use of standards that are traceable to NBS SRMs or an NBS/EPA-approved commercially available Certified Reference Material (CRM).

Under the Air Quality Programs, through the Standards for Performance for New Stationary Sources, EPA requires that spectrophotometers have a NIST-traceable calibration as a minimum design specification, and in the case of the Fourier Transform

Infra-Red Spectrometers (FT-IR), the performance specifications require the use of gaseous audit samples comprised of components whose concentrations are traceable to NIST standards. Similarly, regulations covering continuous emissions monitoring require the use of reference values from NIST traceable equipment, and regulations covering the Acid Rain Program require certificates showing traceability to NIST protocols and other supporting documents. EPA regulations also require that equipment used in dew point measurements be traceable to NIST standards and that certification and calibration for microbalances be NIST traceable. Extensive references to NIST products and services are also found in Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Exhaust Test Procedures.

'NIST True Value' for purposes of torque calibration is defined by EPA as "the torque calculated by taking the product of a NIST traceable weight or force and a sufficiently horizontal distance along a lever arm, corrected for the lever arm's hanging torque"(Air Pollution Control Programs). However, true value, in general, is defined by NIST as the value consistent with the definition of a given quantity, i.e., a value that would be obtained by a perfect measurement, and hence by nature is indeterminate[4]. Thus while NIST recognizes a "true value" to be indeterminate, a NIST traceable value is referred to by EPA as the "NIST true value". This inconsistency is further compounded by EPA's definition of the term 'accuracy' as "the maximum difference between a measured or calculated value and the true value, where the true value is determined by NIST" (40 CFR 1065.1001). A different approach to the question of NBS true value is seen in the Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous And Particulate Exhaust Test Procedures, where the regulations require that flowmeter calibration be traceable to NBS, and further specify that value to serve as the reference value (i.e., the NBS true value). In addition, the EPA test procedure and equipment requirement under the Air Pollution Control Program which exempts the need for approvals to be sought for using international calibration standards if the "standards have been shown to be traceable to NIST standards".

6.2. Standard Reference Materials (SRMs)

Standard Reference Materials (SRMs) are referred to in the CFR by DoL/OSHA, the EPA, and DoT/NHTSA (Appendix 6). The citations are either to specific SRMs or to SRMs in general. A specific citation is the reference to SRM 2670 by DoL/OSHA as a possible source of reference materials available for use in Quality Control/Quality Assurance (QC/QA) analyses of cadmium in urine under the Occupational Safety and Health Standards for Hazardous and Toxic Technology. As a generic citation, EPA refers to SRMs as a source of calibration gases that can be used to meet the specifications and test procedures for continuous emissions monitoring.

DoT/NHTSA, as part of its regulations for Federal Motor Vehicle Safety Standards for motor vehicle brake fluids, requires the use of zinc oxide, oil furnace back and sulfur used in the formulation of rubber compound for making styrene-butadiene rubber brake cups for testing motor vehicle brake fluids. The standard stipulates the concentration of

[4] J. Randa, NIST Project on Standard Terminology for Microwave Radiometry (2002), page 6.

components used for making the brake cups, and requires that zinc oxide, oil furnace black and sulfur used in such formulations have properties identical to NBS 370 (zinc oxide), NBS 378 (oil furnace black) and NBS 371 (sulfur) as materials supplied by the National Bureau of Standards. These materials are not currently listed in NIST databases and are not available from NIST.

HHS/FDA cites NBS Material 577 as part of the test for compliance that food additive combustion product gas may be safely used in the processing and packaging of the foods, using spectrophotometric measurements. However, this reference material, too, is not available from NIST.

EPA depends substantially on several NIST products and services for the enforcement of its regulations. EPA's Air Programs and the Toxic Substances Control Act refer extensively to NBS and NIST Standard Reference Materials to be used in calibrating devices that must show traceability to NIST. The EPA defines traceability as a "local standard that has been compared and certified either directly or via not more that one intermediate standard, to a primary standard such as a National Bureau of Standards Standard Reference Material (NBS SRM) or a USEPA/NBS-approved Certified Reference Material (CRM)". Under the National Primary and Secondary Ambient Air Quality Standards, permeation devices used for determination of sulfur dioxide in the atmosphere should be traceable to SRMs 1625, 1626 and 1627, and similarly calibration procedures for the measurement of nitrogen oxide and nitrogen dioxide (NOx gases) requires that permeation devices must be calibrated with a reference standard that is traceable to SRM 1683 or SRM 1684 (for NO) and SRM 1629 for NO2.

EPA also cites SRM 930D related to spectrophotometer calibration and the use of NBS SRM 1876 and RM 8410 as a measure of accuracy and comparability in Transmission Electron Microscopy for asbestos-related analyses.

NIST SRMs form the basis for EPA's definition of Standard Reference Material-equivalent compressed gas primary reference material (SRM-equivalent PRM). Furthermore, EPA requires that working and transfer standards and equipment used for auditing must be different from the standards and equipment used for calibration and spanning, but may still refer to the same NIST SRM, CRM, etc.

References to NIST standards are also found in EPA procedures related to gaseous exhaust test methods for emissions regulation, and for gasoline-fueled and diesel-fueled heavy duty engines, where SRMs are used as calibration and span gases, or where the gases used for such purposes must be derived from NBS SRMs. Similar requirements are also included in emission test equipment provisions for control of emissions from non-road spark-ignition engines at or below 19 kW.

SRM 1627 and 1629 are not listed in the NIST SRM database. SRMs 1625, 1626, 1683 and 1684 are listed, but are flagged as being "out of stock". SRM 1876 was superseded by 1876b, which also is out of stock. There is no information on RM 8410, but RM 8411 is listed as being out of stock. NBS 370, 371, 372, 378, 384 and 577 are either out of

stock or not listed. SRM 930D is available as SRM 930e and SRM 1582 as well as SRM 2670 are available. Out of 18 specifically numbered SRMs cited, only 3 are available. Table 3 below summarizes this information.

Table 3 - Availability of SRMs that are specifically identified by number in the CFR, per search in NIST SRM catalog, www.ts.nist.gov/srm

SRM number	SRM on	Availability	Comments
NBS 370	Zinc oxide	No	
NBS 371	Sulfur	No	
NBS 372	Stearic acid	No record found	
NBS 378	Oil furnace black	No record found	
NBS 384	n-tertiary butyl 2-benzothiazole sulfenamide	No	
NBS 577	Absorbance of naphthalene	No	Search revealed SRM 1577c for bovine liver
SRM 930D	Luminous transmittance	Yes	Replaced by 930 e
SRM 1582	Petroleum crude oil	Yes	Petroleum crude oil
NBS SRM 1625	Permeation device to measure sulfur dioxide in the atmosphere	No	SO2 permeation tube 10 mm – out of stock
NBS SRM 1626	Permeation device to measure sulfur dioxide in the atmosphere	No	SO2 permeation tube 5 mm – out of stock
NBS SRM 1627	Permeation device to measure sulfur dioxide in the atmosphere	No record found	
NBS SRM 1629	NO2	No record found	
NBS SRM 1683	NO in N2	No	Search revealed SRM 1683 b on NO/N2, 50 µmol/mo – out of stock
NBS SRM 1684	NO in N2	No	Search revealed SRM 1684 b on NO/N2, 100

			µmol/mo – out of stock
NBS SRM 1876	Microscopy method for asbestos	No	Search revealed SRM 1876 b on chrysolite asbestos – out of stock
RM 8410	Microscopy method for asbestos	No record found	
RM 8411	Microscopy method for asbestos	No	SRM 8411 is for mixed asbestos research filter – out of stock
SRM 2670	Cadmium in urine	Yes	Superseded by 2670a. Toxic elements in urine (freeze-dried)

6.3. Special Publications

DoL/OSHA cites once the 1977 NBS publication on polarized light microscopy of asbestos.

EPA has a total of four citations of NBS Special Publications: three to the 1978 NBS SP506 on misidentification of asbestos in talc, and two to the 1976 NBS SP 442 on organic chemical analysis for municipal and industrial wastewater.

The DHS/USCG has 20 references to the 1976 NBS Special Publication 440, a dictionary of color names.

Two copies of SP 506 are available at NIST. There is a holding related to SP442 which is a 1983 supplement to the Manual on Water, sponsored by ASTM Committee D19. Two copies of SP 440 are available at NIST.

Appendix 7 shows the references to Special Publications.

6.4. Assorted Publications

A wide variety of NBS/NIST publications are grouped in this category.

The DoE, part on energy management and planning programs, cites a NIST 1985 publication on life cycle costing.

FTC cites three times a 1995 NIST publication on testing of engine oil, making its requirements mandatory.

FERC cites once a 1984 NBS publication on seismic review of liquid natural gas facilities.

HUD cites once for its minimum property standards a 1970 NBS publication on the flammability testing of textile floor coverings. The test method is also available as an ASTM standard.

DoL/OSHA cites five NBS publications from 1980-1983 that help understand some requirements for accident prevention signs and tags. With the same purpose, there is a citation for 1978 NBS publication on fire alarms and communication systems.

Two undated NBS reports are cited by OSHA as a source of definitions in classifying soils and rocks deposits and for shoring and sloping of trenches and excavations.

EPA has five citations to three NBS documents. The first is to an undated report on standard reference powder refraction patterns; two are to a 1986 report on the aqueous solubility of organic compounds; and two are for the 1981 report on the same subject.

USCG has nine references to three publications. The 1956 NBS Report 4792 on a test to evaluate smoke signals is cited five times. An undated NBS Simplified Practice on first aid kits is cited three times. One citation refers to an undated NBS report on tests on fire extinguishers.

FCC cites three times a 1967 NBS technical note on calculating the PCS signal levels at microwave receivers.

These references are listed in Appendix 8.

6.5. Weights and Measures Handbooks (Handbook 44, 105-1 and 133).

Handbook 44, a NIST publication that provides specifications, tolerances and other technical requirements for weighing and measuring devices, is referenced 15 times in the CFR, mostly by the Department of Agriculture in both titles 7 and 9. FDA and EPA also cite this handbook. In title 7, there is one reference in the Agricultural Marketing Service chapter, under part 58 for dairy plants and products, and two references in the Food Grain Inspection Service chapter, parts 801 and 802 on weighing equipment. In title 9, there is one reference in part 201 for the regulations under the Packers and Stockyards Act, four references in the Food Safety and Inspection Service chapter, part 317 on labeling and marking and three additional references in part 381 on poultry products.

FDA cites Handbook 44 three times under part 1 on general enforcement regulations, and EPA cites it once in part 63 on emissions standards for monitoring requirements.

Handbook 44 is published yearly, and has been issued 25 times since 1979. It is available in hard copy and on-line from the NIST Weights and Measures Division web site at http://ts.nist.gov/ts/htdocs/230/235/pubs.htm.

Handbook 133, a NIST publication on checking the net contents of packaged goods, is referenced six times by the USDA/FSIS in its part 317 on labeling and marking and in

part 381 on poultry inspection regulations and subpart on procedures for net weight compliance. Two of the USDA citations make the Third Edition of Handbook 133 mandatory; the other four exclude specific chapters of Handbook 133 that are irrelevant to USDA regulations.

Handbook 133 has been published in four editions. The most recent is the January 2005 version of the 4th Edition that was published in 2004 and is available at http://ts.nist.gov/ts/htdocs/230/235/pubs.htm . The 1988 version referenced in the CFR is available for review at the Weights and Measures Division of NIST.

Handbook 105-1, a 1990 NIST publication on the specifications and tolerances for reference standard and field standard weight and measures (NIST Class F), is referenced once by the USDA's Grain Inspection, Packers and Stockyards Inspection (Federal Grain Inspection Service) and is incorporated by reference.

Handbook 105-1 is available from the NIST Weights and Measures Division web site and can be downloaded at http://ts.nist.gov/ts/htdocs/230/235/labmetrologypage.htm

References to Handbooks 44, 105-1 and 133 and their complete titles are included in Appendix 9.

6.6. Accreditation, the National Voluntary Laboratory Accreditation Program (NVLAP), and, the National Voluntary Conformity Assessment System Evaluation (NVCASE)

One reference under the DoE's part 431 for the energy efficiency of certain commercial and industrial products cites NVLAP.

Two references under the title 15 chapter on NIST, part 280 pertain to the Fastener Quality Act.

HUD has three citations to NVLAP in part 200 on FHA (Federal Housing Administration) programs. The first reference states that its building product certification requirements may require accreditation of laboratories by programs such as NVLAP. The second and third refer to periodic carpet testing in a NVLAP-accredited laboratory.

DoL/OSHA cites NVLAP once in its part on asbestos to require testing in a 'nationally recognized testing program' such as a NVLAP-accredited laboratory.

EPA cites NBS-accredited laboratories for testing asbestos for school programs.

FCC cites NIST and NIST programs seven times. Three references are in part 2, subpart on equipment authorization procedures, in the sections on designation and on authorization of Telecommunications Certification Bodies (TCB). The other four are in part 68 on connections of terminal equipment to the telephone network, subparts on conditions on use of terminal equipment, sections on the designation and requirements

for telecommunications certification bodies (TCBs). The NVCASE program, NIST roles, and the NIST accreditation program are recognized. However, NVLAP is not specifically mentioned; rather the reference is to accreditation under the NVCASE program.

These references to NVLAP and NVCASE are shown in Appendix 10.

6.7. Voluntary Product Standards and Commercial Standards

NIST is an active participant in standards development, but, in general, does not develop standards. Two exemptions to this are the development of Computer Security Guidelines/standards for use by the federal government (known as Federal Information Processing Standards) and the development of certain Voluntary Product Standards (VPS). The Department of Commerce is authorized to sponsor voluntary Product Standards development through 15 CFR 10 (b), which defines the requirements for DoC to sponsor Voluntary Product Standards development, and also defines the role of DoC in such a process, granting NIST the authority to administer these procedures for the department.

VPS 36-70 and **VPS 54-72** define apparel sizes for boys and girls, respectively. They are cited by the CPSC in defining tight-fitting with respect to the flammability of children's sleepwear. However, these standards are no longer valid. Paper copies are available at the National Center for Standards and Certification Information (NCSCI) at NIST.

HHS/FDA, in the part on animal food labeling, makes a general reference that if a NBS voluntary product standard exists for the number of servings, any label under FDA regulation shall use it.

HUD has eight citations to the following standards in the HUD Minimum Property Standards. **PS 1-83** relates to construction and industrial plywood and **PS 2-92** gives performance requirements for wood-based structural panels. **VPS 20-94** provides requirements on grade marking and is cited once by HUD. **CS 136-55** is on insect wire screening and **CS 242-62** relates to steel doors and frames.

PS 1-83 is no longer valid and has been superseded by **PS 1-95. VPS 20-94** is no longer valid and has been replaced by **PS 2-92** and **PS 20-99.** The current versions are available electronically at the NIST/TS web site http://ts.nist.gov/ts/htdocs/210/sccg/sccg.htm. **CS 136-55** and **CS 242-62** are no longer valid. Paper copies of withdrawn standards are available at NIST/NCSCI.

DoL/OSHA cites **CS 202-56** on industrial lifts and loading ramps once. However, CS 202-56 has been withdrawn and is no longer valid. Paper copies are available at NIST/NCSCI.

The references to these standards are shown in Appendix 11.

6.8. Computer Security

The Office of Personnel Management makes two references to NIST on computer security. The first is to NIST Special Publication 500-172 on computer security training guidelines, and the second is a general reference to NBS standards on the physical security of automated data processing. SP500-172 has been cancelled.

FERC in a general fashion cites once the NBS guidelines on computer security.

Under the Foreign Relations title of the CFR, in the chapter on International Boundary and Water Commission, US and Mexico Section, the part on the Privacy Act of 1974 there is a citation to the NBS booklet on "Computer Security Guidelines for implementing the Privacy Act of 1974".

Under the Bureau of Indian Affairs title of the CFR, in the chapter on the Navajo and Hopi Indian Relocation, part on Commission Operations and Relocation Procedures, subpart on Privacy Act, there is reference to the NBS booklet on computer security guidelines.

Under the Judicial Administration title of the CFR, in the chapter on the Office of the Independent Counsel, part on the production or disclosure of material or information, there is a reference to consistency with the guidelines developed by NBS for the security of systems of records.

Under the Treasury title of the CFR, there is a reference to the standards promulgated by NBS to ensure maintenance of records under the Privacy Act.

Under the Public Contracts and Property Management title of the CFR, in the chapter on temporary duty travel allowances, part on agency travel accountability requirements, there is reference to the NIST security and privacy requirements for electronic data exchange.

Under the Interior title of the CFR, in the part on records and testimony, subchapter on the Privacy Act, there is reference to the NBS booklet on computer security guidelines.

HHS in the chapter on child support enforcement, part on standards for program operations, both Subpart 7 on provisions of services in interstate cases and Subpart 72 on collection of past-due support by Federal tax refund offset refer to the NIST Federal Information Processing Standards (FIPS) publication. While a specific reference is not mentioned, it may be presumed that it is FIPS Pub 55-DC3 which is available at http://www.its.nist.gov/fipspubs/fip55-3.htm.

Under the Transportation title of the CFR, chapter on the Federal Motor Carrier Safety Administration, part relevant to the hours of service of drivers, the NBS FIPS publication 1-1 is cited for the automatic on-board recording devices. No reference to NIST FIPS Pub 1-1 has been found in the NIST FIPS archives.

Several agencies cite computer security guidelines to implement the 1974 Privacy Act. FIPS Pub 41, which provides these guidelines and is presumably the text referred to by

the agencies, was withdrawn in 1998. It is still however available at http://www.itl.nist.gov/fipspubs/fips41.pdf

Appendix 12 provides these references.

6.9. Circular 484, a 1949 NBS publication on spectrophotometry, is cited three times by the HHS/FDA in part 172 on permitted food additives, in the sections on petroleum naphtha, on synthetic fatty alcohols and on petroleum wax. It is cited four times in part 178 on indirect food additives, twice in the section on mineral oils, once in the section on polyhydric alcohol esters of oxidatively refined (Gersthofen process) montan wax acids and once in the section on surface lubricants used in the manufacture of metallic articles.

Circular 484 was published only in 1949; one copy is available at NIST.

References to Circular 484 are in Appendix 13.

6.10. Handbook 69 is a 1959 NBS publication on the determination of radiation exposure; four agencies reference it. The NRC references it in the subpart for reactor site criteria and in the subpart for licensing of productions and utilization facilities - technical information. The DoL/WHD cites this handbook under its part on child labor regulations, subpart on occupations particularly hazardous to minors. Both EPA references are in part 141 on national primary drinking water regulations, one under definitions and the other under the maximum contaminant levels and maximum residual disinfectant levels. The DoD refers to Handbook 69 in part 650 on environmental protection and enhancement, subpart on hazardous and toxic materials management.

Handbook 69 was originally published in 1959. Contrary to the EPA citation, the NIST library information does not indicate any 1963 revision. One copy is available at NIST.

References to Handbook 69 are included in Appendix 14.

6.11. Handbook 28, a 1957 NBS publication on screw thread standards, is referenced once by CPSC in relation to attachment hardware for bicycles. It is referenced four times by the DoT/RSPA, once in a general information subpart, twice in the subpart on specifications for packaging used for the transportation of hazardous materials, and once in the subpart for tank cars.

Handbook 28 was originally published in 1939, and then republished in 1942, 1944 with supplements, 1949, and 1950. In 1957, it was issued in three parts, and in 1963 it was republished with one supplement. Seven copies are currently available at NIST.

The CFR references to Handbook 28 are shown in Appendix 15.

6.12. Handbook 81, a 1961 NBS publication on safety rules for the installation of electrical supply lines, is referenced three times by the DoL/MSHA, under safety and health standards, in its part 56 on surface metal and nonmetal mines and in its part 57 on underground metal and nonmetal mines and for part 77 on surface coal mines and surface work areas of underground coal mines. The subpart on surface high-voltage distribution references the National Electrical Safety Code, which was formerly (?) Handbook 81.

Handbook 81 was originally published in 1941 and then updated in 1961. Both versions were approved by the American Standards Association (the predecessor of the American National Standards Institute, ANSI). Contrary to the MSHA citation, the NIST library information does not indicate any 1968 supplement. One copy is available at NIST.

References to Handbook 81 are provided in Appendix 16.

6.13. National Technology Transfer and Advancement Act (NTTAA)
There are three citations in the CFR to the NTTAA, which defines the responsibilities of NIST, those of federal agencies, and those of Agency Standards Executives with respect to the Act.

Appendix 17 lists the references.

6.14. Handbook 91, a 1966 NBS publication on experimental statistics, is referenced twice by the DHS/USCG, part 162 on engineering equipment, subpart on pollution prevention equipment; once as a document incorporated by reference; and once under designation of a facility authorized to perform approval tests.

Handbook 91 was originally published in 1963 and republished with corrections in 1966. Three copies of the 1963 version and five copies of the 1966 version are available at NIST. An updated and expanded version of this handbook is now available as the NIST/SEMATECH e-Handbook of Statistical Methods, http://www.itl.nist.gov/div898/handbook/.

CFR references to Handbook 91 are in Appendix 18.

6.15. Handbook 96, a 1964 NBS publication on inspection of photographic record films for blemishes due to aging, is referenced twice by the DoT. The first reference is by the Maritime Administration in its part 380 on procedures, subpart on records retention schedule. The second is by the Federal Motor Carrier Safety Administration, part 390 on general requirements and information, section on copies of records or documents.

Handbook 96 was published only in 1964; one copy is available at NIST.

References to Handbook 96 are shown in Appendix 19.

6.16. Handbook 150 and its several supplements provide the procedures and requirements for the NVLAP. **Handbook 150-01** is referenced under the DoE's part 430 on the energy conservation program for consumer products program and in part 431 on the energy efficiency program for certain commercial and industrial products under testing laboratories.

Handbook 150 and all its supplements are available for free downloading from the NIST/NVLAP web site at http://ts.nist.gov/ts/htdocs/210/214/214.htm.

References to Handbook 150 are included in Appendix 20.

6.17. Handbook 136, a 1981 publication on radiological safety, is also identified as an American National Standard, ANS N432. It is referenced once by the DoE/NRC, in part 34 on licenses for industrial radiographic operations as a mandatory requirement for equipment performance.

Handbook 136 was published only in 1981; at least one copy is available at NIST.

References to Handbook 136 are listed in Appendix 21.

7. Availability of NIST Products cited in the CFR

Information on the availability of SRMs is provided in Table 3 in section 6.2 above. Information on the availability of NIST/NBS publications is provided in Appendix 23.

8. Conclusions

From the range of references, it is obvious that U.S. federal agencies have looked, and continue to look, to NIST to provide measurement leadership, along with state-of-the-art products and services for metrology, measurement, laboratory accreditation, conformity assessment and for information technology security. The longevity of some of the identified references clearly indicates NIST's long-standing and essential role measurement science and expertise. Furthermore, the multiple references to numerous NIST products and services attest to their inherent value for many government programs. Thus, it is evident from the extent of the NIST citations in the CFR that U.S. federal agencies rely upon and value highly NIST metrology and measurements expertise. Some important examples include gas standards for use as calibration and span gases and references to NIST Handbook 44.

It should be emphasized that this study did not attempt to measure the impact of specific NIST/NBS products and services or their totality on the U.S. economy. However, NIST impact on the U.S. economy and society is evident through the numerous references by

U.S. federal agencies to particular NIST products and services. One example is the traceability requirements that EPA includes in their regulations for stationary source, mobile source and ambient air monitoring which has led to a strong demand for NIST SRMs and certification of NIST Traceable Reference Materials (NTRM). To increase the availability of certified gas-mixture reference materials, NIST in collaboration with the EPA and the appropriate specialty gas companies, created the NTRM program. This program has been projected to have net benefits between $ 49 million and $ 63 million from 1990 through 2007, at 2001 dollar value[5]. Another clear example of NIST impact is in EPA regulations that refer to NIST SRMs within the context of measuring the sulfur content of fossil fuels. The economic impact of these SRMs, including benefits accruing from improvement in product quality, production efficiency, and reductions in transaction costs and sulfur dioxide emissions to the environment have been estimated at $409 million, beginning in 1984 and projected through 2003, at 1998 dollar value [6].

There is a wide range of U.S. federal agencies with regulations requiring compliance with NIST guidelines/standards on computer and data security. An economic impact assessment of NIST's Data Encryption Standards program has estimated the impact to be between $345 million and $1.19 billion (net present value in 2000)[7]. It is important to note that these estimates are for the overall use of NIST's data encryption standards, and include the effect due to federal regulation requirements.

Federal regulations require thermocouple calibration or traceability to NIST. One way to meet this requirement is through the NIST Thermocouple Calibration Program (TCP). An economic impact study of this program found that the internal rate of return from the TCP investments is at least 31.8 %[8]. The study also concluded that this rate of return indicates a socially-valuable activity affecting a broad range of U.S. domestic industries.

The most significant impact of NIST product and services on the U.S. economy is illustrated by the Weights and Measures Handbooks (Handbooks 44, 105-1 and 133) which are cited twenty two times by five agencies (most often USDA). It has been estimated that weights & measures regulations impact $4.5 trillion of commerce or 52% of the U.S. GDP in 1998 figures. In addition, virtually all states' regulations reference NIST weights and measures handbooks. This also illustrates that a simple numeric count of citations is not an adequate indication to assess the critical importance and/or impact of NIST products.

In general, while numerous references to NIST products, services and publications in the CFR are valid, there are also a number of inaccurate, erroneous, and outdated references. In some instances there are NIST products and services which are cited but not available,

[5] The Economic Impact of the Gas-Mixture NIST-Traceable Reference Materials Program (Planning Report #02-4) http://www.nist.gov/director/planning/impact_assessment.htm#recent
[6] Economic Impact of Standard Reference Materials for Sulfur in Fossil Fuels (Planning Report #00-1) http://www.nist.gov/director/planning/impact_assessment.htm#recent
[7] The Economic Impacts of NIST's Data Encryption Standard (DES) Program (Planning Report 01-2) http://www.nist.gov/director/planning/impact_assessment.htm#recent
[8] Economic Assessment of the NIST Thermocouple Calibration Program (Planning Report #97-1) http://www.nist.gov/director/planning/impact_assessment.htm#recent

and in some instances there is no information at NIST about them. Examples are the NIST SRMs that are out of stock, and the references in the CFR to NBS Materials for which there is no available information.

The methodical review of the CFR conducted presents an opportunity for NIST regarding its products and services. NIST should make every effort to assure that up-to-date services are known and available to U.S. government agencies and to industry. To do this, NIST must review thoroughly the current and projected availability of all NIST/NBS products and services cited in CFR references. Additionally, to address specifically the regulatory needs of U.S. federal agencies, NIST should approach regulators to offer its expertise and knowledge and to explain how best to use and reference NIST measurement services and products in their regulations. Specific recommendations are given in section 9 below.

NIST's responsibility to ensure the integrity of the nation's measurement system is a unique and vital component that contributes to the welfare of the nation. Carrying out the recommended actions below will increase NIST's value to U.S. federal agencies, industry and other stakeholders.

9. Recommendations

NIST should ensure that its products and services are cited appropriately in regulations and that they are technically valid. Relevant NIST Laboratories should carry out a review to confirm the findings of this study and determine the technical validity of the references. Then, the relevant program responsible for the cited product or service should either identify alternative or new products and services that can serve the purpose of the original citation or other viable options. If NIST Laboratories have followed a deliberate transition strategy for certain products and services, then this information should be documented and presented in a form that is understandable and useful to regulators.

NIST Technology Services can work with NIST Laboratories to evaluate the out-of-date citations identified in this report and determine a course of action for each one. Once NIST has identified alternative resources or confirmed NIST's inability to deliver a cited product and service, NIST must determine the best way to contact regulators and others that may provide support in addressing the technical and administrative issues that were identified.

NIST should approach regulators about: (a) current NIST/NBS products and services that may better suit agencies' needs; (b) the lack of availability of some cited NIST/NBS products, suggesting that they may be inadequate and providing possible replacements for outdated citations; (c) the meaning and significance of traceability and how to demonstrate it, since some regulations specify "traceability to NIST/NBS" or "traceability to NIST standards", without explicitly identifying the required standard to which traceability should be established.

In addition NIST should support agencies in correcting factual mistakes such as; (a) incorrect references to NIST as the National Institute of/for Science and Technology or the National Institute of/for Standards and Technologies, or still to the National Bureau of Standards; (b) regulations that refer to both NBS and NIST in the same paragraph. The authors note that it may be possible to effect some of these corrections by working directly with the U.S. National Archives and Records Administration (NARA), which is responsible for maintaining an electronic database of the CFR.

Finally, NIST should establish a policy that, in the future, when Laboratories consider termination of a product or service, they should first determine if it is referenced in the CFR and provide appropriate alternatives or work with the relevant agency to change or withdraw particular references.

We believe this is a significant undertaking but one that will enhance the value of NIST products and services to all stakeholders and will clearly identify NIST as the leader of the Nation's Measurement System, which includes responsibilities such as:

- Identifying unmet measurement needs of U.S. industry, commerce, regulatory agencies, and national defense;
- Identifying needed de-facto national standards of measurement;
- Initiating collaborations with and among government agencies and industrial institutions with unmet measurements needs and responding appropriately;
- Developing or collaborating with others on developing measurements, methods and standards to fill identified national measurement needs; and
- Supporting other government agencies with special measurement needs.

Appendix 1

Listing of References to NIST and NBS in the Code of Federal Regulations (Martinez and DeVaux)

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
Security guidelines	security guidelines for automated systems of records		Admin Personnel	5 CFR 293.107
NBS-SRM 1010a	Microcopy Resolution Test Chart (ISO Test Chart No. 2)	1990	ATBCB	36 CFR 1230.14(d)(1)(i)
NBS-SRM 1010a	Microcopy Resolution Test Chart (ISO Test Chart No. 2)	1990	ATBCB	36 CFR 1230.3(d)
NBS Calibration	total heat flux meter / radiation instrumentation		CPSC	16 CFR 1209.8
PS 36-70	Body Measurements for Sizing Boys Apparel (formerly CS 155-50)	1970	CPSC	16 CFR 1616.2(b)
PS 54-72	Body Measurements for Sizing Girls Apparel (formerly CS 153-48)	1972	CPSC	16 CFR 1616.2(b)
Handbook 28	Screw Thread Standards for Federal Service		CPSC	16 CFR 1512.4
Handbook 44	Specifications, Tolerances and other Technical Requirements for Weighing and Measuring Devices		USDA/FSIS	9 CFR 317.20 (c)
Handbook 44	Specifications, Tolerances and other Technical Requirements for Weighing and Measuring Devices		USDA/FSIS	9 CFR 381.121(d)
Handbook 44	Specifications, Tolerances and other Technical Requirements for Weighing and Measuring Devices		USDA/FSIS	9CFR 317.21 (b)
Handbook 133	Checking the Net Contents of Packaged Goods, Third Edition with supplements 1, 2, 3, and 4 with the exception of those regulations listed in 9 CFR 317.19(b) and (c)	1988	USDA/FSIS	9 CFR 317.19(a)
Handbook 133	Checking the Net Contents of Packaged Goods, Third Edition with supplements 1, 2, 3, and 4 with the exception of those regulations listed in 9 CFR 317.19(b) and (c)	1988	USDA/FSIS	9 CFR 381.121b(a)
Handbook 44	Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, 1999 edition	1998	USDA/FSIS	9 CFR 317.20(a)
Handbook 44	Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, 1999 edition	1998	USDA/FSIS	9 CFR 381.121c(a)
Handbook 44	Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, 1999 edition	1998	USDA/FSIS	9 CFR 381.121c(c)
Handbook 44	Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices	1991	USDA/GIPSA	5 CFR 801.12
Handbook 105-1	Specifications and Tolerances for Field Standard Weights	1990	USDA/GIPSA	7 CFR 802.0(a)
Handbook 44	Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices	1990	USDA/GIPSA	7 CFR 802.0(a)

Handbook 44	Specifications, Tolerances, and other Technical Requirements for Weighing and Measuring Devices	1996	USDA/GIPSA	9 CFR 201.71(a)
Traceability / calibration	State, county and city metrology labs		USDA/GIPSA	7 CFR 802.1
SP 250	Calibration and Related Measurement Services of the National Institute of Standards and Technology	NDG	DOC/NIST	15 CFR 200.115(a)
SP 260	Catalog of NIST Standard Reference Materials and Supplement	NDG	DOC/NIST	15 CFR 230.7(a)
Handbook 69	National Council on Radiation Protection and Measurement Report N. 22		DOD	32 CFR 650.139
Handbook 150-01	NVLAP Energy Efficient Lighting Products, Lamps and Luminaries	1993	DOE	10 CFR 430.22
Calibration	Lumen measurements		DOE	10 CFR 430.27
Handbook 150-10	NVLAP Efficiency of Electrical Motors		DOE	10 CFR 431.25
NIST 85-3273	Life Cycle Costing Manual for Federal Energy Management Program		DOE	10 CFR 436.34
Calibration	Calibration services		DOE	48 CFR 908.7113
Handbook 136	Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography	1981	DOE/NRC	10 CFR 34.20
NBS Handbook 69	Radiation exposure	1959	DOE/NRC	10 CFR 100.11
NBS Handbook 69	Radiation exposure	1959	DOE/NRC	10 CFR 50.34
Handbook 69	Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure		DOE/NRC	10CFR100.10
Not Stated	National Electrical Safety Code: Part 2: Safety Rules for the Installation and Maintenance of Electric Supply and Communications Lines; and Supplement 2 (1968)	1961	DOL/MSHA	30 CFR 56.12047
Not Stated	National Electrical Safety Code: Part 2: Safety Rules for the Installation and Maintenance of Electric Supply and Communications Lines; and Supplement 2 (1968)	1961	DOL/MSHA	30 CFR 57.12047
Not Stated	National Electrical Safety Code	1971	DOL/MSHA	30 CFR 77.807-1
Traceability	Calibration gas values		DOL/MSHA	30 CFR7.86, Subpart E
Traceability	Span gas values		DOL/MSHA	30 CFR7.86 Subpart E
Calibration	Light measuring instrument		DOL/MSHA	30 CFR 75.1719-3
Traceability/Calibration	calibration standards		DOL/MSHA	30 CFR 7.7
Traceability/Calibration	calibration standards		DOL/MSHA	30 CFR 7.4

Appendix 1

Laboratory accreditation	NAVLAP Asbestos Program		DOL/OSHA	29 CFR 1910.1001
SRM 2670	Cadmium in urine		DOL/OSHA	29 CFR 1910.1027
NBS report	Recommended Technical Provisions for Construction Practice in Shoring and Sloping of Trenches and Excavations		DOL/OSHA	29 CFR 1926.652
Laboratory accreditation	Asbestos - participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples		DOL/OSHA	29 CFR1926 Subpart Z
CS 202-56	Industrial Lifts and Hinged Loading Ramps	1961	DOL/OSHA	29 CFR 1910.30
Traceability/Calibration	recording test equipment calibration		DOL/OSHA	29 CFR 1919.60
Calibration	dynamometer calibration		DOL/OSHA	29 CFR 1919.10
Handbook 69	Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radio Nuclides in Air and in Water for Occupational Exposure, 1959		DOL/WHD	29 CFR 570.57
Traceability	Method traceable to NIST		DOT/FAA	14CFR A36.3.9.7
Traceability	Method traceable to NIST		DOT/FAA	14CFR A36.3.9.10
Calibration	Traceable to NBS		DOT/FAA	14CFR H36.101 (7)
Calibration	Traceable to NIST		DOT/FAA	14CFR J36.109(iii)
Calibration	Traceable to NIST		DOT/FAA	14CFR145.47
	Film for photographing copies, minimum specifications of NBS		DOT/FMCSA	49 CFR 390.31
Handbook 96	Inspection of Processed Photographic Record Films for Aging Blemishes		DOT/MA	46 CFR 380.21
NBS 378	Oil furnace black / formulation of rubber compound		DOT/NHTSA	49 CFR 571
NBS 370	Zinc oxide / formulation of rubber compound		DOT/NHTSA	49 CFR 571
NBS 371	Sulfur / formulation of rubber compound		DOT/NHTSA	49 CFR 571
NBS 372	Stearic acid / formulation of rubber compound		DOT/NHTSA	49 CFR 571
NBS 384	n-tertiary butyl-2…./ formulation of rubber compound		DOT/NHTSA	49 CFR 571
Calibration	time signals		DOT/NHTSA	49 CFR 571.116
Handbook H-28	Handbook of Screw-Thread Standards for Federal Service, Part II, December 1966 Edition	1957	DOT/RSPA	49 CFR 171.7
Handbook H-28	Handbook of Screw-Thread Standards for Federal Service, Part II, December 1966 Edition	1957	DOT/RSPA	49 CFR 178.45

Appendix 1

Handbook H-28	Handbook of Screw-Thread Standards for Federal Service, Part II, December 1966 Edition	1957	DOT/RSPA	49 CFR 178.46
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.010-1
Publication 440	Large radius or ASME flow nozzles	1976	DOT/USCG	46 CFR 160.021-1
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.022-1
Report 4792	Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals	1956	DOT/USCG	46 CFR 160.022-1
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.024-1
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.036-1
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.037-1
Report 4792	Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals	1956	DOT/USCG	46 CFR 160.037-1
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.057-1
Report 4792	Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals	1956	DOT/USCG	46 CFR 160.057-1
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.077-5
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.151-15
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.171-3

Appendix 1

Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.174-3
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 160.176-9
Handbook 91	Experimental Statistics	1966	DOT/USCG	46 CFR 162.050-4
Publication 440	Color: Universal Language and Dictionary of Names	1976	DOT/USCG	46 CFR 169.115
	testing - structural insulation		DOT/USCG	46 CFR 164.007
	Testing - bulkhead panels		DOT/USCG	46 CFR 164.008
	Inspection and Testing - deck coverings for merchant vessels		DOT/USCG	46 CFR 164.006
Simplified Practice Recommendation R178-41	Packaging of First-Aid Unit Dressings and Treatments		DOT/USCG	46 CFR 160.041
SP 440	Color: Universal Language and Dictionary of Names		DOT/USCG	46 CFR 160.074
NBS Building Materials and Structures Report 150	Fire tests, extinguishers, fire, portable, marine type		DOT/USCG	46 CFR 162.028
Handbook 44	Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices	1998	EPA	40 CFR 63.1303(e)(3)
Handbook 69	Permissible Body Burdens and Maximum permissible Concentrations of Radionuclides in Air or Water for Occupational Exposure	1963	EPA	40 CFR 141.16(b)
NBS SRM	General requirement		EPA	40 CFR Part 50
NBS Calibration	traceable bubble flowmeter or calibrated wet test meter		EPA	40 CFR 50.4 9.4.1

Appendix 1

NBS SRM 1625	Permeation devices		EPA	40 CFR 50.4 10.3
NBS SRM 1626	Permeation devices		EPA	40 CFR 50.4 10.3
NBS SRM 1627	Permeation devices		EPA	40 CFR 50.4 10.3
NBS SRM	CO in air		EPA	40 CFR 50.4 3.1
NBS SRM 1683	NO concentration		EPA	40 CFR 50.4 1.3, 2.3.1
NBS SRM 1684	NO concentration		EPA	40 CFR 50.4 1.3, 2.3.1
Calibration /traceability	Flow rate transfer		EPA	40 CFR 50.3 7.3, 8.2.2
NBS SP 300	Colorimetric Precision Measurement and Calibration	1972	EPA	40 CFR Part 60 16.00
NBS/EPA publication	A Procedure for establishing traceability to gas mixtures to certain National Bureau of Standards Standard Reference Materials	1981	EPA	40 CFR Part 60 17.00
SRM	Audit gases		EPA	40 CFR Part 60 5.1.2
NBS-calibration?	Carbon dioxide, methane, xylene		EPA	40 CFR 53.22
NBS	reference filters		EPA	40 CFR 86.884-11
Traceability / calibration	NBS value torque		EPA	40 CFR 86.1308-84
Traceability / calibration	Weights traceable to NIST		EPA	40 CFR 86.1308-84

Appendix 1

NBS/EPA publication	A Procedure for establishing traceability to gas mixtures to certain National Bureau of Standards Standard Reference Materials	1981	EPA	40 CFR 58.61
Traceability / calibration	Flowmeter calibration or other measurement if traceable to NBS		EPA	40 CFR 86.1319-90
Traceability / calibration	NBS traceable flow calibration		EPA	40 CFR 86.1320-90
NBS Handbook 69	Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure		EPA	40 CFR 141 Subpart A
NBS Handbook 69	Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure	1963	EPA	40 CFR 141.66
Traceability	Flow calibration device		EPA	40 CFR 86.120-94
Traceability / calibration	NBS weights		EPA	40 CFR 86.333.79
Traceability	Calibration gas and span gas		EPA	40 CFR 86.301-79
Traceability	Calibration gas and span gas		EPA	40 CFR 86.308-79
Traceability / calibration	NBS weights		EPA	40 CFR 86.312-79
Traceability	For fuels and fuel additives		EPA	40 CFR 80.1045
Traceability	Gaseous pollutant concentration standards		EPA	40 CFR58
Traceability	Gaseous standards used to obtain test concentrations for CO, SO2 and NO2		EPA	40 CFR58
Traceability	Flow rate measurement device		EPA	40 CFR 53.52

Appendix 1

Traceability/calibration	all measurement instruments used in the tests		EPA	40 CFR 53.52
Traceability	Flow rate measurement device		EPA	40 CFR 53.53
Traceability	Flow rate measurement device		EPA	40 CFR 53.54
Traceability	Flow rate measurement device		EPA	40 CFR53, Subpart E
Traceability/calibration	all measurement instruments used in the tests		EPA	40 CFR53, Subpart E
Traceability	Flow rate measurement device		EPA	40 CFR53, Subpart E
Traceability/calibration	all measurement instruments used in the tests		EPA	40 CFR53, Subpart E
Traceability	Miniature temperature sensors		EPA	40 CFR53, Subpart E
Traceability/calibration	all measurement instruments used in the tests		EPA	40 CFR53, Subpart E
Traceability/calibration	all relevant measurement equipment		EPA	40 CFR53, Subpart A
Traceability	Flow rate measurement device		EPA	40 CFR53, Subpart A
Traceability	Gases used for calibration, fuel and combustion air		EPA	40 CFR52.741, Subpart O
Traceability	The span gases used for the gas calibration		EPA	40 CFR51.373, Subpart S
Traceability	flow rate standard		EPA	40 CFR 50.12

Appendix 1

Traceability	the accuracy of the temperature monitor		EPA	40 CFR 63.364
Traceability	verified in calibrated oven traceable to NIST		EPA	40 CFR 63.364
Traceability	accuracy of the temperature monitor		EPA	40 CFR 63.564 (e) (4), (g) (3), (h) (7)
Traceability	Equivalent to calibration error (CE) test		EPA	40 CFR63.1213Subpart EEE
Traceability	The device		EPA	40 CFR63.5545 Subpart UUUU
Traceability	Calibration gas values		EPA	40 CFR72
Traceability	compressed gas calibration standard		EPA	40 CFR72
Traceability	transmitter or transducer;…and expected transmitter output during accuracy test		EPA	40 CFR75, Subpart A
Traceability	Information demonstrating that the proposed alternative produces data acceptable for use		EPA	40 CFR75, Subpart A
Traceability	calibration gases		EPA	40 CFR75, Subpart A
Traceability	Flowmeter accuracy		EPA	40 CFR75, Subpart A
Traceability	differential pressure transmitter or transducer, static pressure transmitter or transducer, and temperature transmitter or transducer		EPA	40 CFR75, Subpart A
Traceability	Calibration gases		EPA	40 CFR 86.114-94
Traceability	Calibration gases		EPA	40 CFR 86.1214-85

Appendix 1

Traceability	Calibration gases		EPA	40 CFR 86.1314-94
Traceability	Span gases		EPA	40 CFR 86.114-94
Traceability	Span gases		EPA	40 CFR 86.1214-85
Traceability	Span gases		EPA	40 CFR 86.1314-94
Traceability	Methanol in air gases		EPA	40 CFR 86-114-94
Traceability	Methanol in air gases		EPA	40 CFR 86.514-78
Traceability	Methanol in air gases		EPA	40 CFR 86.1214-85
Traceability	Methanol in air gases		EPA	40 CFR 86.1314-94
Traceability	known methane in air concentrations		EPA	40 CFR 86.121-90
Traceability	known methane in air concentrations		EPA	40 CFR 86.521-90
Traceability	known methane in air concentrations		EPA	40 CFR 86.1221-90
Traceability	known methane in air concentrations		EPA	40 CFR 86.1314-94
Traceability	known methane in air concentrations		EPA	40 CFR 86.1321-94
Traceability/calibration	Calibration		EPA	40 CFR 86.1306-07

Appendix 1

Traceability	Dewpoint shall be measured		EPA	40 CFR 86.1312-2007
Traceability/calibration	certification and calibration procedures		EPA	40 CFR 86.1312-2007
Traceability	Dynamometer calibration weights		EPA	40 CFR 89.306
Traceability	Dynamometer calibration weights		EPA	40 CFR 91.305
Traceability/calibration	Calibration and span gases		EPA	40 CFR 89.312
Traceability/calibration	Calibration and span gases		EPA	40 CFR90
Traceability/calibration	Calibration and span gases		EPA	40 CFR91.312
Traceability/calibration	Calibration and span gases		EPA	40 CFR91.314
Traceability/calibration	flowmeter calibration		EPA	40 CFR89.422
Traceability/calibration	flowmeter calibration		EPA	40 CFR90.424
Traceability/calibration	flowmeter calibration		EPA	40 CFR91
Traceability	Other measurement systems may be used		EPA	40 CFR89.422
Traceability/calibration	Dynamometer calibration weights		EPA	40 CFR90.305
Traceability/calibration	Calibration gas/span gas		EPA	40 CFR90.314

Appendix 1

Traceability	Large radius or ASME flow nozzles		EPA	40 CFR90.424
Traceability	the true value, where the true value is determined from NIST traceable measurements		EPA	40 CFR92
Traceability	Engine flywheel torque readout		EPA	40 CFR92
Traceability/calibration	Calibration and span gases		EPA	40 CFR92
Traceability	true value torque		EPA	40 CFR92
Traceability	Weights		EPA	40 CFR92
Traceability/calibration	master load cell		EPA	40 CFR92.117
Traceability/calibration	critical flow orifice, a bellmouth nozzle, or a laminar flow element or an NIST traceable flow calibration device is required as the standard device		EPA	40 CFR92.117
Traceability/calibration	Filters		EPA	40 CFR 92.122
Traceability	Gas		EPA	40 CFR 92.122
Traceability	solution containing an analyte		EPA	40 CFR136
Traceability	Span gas		EPA	40 CFR 85.2232
NBS Technical Note 101	Transmission Loss Predictions for Tropospheric Communication Circuits	1967	FCC	47 CFR 24.253
Accreditation	TCBs shall be accredited by the NIST under its NVCASE program, or other recognized programs based on ISO/IEC Guide 65, to comply with the Commission's qualification criteria for TCBs. NIST may, in accordance with its procedures, allow other		FCC	47 CFR2

	appropriately qualified accrediting bodies to accredit TCBs and testing laboratories			
Accreditation	TCBs shall be accredited by the NIST under its NVCASE program, or other recognized programs based on ISO/IEC Guide 65, to comply with the Commission's qualification criteria for TCBs. NIST may, in accordance with its procedures, allow other appropriately qualified accrediting bodies to accredit TCBs and testing laboratories		FCC	47 CFR68.160
Accreditation	Commission will designate as a TCB any organization that meets the qualification criteria and is accredited by NIST or its recognized accreditor		FCC	47 CFR2
Accreditation	Commission will designate as a TCB any organization that meets the qualification criteria and is accredited by NIST or its recognized accreditor		FCC	47 CFR68.160
	Time signal rebroadcasts		FCC	47 CFR 73.1207
Traceability	Standard radio frequency		FCC	47 CFR 73.1540
NBSIR 84-7833	Data requirements for the Seismic Review of LNG facilities		FERC	18 CFR 153.7
Security guidelines			FERC	18 CFR 36.204
NIST report	Engine Oil Licensing and Certification System	1995	FTC	16 CFR 311.4 and 311.5
Circular 484	Spectrophotometry	1949	HHS/FDA	21 CFR 172.250(b)(3)
Circular 484	Spectrophotometry	1949	HHS/FDA	21 CFR 172.886(b)
Circular 484	Spectrophotometry	1949	HHS/FDA	21 CFR 178.3770(a)(4)
Circular 484	Spectrophotometry	1949	HHS/FDA	21 CFR 178.3910(a)(4)(iii)

Appendix 1

Handbook 44	Measure Container Code, section 4.45 Measure Containers	NDG	HHS/FDA	21 CFR 1.24(a)(6)(i)
Handbook 44	Measure Container Code, section 4.45 Measure Containers	NDG	HHS/FDA	21 CFR 1.24(a)(6)(ii)
Handbook 44	Measure Container Code, section 4.45 Measure Containers	NDG	HHS/FDA	21 CFR 1.24(a)(6)(iii)
Traceability / calibration	Mammography equipment		HHS/FDA	21 CFR 900.2
	Spectrophotometry		HHS/FDA	21 CFR 172.864
Material N. 577	Naphthalene, combustion product gas		HHS/FDA	21 CFR 173.355
Calibration	audiometer calibration set		HHS/FDA	21 CFR 874.1080
	Definition of voluntary product standards		HHS/FDA	21 CFR 501.8
	Spectrophotometry		HHS/FDA	21 CFR 178.3620
Handbook 74	Building Code Requirements for Reinforced Masonry (ANSI A41.2)	1960	HUD	24 CFR 200, Subpart S
PS 1-74	Product Standard for Construction and Industrial Plywood with Typical APA Trademarks	1974	HUD	24 CFR 200, Subpart S
PS 1-82	Voluntary Product Standard, Construction and Industrial Plywood	1982	HUD	24 CFR 3280.304(b)(1)
CS 138-55	Insect Wire Screening	1955	HUD	24 CFR 200, Appendix A
CS 242-62	1-3/4" Thick Steel Doors and Frames	1962	HUD	24 CFR 200, Appendix A

Appendix 1

CS 242-62	1-3/4" Thick Steel Doors and Frames	1962	HUD	24 CFR 200, Subpart S
FF-1-70	Standard Test Method for Flammability of Finished Textile Floor Covering Materials (ASTM D2859-76)	1970	HUD	24 CFR 200.942
PS 1-83	Product Standard for Construction and Industrial Plywood with Typical APA Trademarks	1983	HUD	24 CFR 200, Appendix A
PS 20-70	American Softwood Lumber Standard	1970	HUD	24 CFR 200, Subpart S
PS 20-94	American Softwood Lumber Standard	1994	HUD	24 CFR 200.943(a)(1)
PS 27-70	Mosaic-Parquet Hardwood Slat Flooring	1970	HUD	24 CFR 200, Subpart S
PS 2-92	Performance Standard for Wood-Based Structural-Use Panels	1992	HUD	24 CFR 200, Appendix A
PS 51-71	Hardwood and Decorative Plywood	1971	HUD	24 CFR 200, Subpart S
PS 56-73	Structural Glued Laminated Timber (ANSI A190.1)	1973	HUD	24 CFR 200, Subpart S
PS 57-73	Cellulose Fiber Insulation Board (ANSI A194.1)	1973	HUD	24 CFR 200, Subpart S
PS 58-73	Basic Hardboard (ANSI A135.4)	1973	HUD	24 CFR 200, Subpart S
PS 59-73	Pre-finished Hardboard Paneling (ANSI A135.5)	1973	HUD	24 CFR 200, Subpart S
PS 60-73	Hardboard Siding (ANSI A135.6)	1973	HUD	24 CFR 200, Subpart S
Publication	Dust Spot Method of Testing Air Filters	1957	HUD	24 CFR 200, Subpart S

Appendix 1

SP 330	The International System of Units	1977	HUD	24 CFR 200, Subpart S
PS 2-92	Performance Standard for Wood-Based Structural-Use Panels		HUD	24 CFR 3280.304
VPS 20-94	American Softwood Lumber Standard		HUD	24 CFR 200.943
DOC FF1-70	Standard test method for Flammability of Finished Textile Floor Covering Materials		HUD	24 CFR 200.942
Accreditation	NVLAP - carpet		HUD	24 CFR 200.942
Accreditation	NVLAP - carpet		HUD	24 CFR 200.945
VPS PS 1-83	Construction and Industrial Plywood		HUD	24 CFR 200.944
Computer Security Guidelines for Implementing the Privacy Act of 1974			Indian Affairs	25 CFR 43.22
Security Guidelines			Judicial Administration	28 CFR 700.24
SP 500-172	Computer Security Training Guidelines	?	OPM	5 CFR 930, Subpart C
Security standards			Treasury	31 CFR 1.22
Security standards	security and privacy requirements established by the NIST for electronic data interchange		Public Contracts and Property Management	41 CFR301-71.3

Appendix 2
Federal Agencies Referencing NIST and NBS in the Code of Federal Regulations (Martinez and DeVaux)

Agency			Number of References
1. Administrative Personnel			1
2. Architectural and Transportation Barriers Compliance Board		ATBCB	2
3. Consumer Product Safety Commission		CPSC	4
4. Department of Agriculture/Food Safety Inspection Service	USDA	FSIS	8
5. Department of Agriculture/Grain Inspection, Packers and Stockyards Administration	USDA	GIPSA	5
6. Department of Commerce/NIST	DOC	NIST	2
7. Department of Defense	DOD		1
8. Department of Energy	DOE		5
9. Department of Energy/Nuclear Regulatory Commission	DOE	NRC	4
10. Department of Labor/Mine Safety and Health Administration	DOL	MSHA	8
11. Department of Labor/Occupational Safety and Health Administration	DOL	OSHA	7
12. Department of Labor/Employment Standards Administration	DOL	ESA	1
13. Department of Transportation/Federal Aviation Administration	DOT	FAA	5
14. Department of Transportation /Federal Motor Carrier Safety Administration	DOT	FMCSA	1
15. Department of Transportation/Maritime Administration	DOT	MA	1
16. Department of Transportation/National Highway and Traffic Safety Administration	DOT	NHTSA	6
17. Department of Transportation/Research and Special Programs Administration	DOT	RSPA	3
18. Department of Transportation/U.S. Coast Guard	DOT	USCG	23
19. Environmental Protection Administration		EPA	100
20. Federal Communications Commission		FCC	7
21. Federal Energy Regulatory Commission		FERC	2
22. Federal Trade Commission		FTC	1
23. Department of Health and Human Services/Food and Drug Administration	HHS	FDA	13
24. Department of Housing and Urban Development	HUD		26
25. Indian Affairs			1
26. Judicial Administration			1
27. Office of Personnel Management		OPM	1
28. Department of Treasury	Treasury		1
29. Public Contracts			1

Appendix 2

Appendix 3
Listing of References to NIST and NBS in the Code of Federal Regulations (Aanstoos)

CFR	Score	Description/Comments
10 CFR 100	NBS	Determination of exclusion area low population zone and population center distance.
10 CFR 34	NBS	Performance requirements for industrial radiography equipment.
10 CFR 35	NIST	Dosimetry equipment.
10 CFR 430	NIST	Reference Sources.
10 CFR 430	NIST	Appendix R -- Uniform Test Method for Measuring Average Lamp Efficacy (LE) and Color Rendering Index (CRI)
10 CFR 431	NIST	Testing laboratories.
10 CFR 436	NIST	Methodological assumptions.
10 CFR 50	NBS	Contents of applications; technical information.
14 CFR 145	NBS	Equipment and materials: Ratings other than limited ratings.
14 CFR 25	NIST	APPENDIX F TO PART 25.
14 CFR 36	NBS	APPENDIX H -- NOISE REQUIREMENTS FOR HELICOPTERS UNDER SUBPART H
15 CFR 10	NIST	General.
15 CFR 10	NIST	Appeals.
15 CFR 10	NIST	Interpretations.
15 CFR 200	NIST	Statutory functions.
15 CFR 200	NIST	Measurement research.
15 CFR 200	NIST	Types of calibration and test services.
15 CFR 200	NIST	Consulting and advisory services.
15 CFR 200	NIST	Standard reference materials.
15 CFR 200	NIST	Standard reference data.
15 CFR 200	NIST	Publications.
15 CFR 200	NIST	WWV-WWVH-WWVB broadcasts.
15 CFR 200	NIST	Request procedure.
15 CFR 200	NIST	Shipping insurance and risk of loss.
15 CFR 200	NIST	Priorities and time of completion.
15 CFR 200	NIST	Witnessing of operations.
15 CFR 200	NIST	Reports.

15 CFR 23	NBS	Definitions.
15 CFR 230	NIST	Introduction.
15 CFR 256	NIST	The Research Associate Program.
15 CFR 265	NIST	Closing the site.
15 CFR 270	NIST	Definitions used in this part.
15 CFR 270	NIST	Scope.
15 CFR 270	NIST	Evidence collected by investigation participants who are not NIST employees.
15 CFR 270	NIST	Subpoenas.
15 CFR 270	NIST	Public hearings.
15 CFR 270	NIST	Moving and preserving evidence.
15 CFR 270	NIST	Information created by investigation participants who are not NIST employees.
15 CFR 270	NIST	Freedom of Information Act.
15 CFR 270	NIST	Protection of voluntarily submitted information.
15 CFR 270	NIST	Public safety information.
15 CFR 280	NIST	Description of rule/Delegation of authority.
15 CFR 280	NIST	Definitions used in this subpart.
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	
15 CFR 280	NIST	Petitions for Approval of Documents.

Appendix 3

15 CFR 280	NIST	Affirmations.
15 CFR 280	NIST	Laboratory accreditation.
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	Scope.
15 CFR 280	NIST	Violations.
15 CFR 280	NIST	Penalties
15 CFR 280	NIST	Administrative enforcement proceedings.
15 CFR 280	NIST	Institution of administrative enforcement proceedings.
15 CFR 280	NIST	Representation.
15 CFR 280	NIST	Filing and service of papers other than charging letter.
15 CFR 280	NIST	Answer and demand for hearing.
15 CFR 280	NIST	Default.
15 CFR 280	NIST	Summary decision.
15 CFR 280	NIST	Discovery.
15 CFR 280	NIST	Subpoenas.
15 CFR 280	NIST	Matter protected against disclosure.
15 CFR 280	NIST	Prehearing conference.
15 CFR 280	NIST	Hearings.
15 CFR 280	NIST	Interlocutory review of rulings.
15 CFR 280	NIST	Proceeding without a hearing.
15 CFR 280	NIST	Procedural stipulations; extension of time.
15 CFR 280	NIST	Decision of the administrative law judge.
15 CFR 280	NIST	Settlement.
15 CFR 280	NIST	Reopening.
15 CFR 280	NIST	Record for decision and availability of documents.
15 CFR 280	NIST	Appeals.
15 CFR 280	NIST	Recorded insignia required prior to offer for sale.
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]

Appendix 3

15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	Application for insignia.
15 CFR 280	NIST	Review of the application.
15 CFR 280	NIST	Certificate of recordal.
15 CFR 280	NIST	Recordal of additional insignia.
15 CFR 280	NIST	Maintenance of the certificate of recordal.
15 CFR 280	NIST	Notification of changes of address.
15 CFR 280	NIST	Transfer or amendment of the certificate of recordal.
15 CFR 280	NIST	Transfer or assignment of the trademark registration or recorded insignia.
15 CFR 280	NIST	Change in status of trademark registration or amendment of the trademark.
15 CFR 280	NIST	Cumulative listing of recordal information.
15 CFR 280	NIST	Records and files of the United States Patent and Trademark Office
15 CFR 280	NIST	[SUBPART E WAS REMOVED. SEE 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 June 28 2000.]
15 CFR 280	NIST	[SUBPART F WAS REMOVED. SEE 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[SUBPART G WAS REDESIGNATED AS SUBPART C. SEE 65 FR 39798 39802 JUNE 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.200. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.2. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.201. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.202. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.203. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.204. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.205. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.206. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.207. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.208. See 65 FR 39798 39802 June 28 2000.]

Appendix 3

15 CFR 280	NIST	[This section was redesignated as § 280.209. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.210. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.211. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.212. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.213. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.214. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.215. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.216. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.217. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.218. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.219. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.220. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.221. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.222. See 65 FR 39798 39802 June 28 2000.]
15 CFR 280	NIST	[SUBPART H WAS REDESIGNATED AS SUBPART D. SEE 65 FR 39798 39803 JUNE 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.300. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.310. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.311. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.312. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.313. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.320. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.321. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.322. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.323. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.324. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.325. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[This section was redesignated as § 280.326. See 65 FR 39798 39803 June 28 2000.]
15 CFR 280	NIST	[SUBPART I WAS REMOVED. SEE 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]

Appendix 3

15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 June 28 2000.]
15 CFR 280	NIST	[SUBPART J WAS REMOVED. SEE 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[SUBPART K WAS REMOVED. SEE 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[SUBPART L WAS REMOVED. SEE 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]

Appendix 3

15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 280	NIST	[This section was removed. See 65 FR 39798 39801 JUNE 28 2000.]
15 CFR 285	NIST	Purpose.
15 CFR 285	NIST	Confidentiality.
15 CFR 285	NIST	Referencing NVLAP accreditation.
15 CFR 285	NIST	Establishment of laboratory accreditation programs (LAPs) within NVLAP.
15 CFR 285	NIST	Termination of a LAP.
15 CFR 285	NIST	Application for accreditation.
15 CFR 285	NIST	Assessment.
15 CFR 285	NIST	Proficiency testing.
15 CFR 285	NIST	Granting accreditation.
15 CFR 285	NIST	Renewal of accreditation.
15 CFR 285	NIST	Changes to scope of accreditation.
15 CFR 285	NIST	Monitoring visits.
15 CFR 285	NIST	Denial suspension revocation or termination of accreditation.
15 CFR 285	NIST	Criteria for accreditation.
15 CFR 285	NIST	Obtaining documents.
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 May 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 May 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 May 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 May 30 2001.]
15 CFR 285	NIST	[SUBPART C WAS REMOVED. SEE 66 FR 29219 29223 MAY 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 May 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 May 30 2001.]

Appendix 3

15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 May 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 May 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 May 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 May 30 2001.]
15 CFR 285	NIST	[SUBPART D WAS REMOVED. SEE 66 FR 29219 29223 MAY 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 MAY 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 MAY 30 2001.]
15 CFR 285	NIST	[This section was removed. See 66 FR 29219 29223 MAY 30 2001.]
15 CFR 286	NIST	Scope.
15 CFR 286	NIST	Objective.
15 CFR 286	NIST	Implementation.
15 CFR 286	NIST	Program requirements.
15 CFR 286	NIST	Public consultation.
15 CFR 286	NIST	Evaluation process.
15 CFR 286	NIST	Maintaining recognized status.
15 CFR 286	NIST	Appeal.
15 CFR 286	NIST	Listings.
15 CFR 286	NIST	Terminations.
15 CFR 287	NIST	Definitions. n1
15 CFR 287	NIST	Responsibilities of the National Institute of Standards and Technology.
15 CFR 287	NIST	Responsibilities of Federal agencies.
15 CFR 287	NIST	Responsibilities of an Agency Standards Executive.
15 CFR 290	NIST	Definitions.
15 CFR 290	NIST	Program description.
15 CFR 290	NIST	Terms and schedule of financial assistance.
15 CFR 290	NIST	Basic proposal qualifications.
15 CFR 290	NIST	Proposal evaluation and selection criteria.
15 CFR 290	NIST	Proposal selection process.
15 CFR 290	NIST	Reviews of centers.
15 CFR 291	NIST	Program description.
15 CFR 291	NIST	Environmental integration projects.
15 CFR 291	NIST	Environmental tools and techniques projects.

Appendix 3

15 CFR 291	NIST	National industry-specific pollution prevention and environmental compliance resource centers.
15 CFR 291	NIST	Proposal selection process.
15 CFR 292	NIST	Program description.
15 CFR 292	NIST	Training development and deployment projects.
15 CFR 292	NIST	Technical tools techniques practices and analyses projects.
15 CFR 292	NIST	Proposal selection process.
15 CFR 295	NIST	Definitions.
15 CFR 295	NIST	The selection process.
15 CFR 295	NIST	Use of pre-proposals in the selection process.
15 CFR 295	NIST	Intellectual property rights; Publication of research results.
15 CFR 295	NIST	Qualification of proposers.
15 CFR 4	NIST	Appendix B to Part 4 -- Officials Authorized to Deny Requests for Records…
15 CFR 8	NBS	APPENDIX A -- PROGRAMS COVERED BY TITLE VI
16 CFR 1209	NBS	Procedure for calibration of radiation instrumentation.
16 CFR 1303	NBS	Findings.
16 CFR 1512	NBS	Mechanical requirements.
16 CFR 200	NIST	Use of results or reports.
16 CFR 230	NIST	Description of services and list of fees incorporation by reference.
16 CFR 256	NIST	Procedure.
16 CFR 265	NIST	Photography for advertising or commercial purposes; advertising and soliciting.
16 CFR 311	NIST	Testing.
16 CFR 311	NIST	Labeling.
16 CFR 311	NIST	Prohibited acts.
17 CFR 200	NIST	Fees and bills.
17 CFR 256	NIST	Qualifications.
18 CFR 153	NBS	Definitions.
18 CFR 200	NIST	Description of services and list of fees incorporation by reference.
18 CFR 256	NIST	Duration of projects.
18 CFR 3B	NBS	Safeguarding information in manual and computer-based record systems.
21 CFR 1	NBS	Exemptions from required label statements.
21 CFR 172	NBS	FILMS AND RELATED SUBSTANCES
21 CFR 172	NBS	Synthetic fatty alcohols.

Appendix 3

21 CFR 172	NBS	Petroleum wax.
21 CFR 173	NBS	Combustion product gas.
21 CFR 178	NBS	Mineral oil.
21 CFR 178	NBS	Polyhydric alcohol esters of oxidatively refined (Gersthofen process) montan wax acids.
21 CFR 178	NBS	Surface lubricants used in the manufacture of metallic articles.
21 CFR 501	NBS	Labeling of animal food with number of servings.
21 CFR 874	NBS	Audiometer calibration set.
21 CFR 900	NIST	Definitions.
22 CFR 1101	NBS	Security confidentiality and protection of records.
24 CFR 200	NBS	Administrator qualifications and procedures for HUD building products certification programs.
24 CFR 200	NBS	
24 CFR 200	NBS	Supplementary specific requirements under the HUD Building Products Standards and Certification Program
24 CFR 200	NIST	Supplementary specific requirements under the HUD building product standards and certification program…
24 CFR 3280	NIST	Materials.
25 CFR 141	NBS	Health and sanitation requirements.
25 CFR 43	NBS	Assuring integrity of records.
25 CFR 700	NBS	Assuring integrity of records.
28 CFR 700	NBS	Security of systems of records.
29 CFR 1910	NBS	Occupational noise exposure.
29 CFR 1910	NBS	Specifications for accident prevention signs and tags.
29 CFR 1910	NIST	Asbestos.
29 CFR 1910	NIST	Cadmium. (PART I OF II)
29 CFR 1910	NBS	APPENDIX C -- FIRE PROTECTION REFERENCES FOR FURTHER INFORMATION
29 CFR 1915	NIST	Asbestos.
29 CFR 1915	NIST	Polarized Light Microscopy of Asbestos-Non-Mandatory
29 CFR 1915	NIST	Appendix F to §1915.1027 -- Nonmandatory Protocol for Biological Monitoring.
29 CFR 1919	NBS	General duties; exemptions.
29 CFR 1919	NBS	General duties exemptions.
29 CFR 1926	NIST	Asbestos.
29 CFR 1926	NIST	Polarized Light Microscopy of Asbestos (Non-Mandatory)
29 CFR 1926	NBS	APPENDIX A -- SOIL CLASSIFICATION
29 CFR 1926	NBS	APPENDIX C -- TIMBER SHORING FOR TRENCHES

Appendix 3

29 CFR 570	NBS	Exposure to radioactive substances and to ionizing radiations (Order 6).
30 CFR 56	NBS	Guy wires.
30 CFR 57	NBS	Guy wires.
30 CFR 7	NBS	Product testing.
30 CFR 7	NBS	Quality assurance.
30 CFR 7	NIST	Test equipment and specifications.
30 CFR 75	NBS	Methods of measurement; light measuring instruments.
31 CFR 1	NBS	Requirements relating to systems of records.
32 CFR 650	NBS	Radioactive materials and nuclear accidents and incidents.
33 CFR 126	NBS	Conditions for designation as designated waterfront facility.
40 CFR 1065	NIST	Dynamometer and engine equipment specifications.
40 CFR 1065	NIST	Flow meters.
40 CFR 1065	NIST	Analytical gases.
40 CFR 1065	NIST	International calibration standards.
40 CFR 1065	NIST	Torque calibration.
40 CFR 1065	NIST	Definitions.
40 CFR 1065	NIST	Symbols acronyms and abbreviations.
40 CFR 136	NBS	APPENDIX A -- METHODS FOR ORGANIC CHEMICAL ANALYSIS OF WASTEWATER [PART 1 OF 3]
40 CFR 136	NBS	APPENDIX A -- METHODS FOR ORGANIC CHEMICAL ANALYSIS OF WASTEWATER [PART 2 OF 3]
40 CFR 136	NIST	APPENDIX A TO PART 136 -- METHODS FOR ORGANIC CHEMICAL ANALYSIS OF WASTEWATER [PART 3 OF 3]
40 CFR 141	NBS	Definitions.
40 CFR 141	NBS	[This section was removed effective Dec. 8 2003. See 65 FR 76708 76745 Dec. 7 2000.]
40 CFR 141	NBS	Maximum contaminant levels for radionuclides. [Effective Dec. 8 2003.]
40 CFR 430	NIST	NON-WOVEN AND PAPERBOARD FROM PURCHASED PULP SUBCATEGORY GENERAL PROVISIONS APPENDIX A
40 CFR 435	NIST	Appendix 5 to Subpart A of Part 435 -- Determination of Crude Oil Contamination in Non-Aqueous Drilling Fluids…
40 CFR 435	NIST	Appendix 6 to Subpart A of Part 435 -- Reverse Phase Extraction (RPE) Method for Detection of Oil Contamination…
40 CFR 50	NBS	Definitions.
40 CFR 50	NIST	Appendix M to Part 50 -- Reference Method for the Determination of Particulate Matter
40 CFR 50	NBS	APPENDIX A -- REFERENCE METHOD FOR THE DETERMINATION OF SULFUR DIOXIDE IN THE ATMOSPHERE
40 CFR 50	NBS	APPENDIX B -- REFERENCE METHOD FOR THE DETERMINTION OF PARTICULATE MATTER IN THE ATMOSPHERE
40 CFR 50	NBS	APPENDIX C -- MEASUREMENT AND CALIBRATION PROCEDURE FOR THE MEASUREMENT OF CARBON MONOXIDE
40 CFR 50	NBS	APPENDIX D -- MEASUREMENT AND CALIBRATION PROCEDURE FOR THE MEASUREMENT OF OZONE

Appendix 3

40 CFR 50	NBS	APPENDIX F -- MEASUREMENT PRINCIPLE AND CALIBRATION PROCEDURE FOR THE MEASUREMENT OF NITROGEN DIOXIDE
40 CFR 50	NBS	APPENDIX J -- REFERENCE METHOD FOR THE DETERMINATION OF PARTICULATE MATTER IN THE ATMOSHPERE
40 CFR 50	NIST	APPENDIX L TO PART 50 -- REFERANCE METHOD FOR THE DETERMINATION OF FINE PARTICULATE MATTER
40 CFR 51	NIST	APPENDIX M TO PART 51 -- RECOMMENDED TEST METHODS FOR STATE IMPLEMENTATION PLANS
40 CFR 51	NBS	APPENDIX P -- MINIMUM EMISSION MONITORING REQUIREMENTS
40 CFR 51	NIST	APPENDIX A TO SUBPART S -- CALIBRATIONS
40 CFR 52	NIST	Control strategy: Ozone control measures for Cook DuPage Kane Lake McHenry and Will Counties.
40 CFR 53	NBS	Generation of test atmospheres.
40 CFR 53	NIST	Applications for reference or equivalent method determinations.
40 CFR 53	NIST	Demonstration of compliance with design specifications and manufacturing and test requirements.
40 CFR 53	NIST	Leak check test.
40 CFR 53	NIST	Test for flow rate accuracy regulation measurement accuracy and cut-off.
40 CFR 53	NIST	Test for proper sampler operation following power interruptions.
40 CFR 53	NIST	Test for effect of variations in power line voltage and ambient temperature.
40 CFR 53	NIST	Test for effect of variations in ambient pressure
40 CFR 53	NIST	Test for filter temperature control during sampling and post-sampling periods.
40 CFR 53	NIST	Aerosol transport test for Class I equivalent method samplers.
40 CFR 53	NIST	Test procedure: Full wind tunnel test.
40 CFR 58	NIST	Definitions.
40 CFR 58	NIST	APPENDIX A -- QUALITY ASSURANCE REQUIREMENTS FOR SLAMS
40 CFR 58	NIST	APPENDIX B -- QUALITY ASSURANCE REQUIREMENTS FOR PSD AIR MONITORING
40 CFR 58	NBS	APPENDIX B -- QUALITY ASSURANCE REQUIREMENTS FOR PREVENTION OF SIGNIFICANT DETERIORATION AIR MONITORING
40 CFR 60	NBS	TABLES TO SUBPART DDDD APPENDIX B -- PERFORMANCE SPECIFICATIONS
40 CFR 60	NIST	APPENDIX B -- PERFORMANCE SPECIFICATIONS
40 CFR 60	NBS	TABLES TO SUBPART DDDD APPENDIX F -- QUALITY ASSURANCE PROCEDURES
40 CFR 63	NIST	Monitoring requirements.
40 CFR 63	NIST	Monitoring requirements.
40 CFR 63	NIST	Quality Assurance Procedures for Continuous Emissions Monitors Used for Hazardous Waste Combustors
40 CFR 63	NIST	What are my monitoring installation operation and maintenance requirements?
40 CFR 63	NIST	What are my monitoring system installation operation and maintenance requirements?
40 CFR 63	NIST	APPENDIX A -- TEST METHODS (I OF II)

Appendix 3

40 CFR 63	NIST	APPENDIX A -- TEST METHODS (II OF II)
40 CFR 63	NBS	TABLES TO SUBPART SSSSS OF PART 63 APPENDIX A -- TEST METHODS (I OF II)
40 CFR 72	NIST	Definitions.
40 CFR 72	NIST	Measurements abbreviations and acronyms.
40 CFR 75	NIST	Certification quality assurance and quality control record provisions.
40 CFR 75	NIST	Petitions to the Administrator.
40 CFR 75	NIST	APPENDIX A TO PART 75 -- SPECIFICATIONS AND TEST PROCEDURES
40 CFR 75	NIST	APPENDIX D TO PART 75 -- OPTIONAL SO[2] EMISSIONS DATA PROTOCOL FOR GAS-FIRED AND OIL-FIRED UNITS
40 CFR 763	NBS	Analysis.
40 CFR 763	NBS	Response actions.
40 CFR 763	NIST	APPENDIX C TO SUBPART E - ASBESTOS MODEL ACCREDITATION PLAN
40 CFR 763	NBS	APPENDIX A -- INTERIM TRANSMISSION ELECTRON MICROSCOPY ANALYTICAL METHODS
40 CFR 763	NBS	APPENDIX E -- INTERIM METHOD OF THE DETERMINATION OF ASBESTOS IN BULK INSULATION SAMPLES
40 CFR 799	NBS	TSCA partition coefficient (n -octanol/water) generator column method.
40 CFR 799	NBS	TSCA water solubility: Generator column method.
40 CFR 80	NBS	APPENDIX B -- TEST METHODS FOR LEAD IN GASOLINE
40 CFR 85	NBS	Calibrations adjustments -- EPA 81.
40 CFR 85	NIST	Steady state test equipment calibrations adjustments and quality control -- EPA 91.
40 CFR 86	NBS	Analytical gases.
40 CFR 86	NBS	Analytical gases.
40 CFR 86	NBS	Gas meter or flow instrumentation calibration; particulate methanol and formaldehyde measurement.
40 CFR 86	NBS	Gas specifications.
40 CFR 86	NBS	Dynamometer and engine equipment specifications.
40 CFR 86	NBS	Dynamometer calibration.
40 CFR 86	NBS	Humidity calculations.
40 CFR 86	NBS	Analytical gases.
40 CFR 86	NBS	Instrument checks.
40 CFR 86	NBS	Analytical gases.
40 CFR 86	NBS	Dynamometer and engine equipment specifications.
40 CFR 86	NBS	Analytical gases.
40 CFR 86	NBS	Analytical gases.
40 CFR 86	NBS	CVS calibration.

Appendix 3

40 CFR 86	NBS	CVS calibration.
40 CFR 86	NBS	Gas meter or flow instrumentation calibration; particulate methanol and formaldehyde measurement.
40 CFR 86	NIST	Analytical gases.
40 CFR 86	NIST	Hydrocarbon analyzer calibration.
40 CFR 86	NIST	Analytical gases.
40 CFR 86	NIST	Hydrocarbon analyzer calibration.
40 CFR 86	NIST	Analytical gases.
40 CFR 86	NIST	Hydrocarbon analyzer calibration.
40 CFR 86	NIST	Equipment required and specifications; overview.
40 CFR 86	NIST	Filter stabilization and microbalance workstation environmental conditions microbalance specifications…
40 CFR 86	NIST	Analytical gases.
40 CFR 86	NIST	CVS calibration.
40 CFR 86	NIST	Hydrocarbon analyzer calibration.
40 CFR 89	NIST	Acronyms and abbreviations.
40 CFR 89	NIST	Dynamometer specifications and calibration weights.
40 CFR 89	NIST	Analytical gases.
40 CFR 89	NIST	Appendix A to Subpart D -- Tables
40 CFR 89	NIST	Dilute sampling procedures -- CVS calibration.
40 CFR 90	NIST	Acronyms and abbreviations.
40 CFR 90	NIST	Dynamometer specifications and calibration accuracy.
40 CFR 90	NIST	Analytical gases.
40 CFR 90	NIST	Analyzer accuracy and specifications.
40 CFR 90	NIST	Dilute sampling procedures -- CVS calibration.
40 CFR 91	NIST	Acronyms and abbreviations.
40 CFR 91	NIST	Dynamometer specifications and calibration accuracy.
40 CFR 91	NIST	Analytical gases.
40 CFR 91	NIST	Analyzer accuracy and specifications.
40 CFR 91	NIST	Dilute sampling procedure -- CVS calibration.
40 CFR 92	NIST	Definitions and abbreviations.
40 CFR 92	NIST	Equipment for loading the engine.
40 CFR 92	NIST	Analytical gases.
40 CFR 92	NIST	Engine output measurement system calibrations.

Appendix 3

40 CFR 92	NIST	Gas meter or flow instrumentation calibration particulate measurement.
40 CFR 92	NIST	Smoke meter calibration.
40 CFR 92	NIST	Emission measurement accuracy.
40 CFR 94	NIST	Abbreviations.
40 CFR 94	NIST	Test procedures for Category 3 marine engines.
41 CFR 101	NIST	What registration services are available through GSA?
41 CFR 301	NIST	May we use electronic signatures on travel documents?
41 CFR 301	NIST	APPENDIX D TO CHAPTER 301 -- GLOSSARY OF ACRONYMS
43 CFR 2	NBS	Assuring integrity of records.
45 CFR 303	NBS	Provision of services in interstate IV-D cases.
45 CFR 303	NBS	Requests for collection of past-due support by Federal tax refund offset.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Approval and production tests.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Approval and production tests.
46 CFR 160	NBS	Applicable specification and publication.
46 CFR 160	NBS	Type and size.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Approval and production tests.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Design and performance of inflatable life rafts.
46 CFR 160	NBS	Additional requirements for design and performance of SOLAS A and SOLAS B inflatable life rafts.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Construction.
46 CFR 160	NBS	Incorporation by reference.
46 CFR 160	NBS	Construction.
46 CFR 160	NBS	Incorporation by reference.

Appendix 3

46 CFR 160	NIST	Incorporation by reference.
46 CFR 162	NBS	Requirements.
46 CFR 162	NBS	Documents incorporated by reference.
46 CFR 162	NBS	Designation of facilities.
46 CFR 164	NBS	Inspection and testing.
46 CFR 164	NBS	Procedure for approval.
46 CFR 164	NBS	Testing procedure.
46 CFR 164	NBS	Procedure for approval.
46 CFR 164	NBS	Testing procedure.
46 CFR 164	NBS	Procedure for approval.
46 CFR 164	NBS	General.
46 CFR 169	NBS	Incorporation by reference.
46 CFR 380	NBS	Reproduction.
47 CFR 2	NIST	Designation of Telecommunication Certification Bodies (TCBs).
47 CFR 2	NIST	Requirements for Telecommunication Certification Bodies.
47 CFR 24	NBS	Appendix I -- A Procedure for Calculating PCS Signal Levels at Microwave Receivers
47 CFR 68	NIST	Designation of Telecommunication Certification Bodies (TCBs).
47 CFR 68	NIST	Requirements for Telecommunication Certification Bodies.
47 CFR 73	NBS	Rebroadcasts.
47 CFR 73	NBS	Carrier frequency measurements.
47 CFR 90	NBS	Frequencies available for use in the U.S./Mexico and U.S./Canada border areas.
48 CFR 908	NBS	Calibration services.
49 CFR 171	NBS	Reference material.
49 CFR 178	NBS	Specification 3T seamless steel cylinder.
49 CFR 390	NBS	Copies of records or documents.
49 CFR 395	NBS	Automatic on-board recording devices.
49 CFR 571	NBS	Standard No. 116; Motor vehicle brake fluids.
5 CFR 581	NIST	APPENDIX A TO PART 581 -- LIST OF AGENTS DESIGNATED TO ACCEPT LEGAL PROCESS
5 CFR 293	NBS	Special safeguards for automated records.
5 CFR 930	NIST	Training requirement.
7 CFR 58	NBS	Equipment and utensils.
7 CFR 801	NIST	Design requirements incorporated by reference.

Appendix 3

7 CFR 802	NBS	Qualified laboratories.
7 CFR 802	NIST	Applicability. [Effective until Sept. 8 2003.]
7 CFR 802	NIST	Applicability. [Effective Sept. 8 2003.]
9 CFR 201	NIST	Scales; accurate weights repairs adjustments or replacements after inspection.
9 CFR 317	NBS	Definitions and procedures for determining net weight compliance.
9 CFR 317	NIST	Definitions and procedures for determining net weight compliance.
9 CFR 317	NIST	Scale requirements for accurate weights repairs adjustments and replacement after inspection.
9 CFR 317	NIST	Scales: testing of.
9 CFR 381	NBS	Quantity of contents.
9 CFR 381	NBS	Definitions and procedures for determining net weight compliance.
9 CFR 381	NIST	Definitions and procedures for determining net weight compliance.
9 CFR 381	NIST	Scale requirements for accurate weights repairs adjustments and replacement after inspection.
9 CFR 381	NIST	Scales; testing of.

Appendix 3

Appendix 4
References to NIST/NBS in the Code of Federal Regulations by title (Aanstoos)

CFR Title	Area	Hits	CFR Title	Area	Hits
1	General Provisions	0	26	Internal Revenue	0
2	[Reserved]	0	27	Alcohol, Tobacco Products and Firearms	0
3	The President	0	28	Judicial Administration	1
4	Accounts	0	29	Labor	15
5	Administrative Personnel	3	30	Mineral Resources	6
6	[Reserved]	0	31	Money and Finance: Treasury	1
7	Agriculture	3	32	National Defense	2
8	Aliens and Nationality	0	33	Navigation and Navigable Waters	1
9	Animals and Animal Products	0	34	Education	0
10	Energy	8	35	Panama Canal	0
11	Federal Elections	0	36	Parks, Forests, and Public Property	0
12	Banks and Banking	0	37	Patents, Trademarks, and Copyrights	0
13	Business Credit and Assistance	0	38	Pensions, Bonuses, and Veterans' Relief	0
14	Aeronautics and Space	3	39	Postal Service	0
15	Commerce and Foreign Trade	253	40	Protection of Environment	122
16	Commercial Practices	3	41	Public Contracts and Property Management	3
17	Commodity and Securities Exchanges	2	42	Public Health	0
18	Conservation of Power and Water Resources	4	43	Public Lands: Interior	1
19	Customs Duties	0	44	Emergency Management and Assistance	0
20	Employees' Benefits	0	45	Public Welfare	2
21	Food and Drugs	11	46	Shipping	34
22	Foreign Relations	1	47	Telecommunication	8
23	Highways	0	48	Federal Acquisition Regulations System	1
24	Housing and Urban Development	5	49	Transportation	5
25	Indians	3	50	Wildlife and Fisheries	0

Appendix 5
References to NIST and NBS Traceability and Calibration in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
Traceability / calibration	References are made to the NBS program for the Certification of Capability of State Measurement Laboratories for describing the criteria by which state, county and city labs could be automatically approved by the Grain Inspection, Packers and Stockyard Administration as qualified metrology labs and Type Evaluation Labs		USDA/GIPSA	7 CFR 802.1
Calibration	This regulation requires that dosimetry equipment must be calibrated using a system or source traceable to NIST as one option of a condition to be met. The second condition that needs to be satisfied requires that "the system must have been calibrated within the previous 4 years. Eighteen to thirty months after that calibration, the system must have been intercompared with another dosimetry system that was calibrated within the past 24 months by NIST or by a calibration laboratory accredited by the AAPM - American Association of Physicists in Medicine ."		DOE/NRC	10 CFR 35.630(a)(1,2)
Calibration	In defining the test methods and measurements as part of the Uniform Test Method for Measuring Average Lamp Efficacy (LE) and Color Rendering Index (CRI) of Electric Lamps, this regulation requires that "all lumen measurements made with instruments calibrated to the devalued NIST lumen after January 1, 1996, shall be multiplied by 1.011"		DOE	Appendix R to Subpart B of 10 CFR 430 (4)
Traceability	This regulation states the requirements for calibration and checking of measurement systems used in the "Measurement of Airplane Noise Received on the Ground". In particular, this regulation states that "Within six months of each test series the output of the noise generator must be determined by a method traceable to the U.S. National Institute of Standards and Technology or to an equivalent national standards laboratory as determined by the FAA...".		DOT/FAA	14 CFR 36 Appendix A (A36.3.9.5)
Traceability	This regulation states the requirements for calibration and checking of measurement systems used in the "Measurement of Airplane Noise Received on the Ground". In particular, this regulation states that "Within six months of each test series the output of the sound calibrator must be determined by a method traceable to the U.S. National Institute of Standards and Technology or to an equivalent national standards laboratory as determined by the FAA...".		DOT/FAA	14 CFR 36 Appendix A (A36.3.9.7)
Traceability	This regulation states the requirements for calibration and checking of measurement systems used in the "Measurement of Airplane Noise Received on the Ground". In particular, this regulation states that "Alternatively, within six months of each test series the insertion loss of the windscreen may be determined by a method traceable to the U.S. National Institute of Standards and Technology or an equivalent national standards laboratory as determined by the FAA...".		DOT/FAA	14 CFR Appendix H A36.3.9.10

	In defining the calibrations required while measuring helicopter noise received at the ground, this section in the Appendix requires that "A performance calibration analysis of each piece of calibration equipment, including pistonphones, reference microphones, and voltage insert devices, must have been made during the six calendar months preceding the beginning of each day's test series. Each calibration must be traceable to the National Bureau of Standards."**(MANDATORY)**		DOT/FAA	14 CFR Appendix H H36.109 (e)(7)
Traceability	This section of the Appendix to the regulation pertains to measurement of helicopter noise received on the ground. In defining the calibration requirements of the measuring system and components of the recording system, the regulation states that "A performance calibration analysis of each piece of calibration equipment, including acoustic calibrators, reference microphones, and voltage insertion devices, must have been made during the six calendar months preceding the beginning of the helicopter flyover series. Each calibration shall be traceable to the National Institute of Standards and Technology."**(MANDATORY)**		DOT/FAA	14 CFR 36 Appendix J (J36.107 (e)(2)(iii))
Calibration	As part of the specifications in the Test Method To Determine the Flammability and Flame Propagation Characteristics of Thermal/Acoustic Insulation Materials when exposed to both a radiant heat source and a flame, this part (Part VI, Appendix F to 14CFR25) requires that the standard transducer used for the calorimeter calibration, must in turn be calibrated against a primary standard traceable to NIST.		DOT/FAA	14 CFR 25 Appendix F PartVI(b)(7)(ii)(C)
NBS Calibration	This regulation stipulates the procedures used to calibrate radiation instruments used in test procedures for measuring critical radiant flux. The procedures state that for total heat flux meters "the total flux meter shall be calibrated by the National Bureau of Standards, (direct request for such calibration services to the: Radiometric Physics Division, 534, National Bureau of Standards (NBS), Washington, DC 20234.), or, alternatively, its calibration shall be developed by transfer calibration methods with an NBS calibrated flux meter."...**(MANDATORY)**. These procedures are stated as part of the interim safety standards for cellulose insulation.		CPSC	16 CFR 1209.8(b)
Unknown	This regulation states that "The National Bureau of Standards in 1972 estimated that 600,000 young children have unduly high lead blood content" as part of the CPSC's findings about the risk of injury to children due to lead poisoning. ***No further reference is made to the source of this information, i.e., no citation.***		CPSC	16 CFR 1303.5(a)(5)
NIST report - NIST Test Procedure published through API	Labeling requirements - A manufacturer or other seller may represent, on a label on a container of processed used oil, that such oil is substantially equivalent to new oil for use as engine oil only if the manufacturer has determined that the oil is substantially equivalent to new oil for use as engine oil in accordance with the **NIST test procedures** prescribed under §311.4 of this part, and has based the representation on that determination **(MANDATORY)**.	1995	FTC	16 CFR 311.5

Appendix 5

NIST test procedures-used to establish penalties in case of non-compliance	Prohibited acts - A manufacturer or other seller may represent, on a label on a container of processed used oil, that such oil is substantially equivalent to new oil for use as engine oil only if the manufacturer has determined that the oil is substantially equivalent to new oil for use as engine oil in **accordance with the NIST test procedures** prescribed under §311.4 of this part, and has based the representation on that determination**(MANDATORY)**	1996	FTC	16 CFR 311.6
Traceability	An audiometer calibration set is identified as "a device that consists of an acoustic cavity of known volume, a sound level meter, a microphone with calibration traceable to the National Bureau of Standards, oscillators, frequency counters, microphone amplifiers, and a recorder. The device can measure selected audiometer test frequencies at a given intensity level, and selectable audiometer attenuation settings at a given test frequency." This is within the context of identification of diagnostic devices, particularly Ear, Nose and Throat devices.		HHS/FDA	21 CFR 874.1080(a)
Traceability / calibration	This sub-section defines "Traceable to a national standard means an instrument is calibrated at either the National Institute of Standards and Technology (NIST) or at a calibration laboratory that participates in a proficiency program with NIST at least once every 2 years and the results of the proficiency test conducted within 24 months of calibration show agreement within ± 3 percent of the national standard in the mammography energy range."		HHS/FDA	21 CFR 900.2
Traceability	This regulation requires that as part of laboratory qualifications applicable to all testing laboratories participating in the program including manufacturer's laboratories and the administrator's own laboratories when designated in the specific program, each laboratory shall, "Provide a description of the applicable standards and calibration equipment being used and the calibration procedures followed, including *National Bureau of Standards traceability*, when applicable. List outside organizations providing calibration services, if used."		HUD	24 CFR 200.935(e)(2)(iii)
NBS weights and measures	"b) All weights and measure shall conform to standards set by the National Bureau of Standards and to standards, if any, set by the tribe and, if not in conflict with tribal regulations, to the standards set by the State". Part of the Health and Sanitation requirements for general business practices on certain Indian reservations.	No date	Indian Affairs	25 CFR 141.17
NBS coupler	*"Appendix E to §1910.95—Acoustic Calibration of Audiometers. This Appendix is Mandatory. Audiometer calibration shall be checked acoustically, at least annually, according to the procedures described in this appendix. The equipment necessary to perform these measurements is a sound level meter, octave-band filter set, and a National Bureau of Standards 9A coupler. In making these measurements, the accuracy of the calibrating equipment shall be sufficient to determine that the audiometer is within the tolerances permitted by American Standard Specification for Audiometers, S3.6–1969."*	No date	DOL/OSHA	29 CFR 1910.95

Appendix 5

Calibration	Regulations defining the exemptions to the general duties of persons accredited to certificate (sic) vessels' cargo gear refer to traceability to NBS as "Dynamometers or other recording test equipment owned by an accredited person shall have been tested for accuracy within the six months next preceding application for accreditation or renewal of same. Such test shall be performed with calibrating equipment which has been checked in turn so that indications are traceable to the National Bureau of Standards."		DOL/OSHA	29 CFR 1919.10(d)
Traceability/Calibration	Regulations defining the exemptions to the general duties of persons accredited to certificate (sic) shore-based material handling devices refer to traceability to NBS as "All required unit proof load tests shall be carried out by the use of weights as a dead load. Only where this is not possible may dynamometers or other recording test equipment be used. Any such recording test equipment owned by an accredited person shall have been tested for accuracy within the 6 months next preceding application for accreditation or renewal thereof. Such test shall be performed with calibrating equipment which has been checked in turn so that indications are traceable to the National Bureau of Standards"		DOL/OSHA	29 CFR 1919.60(c)
Traceability/Calibration	As part of the product testing requirements for testing by third party of the applicants, this regulation states that "Unless otherwise specified in the subpart, test instruments shall be calibrated at least as frequently as, and according to, the instrument manufacturer's specifications, using calibration standards traceable to those set by the National Bureau of Standards, U.S. Department of Commerce or other nationally recognized standards and accurate to at least one significant figure beyond the desired accuracy"		DOL/MSHA	30 CFR 7.4(b)
Traceability/Calibration	As part of the QA requirements for testing by third party or applicants, this regulation states that "Unless otherwise specified in the subparts, calibrate instruments used for the inspection and testing of critical characteristics at least as frequently as, and according to, the instrument manufacturer's specifications, using calibration standards traceable to those set by the National Bureau of Standards, U.S. Department of Commerce or other nationally recognized standards and use instruments accurate to at least one significant figure beyond the desired accuracy"		DOL/MSHA	30 CFR 7.7(b)
Traceability	This regulation requires that "Calibration gas values shall be traceable to the National Institute for Standards and Testing (NIST), “Standard Reference Materials” (SRMs). The analytical accuracy of the calibration gas values shall be within 2.0 percent of NIST gas standards" as part of the test equipment requirements for diesel engines intended for use in underground coal mines**(MANDATORY)**.		DOL/MSHA	30 CFR 7.86(b)(16)
Traceability	This regulation states that "Span gas values shall be traceable to NIST SRMs. The analytical accuracy of the span gas values shall be within 2.0 percent of NIST gas standards" as part of the test equipment requirements for diesel engines intended for use in underground coal mines **(MANDATORY)**.		DOL/MSHA	30 CFR 7.86(b)(17)

Appendix 5

Calibration	States that "Light measuring instruments shall be properly calibrated and maintained. Instruments shall be calibrated against standards traceable to the National Bureau of Standards and color corrected to the Commission Internationale de l'Eclairage (CIE) Spectral Luminous Curve" as a requirement for procedures to be followed in measuring luminous intensity **(MANDATORY)**.		DOL/MSHA	30 CFR 75.1719-3
Measurement	Requires that "Engine flywheel torque readout must meet one of the two following standards for accuracy" both of which refer to the NIST true value, to meet the stated dynamometer and engine equipment specifications**(MANDTORY)**.		EPA	40 CFR 1065.105(a)(2)
Traceability	Requires that "Flow meters must have accuracy and precision of ±2 percent of point or better and be traceable to NIST standards" as part of the requirements for equipment and analyzers.		EPA	40 CFR 1065.150(a)
Traceability	For meeting the requirements that analytical gases have to comply with for accuracy and purity specifications the regulation states that "The calibration gases in paragraph (c)(1) of this section must be traceable to within one percent of NIST gas standards or other gas standards we have approved. Span gases in paragraph (c)(1) of this section must be accurate to within two percent of true concentration, where true concentration refers to NIST gas standards, or other gas standards we have approved."		EPA	40 CFR 1065.250(c)(2)
Traceability	States that gases other that those specifically stated can be used provided that they meet the requirements that "they are traceable to within ±2 percent of NIST gas standards or other standards we have approved" as part of the requirements that analytical gases have to comply with to meet accuracy and purity specifications.		EPA	40 CFR 1065.250(c)(3)(i)
Traceability	Requires a knowledge of "the concentration of primary gases used for blending to an accuracy of at least ± 1 percent, traceable to NIST gas standards or other gas standards we have approved" for purposes of "generate calibration and span gases using precision blending devices (gas dividers) to dilute gases with purified nitrogen or with purified synthetic air" as part of the requirements that analytical gases have to comply with to meet accuracy and purity specifications.		EPA	40 CFR 1065.250(c)(4)
Traceability	Exempts the need for approval to be sought for using international calibration standards, if the "standards that have been shown to be traceable to NIST standards". This applies to analyzer and equipment calibration and is stated as part of the test procedures and equipment requirements.		EPA	40 CFR 1065.305(b)
Traceability	For purposes of torque calibration "the NIST “true value” torque is defined as the torque calculated by taking the product of an NIST traceable weight or force and a sufficiently accurate horizontal distance along a lever arm, corrected for the lever arm's hanging torque".		EPA	40 CFR 1065.315
Traceability	Calibration weights used for calibration of torque-measuring devices have to be traceable to NIST weights.		EPA	40 CFR 1065.315 (a)(1), (b)(1)
Measurement	Defines the term "accuracy" to mean "the maximum difference between a measured or calculated value and the true value, where the true value is determined by NIST".			40 CFR 1065.1001

Appendix 5

Traceability	A stock solution is defined as "A solution containing an analyte that is prepared using a reference material traceable to EPA, the National Institute of Science and Technology (NIST), or a source that will attest to the purity and authenticity of the reference material" as part of the definitions pertaining to Method 1613, Revision B for the determination of Tetra- Through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS as one of the Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater.		EPA	40 CFR 136 Appendix A; Method 1613, Rev.B 24.2
Traceability	Method 1650—Adsorbable Organic Halides by Adsorption and Coulometric Titration, and Method 1653—Chlorinated Phenolics in Wastewater by In Situ Acetylation and GCMS define stock solution as "a solution containing an analyte that is prepared using a reference material traceable to EPA, the National Institute of Science and Technology (NIST), or a source that will attest to the purity and authenticity of the reference material".		EPA	40 CFR 430 Appendix A, Method 1650, 18.2; Method 1653, 20.2
EPA/NIST Mass Spec Library	It is advised that the most recent version of the EPA/NIST Mass Spectral Library be available, to be used as part of the data system where the computer system has to be interfaced to the mass spec and the "system must allow the continuous acquisition and storage on machine-readable media of all mass spectra obtained throughout the duration of the chromatographic program". This forms part of the procedures for Determination of Crude Oil Contamination in Non-Aqueous Drilling Fluids by Gas Chromatography/Mass Spectrometry (GC/MS).		EPA	40 CFR 435 Appendix 5; 6.3.4
NBS Calibration	As part of the calibration procedures for flow measurements defined under the Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method) it is required that "Flow measuring devices used for the on-site flow measurements required in 9.4.2 must be calibrated against a reliable flow or volume standard such as an NBS traceable bubble flowmeter or calibrated wet test meter".		EPA	40 CFR 50 Appendix A 9.4.1
Traceability	APPENDIX B -- REFERENCE METHOD FOR THE DETERMINTION OF PARTICULATE MATTER IN THE ATMOSPHERE (NBS Traceable) - States that equipment required for certifying a flow rate transfer standard includes a positive displacement standard volume meter traceable to the National Bureau of Standards		EPA	40 CFR 50 Appendix B; 9.2.1
NBS SRM traceable	Requirements for reagents used in calibration procedures stated under Measurement Principle and Calibration Procedure for the Measurement of Carbon Monoxide in the Atmosphere (Non-Dispersive Infrared Photometry), defined NATIONAL PRIMARY AND SECONDARY AMBIENT AIR QUALITY STANDARDS under the national primary and secondary ambient air quality standards, it is required that "Cylinder(s) of CO in air containing appropriate concentrations(s) of CO suitable for the selected operating range of the analyzer under calibration; CO standards for the dilution method may be contained in a nitrogen matrix if the zero air dilution ratio is not less than 100:1. The assay of the cylinder(s) must be traceable either to a National Bureau of Standards (NBS) CO in air Standard Reference Material (SRM) or to an NBS/EPA-approved commercially available Certified Reference Material (CRM)."		EPA	40 CFR 50 Appendix C 3.1

Appendix 5

Traceability	APPENDIX D -- MEASUREMENT AND CALIBRATION PROCEDURE FOR THE MEASUREMENT OF OZONE (NBS Traceable) - States that in calibration of ozone analyzers, the flow rate through the O3 generator and the dilution air flow rate (FD) be measured with a reliable flow or volume standard traceable to NBS.		EPA	40 CFR 50 Appendix D; 5.5.7
NBS SRM 1684	In stating the Measurement Principle and Calibration Procedure for the Measurement of Nitrogen Dioxide in the Atmosphere (Gas Phase Chemiluminescence), under the National Primary and Secondary Ambient Air Quality Standards, for calibration using gas phase titration of an NO standard with ozone, the NO concentration standard should be a "Gas cylinder standard containing 50 to 100 ppm NO in N2 with less than 1 ppm NO2". Further, "This standard must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), an NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM) ". Similarly, for calibration using NO2 permeation devices "Calibration standards are required for both NO and NO2. The reference standard for the calibration may be either an NO or NO2 standard, and must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), and NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM)".		EPA	40 CFR 50 Appendix F 1.3.1, 2.3.1
Calibration /traceability	The Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere requires that "the flow rate transfer standard must be suitable for the sampler's operating flow rate and must be calibrated against a primary flow or volume standard that is traceable to the National Bureau of Standards (NBS)". It is further required that a calibration relationship (e.g., an equation or family of curves) be established such that traceability to the primary standard is accurate to within 2 percent over the expected range of ambient conditions (i.e., temperatures and pressures) under which the transfer standard will be used and the transfer standard periodically recalibrated.		EPA	40 CFR 50 Appendix J 7.3, 8.2.2
Traceability	APPENDIX L TO PART 50 -- REFERCNCE METHOD FOR THE DETERMINATION OF FINE PARTICULATE MATTER (NIST Traceable) - States that dimension of the impaction jets used in impactors must be verified by the manufacturer using Class ZZ go/no-go plug gauges that are traceable to NIST, and that standard used for calibrating or verifying the sampler's flow rate measurement device have its own certification and be traceable to a National Institute of Standards and Technology (NIST) primary standard for volume or flow rate.		EPA	40 CFR 50 Appendix L; 7.3.4.1;
Traceability	Requires that a flow rate standard used in the Reference Method for the Determination of Fine Particulate Matter as PM2.5 in the Atmosphere must have its own certification and be traceable to a National Institute of Standards and Technology (NIST) primary standard for volume or flow rate.			40 CFR 50 Appendix L; 9.1.2, 9.2.2

Appendix 5

	Appendix M to Part 50 -- Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere - Requires calibration of flow rate transfer standard against a primary flow or volume standard traceable to NIST		EPA	40 CFR 50 Appendix M; 7.3; 8.2.2
Traceability	If using Method 205 "Verification of Gas Dilution Systems for Field Instrument Calibrations" as a recommended test method for state implementation plans under the requirements for preparation, adoption, and submittals of implementation plans, the specifications for the method state that "The gas dilution system shall be recalibrated once per calendar year using NIST-traceable primary flow standards with an uncertainty ≤0.25 percent."		EPA	40 CFR 51 Appendix N; Method 205; 2.1.1
Traceability	Requires that "Span and zero gases should be traceable to National Bureau of Standards reference gases whenever these reference gases are available" defined as part of the minimum specifications of the calibration gases used to meet the requirements of minimum requirements for continuous emission monitoring and recording that each State Implementation Plan has to meet under the requirements for preparation, adoption, and submittals of implementation plans.		EPA	40 CFR 51 Appendix P; 3.3
Traceability	Requires that in calibration of steady-state test equipment "the span gases used for the gas calibration shall be traceable to National Institute of Standards and Technology (NIST) standards ±2%..." This meets the inspection/maintenance program requirements in both ozone and carbon monoxide (CO) nonattainment areas, depending upon population and nonattainment classification or design value. These are part of the requirements for preparation, adoption and submittal of implementation plans.		EPA	40 CFR 51Subpart S, Appendix A (d)(3)
Traceability	Requires that all calibration gases used in procedures for determining the volatile organic compounds (VOC) content of captured gas stream shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. The procedure is intended to be used as a segment in the development of liquid/gas or gas/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations This procedure pertains to testing for captured VOC emissions, part of the VOM measurement techniques for capture efficiency and relates to the approval and promulgation of implementation plans for Illinois.		EPA	40 CFR 52 Subpart O, Appendix B; G.1; 2.1.9
Traceability	Requires that all calibration gases used in procedures for determining the volatile organic compounds (VOC) content of captured gas streams shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. The test is intended to be used as a segment in the development of a gas/gas protocol in which fugitive emissions are measured for determining VOC capture efficiency (CE) for surface coating and printing operations. This procedure pertains to testing for captured VOC emissions (dilution technique), part of the VOM measurement techniques for capture efficiency and relates to the approval and promulgation of implementation plans for Illinois.		EPA	40 CFR 52 Subpart O, Appendix B; G.2; 2.1.9

Traceability	Requires that all calibration gases used in procedures for determining the fugitive volatile organic compounds (VOC) emissions from a building enclosure (BE) shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. The procedure is intended to be used as a segment in the development of liquid/gas or gas/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations. This procedure forms part of the VOM measurement techniques for capture efficiency and relates to the approval and promulgation of implementation plans for Illinois.		EPA	40 CFR 52 Subpart O, Appendix B; F.2; 2.1.9
Traceability	Requires that all calibration gases used in procedures for determining the input of volatile organic compounds (VOC) shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. The procedure is intended to be used as a segment in the development of liquid/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations. This procedure forms part of the VOM measurement techniques for capture efficiency and relates to the approval and promulgation of implementation plans for Illinois.		EPA	40 CFR 52 Subpart O, Appendix B; F.1; 2.1.9
Traceability	Requires that all calibration gases used in procedures for determining the fugitive volatile organic compounds (VOC) emissions from a temporary total enclosure (TTE) shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. The procedure is intended to be used as a segment in the development of liquid/gas or gas/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations. This procedure forms part of the VOM measurement techniques for capture efficiency and relates to the approval and promulgation of implementation plans for Illinois.		EPA	40 CFR 52 Subpart O, Appendix B; L; 2.2.22
Traceability	Requires that an applicant for a reference or equivalent method determination for testing under the ambient air monitoring reference and equivalent methods regulations "shall maintain and include records of all relevant measuring equipment, including the make, type, and serial number or other identification, and most recent calibration with identification of the measurement standard or standards used and their National Institute of Standards and Technology (NIST) traceability". The intent of these records is to demonstrate "the measurement capability of each item of measuring equipment used for the application and include a description and justification (if needed) of the measurement setup or configuration in which it was used for the tests. The calibration results shall be recorded and identified in sufficient detail so that the traceability of all measurements can be determined and any measurement could be reproduced under conditions close to the original conditions, if necessary, to resolve any anomalies."		EPA	40 CFR 53.4(b)(5)(i)

Traceability	"The diameter of the jet of each impactor manufactured for a PM2.5 sampler under the impactor design specifications set forth in 40 CFR part 50, appendix L, shall be verified against the tolerance specified on the drawing, using standard, NIST-traceable ZZ go/no go plug gages" to verify the PM2.5 jet impactor diameter as part of the required specific tests to verify conformance to critical component specifications to demonstrate compliance with design specifications and manufacturing and test requirement, as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods **(Mandatory).**		EPA	40 CFR 53.51(d)(1)
Traceability	Flow rate measurement device used as part of the required test equipment for Leak check test, as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods must have "a range 70 mL/min to 130 mL/min, 2 percent certified accuracy, NIST-traceable" **(mandatory)**.		EPA	40 CFR 53.52(c)(1)
Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in testing for leak checks needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.52(d)
	Flow rate meters used as part of the required test equipment in testing for flow rate accuracy, regulation, measurement accuracy, and cut-off as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods must be "suitable for measuring and recording the actual volumetric sample flow rate at the sampler downtube, with a minimum range of 10 to 25 actual L/min, 2 percent certified, NIST-traceable accuracy." **(mandatory)**.			40 CFR 53.53(c)(1)
Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in testing for flow rate accuracy, regulation, measurement accuracy, and cut-off needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.53(d)
Traceability	Flow rate meters used as part of the required test equipment in testing for proper sampler operation following power interruptions as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods must be "suitable for measuring and recording the actual volumetric sample flow rate at the sampler downtube, with a minimum range of 10 to 25 actual L/min, 2 percent certified, NIST-traceable accuracy." **(mandatory)**.		EPA	40 CFR 53.54(b)(1)

Appendix 5

Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in testing for proper sampler operation following power interruptions needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.54(c)
Traceability	Flow rate meters used as part of the required test equipment in testing for the effects of variations in power line voltage and ambient temperature as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods must be "suitable for measuring and recording the actual volumetric sample flow rate at the sampler downtube, with a minimum range of 10 to 25 actual L/min, 2 percent certified, NIST-traceable accuracy." **(mandatory)**.		EPA	40 CFR 53.55(c)(3)
Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in testing for the effects of variations in power line voltage ambient temperature needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.55(d)
Traceability	Flow rate meters used as part of the required test equipment in testing for the effects of variations in ambient pressure as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods must have "minimum range of 10 to 25 L/min, 2 percent certified, NIST-traceable accuracy" **(mandatory)**.		EPA	40 CFR 53.56(c)(2)
Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in testing for the effects of variations in ambient pressure needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.56(d)
Traceability	NIST Traceable temperature sensors are part of the required test equipment for use in tests "intended to measure a candidate sampler's ability to prevent excessive overheating of the PM2.5 sample collection filter (or filters) under conditions of elevated solar insolation..." This testing falls under the "Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" as part of the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.57(c)(4)

Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in the tests to measure a candidate sampler's ability to prevent excessive overheating of the PM2.5 sample collection filter (or filters) under conditions of elevated solar insolation needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.57(d)
Traceability	This regulation states that documentation is required "showing evidence of appropriately recent calibration, certification of calibration accuracy, and NIST-traceability (if required) of all measurement instruments used in the tests" intended to verify adequate aerosol transport through any modified or air flow splitting components that may be used in a Class I candidate equivalent method sampler such as may be necessary to achieve sequential sampling capability. This is stated as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 under the Ambient Air Monitoring Reference and Equivalent Methods.		EPA	40 CFR 53.59(d)
Traceability	States that "All flow rate measurements used to calculate the test atmosphere concentrations and the test results must be accurate to within ±2 percent, referenced to a NIST-traceable primary standard"**(MANDATORY)**. This requirement is stated for sampler flow rate measurements in the test procedures for a full wind tunnel test for Testing Performance Characteristics of Class II Equivalent Methods for PM2.5 under the Ambient Air Monitoring Reference and Equivalent Methods.		EPA	40 CFR 53.62(c)(8)
Traceability	*Defines 'Traceable'* to mean "a local standard has been compared and certified, either directly or via not more than one intermediate standard, to a National Institute of Standards and Technology (NIST)-certified primary standard such as a NIST-Traceable Reference Material (NTRM) or a NIST-certified Gas Manufacturer's Internal Standard (GMIS)."		EPA	40 CFR 58.1
Traceability	Requires that "gaseous pollutant concentration standards (permeation devices or cylinders of compressed gas) used to obtain test concentrations for CO, SO2, NO, and NO2 must be traceable to either a National Institute of Standards and Technology (NIST) NIST-Traceable Reference Material (NTRM) or a NIST-certified Gas Manufacturer's Internal Standard (GMIS)" as part of the quality assurance requirements for state and local air monitoring station (SLAMS) for Ambient Air Quality Surveillance.		EPA	40CFR 58 Appendix A 2.1(f)2.3.1

Appendix 5

Traceability	States that "Gaseous standards (permeation tubes, permeation devices or cylinders of compressed gas) used to obtain test concentrations for CO, SO2, and NO2 must be traceable to either a National Institute of Standards and Technology (NIST) gaseous Standard Reference Material (SRM) or an NIST/EPA-approved commercially available Certified Reference Material (CRM)." Further states that "direct use of a CRM as a working standard is acceptable, but direct use of an NIST SRM as a working standard is discouraged because of the limited supply and expense of SRMs". This requirement stated under pollutant standards as part of the Quality Assurance Requirements for Prevention of Significant Deterioration (PSD) Air Monitoring for Ambient Air Quality Surveillance.		EPA	40 CFR 58; Appendix B 2.3.1
Traceability	Requires that the spectrophotometer used for attenuator calibration must have an "accuracy of <0.5% transmittance, NIST traceable calibration" as a minimum design specification (MANDATORY). This is stated as part of the performance specifications for Standards of Performance for New Stationary Sources.		EPA	40 CFR 60 Appendix B 1.6.3
Calibration	States that an attenuator used to check the daily calibration drift and calibration error of a COMS can be designated as a primary if calibrated by NIST. This is stated as part of the performance specifications for Standards of Performance for New Stationary Sources.		EPA	40 CFR 60 Appendix B 1.7.1(1)
Traceability	This performance specification is applicable for measuring all hazardous air pollutants (HAPs) which absorb in the infrared region and can be quantified using Fourier Transform Infrared Spectroscopy (FTIR), as long as the performance criteria of this performance specification are met. This specification is to be used for evaluating FTIR continuous emission monitoring systems for measuring HAPs regulated under Title III of the 1990 Clean Air Act Amendments. This specification also applies to the use of FTIR CEMs for measuring other volatile organic or inorganic species. As part of the performance requirements this regulation states that the "audit sample can be a mixture or a single component. It must contain target analyte(s) at approximately the expected flue gas concentration(s). If possible, each mixture component concentration should be NIST traceable (± 2 percent accuracy)". This is part of the Performance Specification for Extractive FTIR Continuous Emissions Monitor Systems in Stationary Sources that form the Standards of Performance for New Stationary Sources.		EPA	40 CFR 60 Appendix B 15.9.1.1
Traceability	Requires that "The owner or operator shall install, calibrate, operate, and maintain a temperature monitor accurate to within ±5.6 °C (±10 °F) to measure the oxidation temperature. The owner or operator shall verify the accuracy of the temperature monitor twice each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose)" for sterilization facilities. This is part of the monitoring requirements of the Ethylene Oxide Emissions Standards for Sterilization Facilities that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.364(c)(4)

Appendix 5

Traceability	Requires that "The owner or operator shall install, calibrate, operate, and maintain a temperature monitor accurate to within ±5.6 °C (±10 °F) to measure the oxidation temperature". As an alternative to verifying the accuracy of the temperature monitor with a reference temperature monitor, the operator or owner can verify the accuracy of the temperature monitor "in a calibrated oven (traceable to NIST standards)". This is part of the monitoring requirements of the Ethylene Oxide Emissions Standards for Sterilization Facilities that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.364(c)(4)
Traceability	Requires the installation, calibration, operation, and maintenance of a temperature monitor accurate to within ±5.6 °C (±10 °F) or within 1 percent of the baseline temperature, whichever is less stringent, to measure the temperature of a combustion device. It is further stated that "the owner or operator shall verify the accuracy of the temperature monitor once each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose)"**(MANDATORY)**. This is part of the monitoring requirements of National Emission Standards for Marine Tank Vessel Loading Operations that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.564(e)(4)
Traceability	When using a carbon adsorber with steam regeneration, requires that "the owner or operator will install, calibrate, maintain, and operate an integrating stream flow monitoring device that is accurate within ±10 percent and that is capable of recording the total stream mass flow for each regeneration cycle. The owner or operator will install, calibrate, maintain, and operate a temperature monitor accurate to within ±5.6 °C (10 °F) or within 1 percent of the baseline carbon bed temperature, whichever is less stringent, to measure the carbon bed temperature". Further requires that "the owner or operator shall verify the accuracy of the temperature monitor once each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose)"**(MANDATORY)**. This is part of the monitoring requirements of National Emission Standards for Marine Tank Vessel Loading Operations that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.564(g)(3)

Traceability	Requires the installation, calibration, operation, and maintenance of a temperature monitor accurate to within ±5.6 °C (±10 °F) or within 1 percent of the baseline temperature, whichever is less stringent, to measure the temperature of a condenser/refrigeration unit. It is further stated that "the owner or operator shall verify the accuracy of the temperature monitor once each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose)"**(MANDATORY)**. This is part of the monitoring requirements of National Emission Standards for Marine Tank Vessel Loading Operations that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.564(h)(1)
Traceability	Absolute Calibration Audit (ACA) is defined as "Equivalent to calibration error (CE) test defined in the appropriate performance specification using NIST traceable calibration standards to challenge the CEMS (continuous emissions monitoring system) and assess accuracy". This definition is spelled under the Quality Assurance Procedures for Continuous Emissions Monitors Used for Hazardous Waste Combustors provided as an appendix to the sub-part on National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors under the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63 Subpart EEE; Appendix
Traceability	This part of the regulation requires that for each continuous parameter monitoring system (CPMS), except for redundant sensors, any device that is used to conduct an initial validation or accuracy audit of a CPMS must have an accuracy that is traceable to National Institute of Standards and Technology (NIST) standards, in addition to other requirements **(MANDATORY).** This requirement is part of the testing and initial compliance requirements under the National Emission Standards for Hazardous Air Pollutants for Cellulose Products Manufacturing (subpart) that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.5545(f)(9)(i)
Traceability	Regulation requires that any device used to conduct an initial validation or accuracy audit of CPMS (continuous parametric monitoring system) must "have an accuracy that is traceable to National Institute of Standards and Technology (NIST) standards", amongst other requirements **(MANDATORY)**. This requirement is part of the testing and initial compliance requirements under the National Emission Standards for Hazardous Air Pollutants for Refractory Products Manufacturing (subpart) that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.9804(a)(15)(i)

NIST certified pH buffer solution	This part of the regulation requires that an initial validation of the pH CPMS be conducted by performing "a single-point calibration using an NIST-certified buffer solution that is accurate to within ±0.02 pH units at 25 °C (77 °F). If the expected pH of the liquid that is monitored lies in the acidic range (less than 7 pH), use a buffer solution with a pH value of 4.00. If the expected pH of the liquid that is monitored is neutral or lies in the basic range (equal to or greater than 7 pH), use a buffer solution with a pH value of 10.00. Place the electrode of your pH CPMS in the container of buffer solution. Record the pH measured by your CPMS. Using the certified buffer solution as the reference, the pH measured by your CPMS must be within the accuracy specified in paragraph (e)(1) of this section"**(MANDATORY)**. This requirement is part of the testing and initial compliance requirements under the National Emission Standards for Hazardous Air Pollutants for Refractory Products Manufacturing (subpart) that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.9804(e)(3)(i)
NIST certified pH buffer solution	This part of the regulation requires that an accuracy audit of the pH CPMS be conducted at least weekly "If your pH CPMS does not include a redundant pH sensor, perform a single point calibration using an NIST-certified buffer solution that is accurate to within ±0.02 pH units at 25 °C (77 °F). If the expected pH of the liquid that is monitored lies in the acidic range (less than 7 pH), use a buffer solution with a pH value of 4.00. If the expected pH of the liquid that is monitored is neutral or lies in the basic range (equal to or greater than 7 pH), use a buffer solution with a pH value of 10.00. Place the electrode of the pH CPMS in the container of buffer solution. Record the pH measured by your CPMS. Using the certified buffer solution as the reference, the pH measured by your CPMS must be within the accuracy specified in paragraph (e)(1) of this section" **(MANDATORY).** This requirement is part of the testing and initial compliance requirements under the National Emission Standards for Hazardous Air Pollutants for Refractory Products Manufacturing (subpart) that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.9804(e)(4)(ii)

calibration gas, reference material	Defines that "Calibration gas" means: (1) A standard reference material; (2) A standard reference material-equivalent compressed gas primary reference material; (3) A NIST traceable reference material; (4) NIST/EPA-approved certified reference materials; (5) A gas manufacturer's intermediate standard; (6) An EPA protocol gas; (7) Zero air material; or (8) A research gas mixture.		EPA	40 CFR 72.2
reference material, traceability	States that "Gas manufacturer's intermediate standard (GMIS) means a compressed gas calibration standard that has been assayed and certified by direct comparison to a standard reference material (SRM), an SRM-equivalent PRM, a NIST/EPA-approved certified reference material (CRM), or a NIST traceable reference material (NTRM), in accordance with section 2.1.2.1 of the "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards," September 1997, EPA–600/R–97/121."		EPA	40 CFR 72.2
reference material	Defines NIST/EPA-approved certified reference material or NIST/EPA-approved CRM as "a calibration gas mixture that has been approved by EPA and the National Institutes of Standards and Technologies (NIST) as having specific known chemical or physical property values certified by a technically valid procedure as evidenced by a certificate or other documentation issued by a certifying standard-setting body."		EPA	40 CFR 72.2
reference material	Defines NIST traceable reference material (NTRM) as "a calibration gas mixture tested by and certified by the National Institutes of Standards and Technologies (NIST) to have a certain specified concentration of gases. NTRMs may have different concentrations from those of standard reference materials."		EPA	40 CFR 72.2
Traceability	*Defines Research gas material* (RGM) as "a calibration gas mixture developed by agreement of a requestor and the National Institutes for Standards and Technologies (NIST) that NIST analyzes and certifies as "NIST traceable." RGMs may have concentrations different from those of standard reference materials."		EPA	40 CFR 72.2

Traceability	Defines Research gas mixture (RGM) as "a calibration gas mixture developed by agreement of a requestor and NIST that NIST analyzes and certifies as “NIST traceable.” RGMs may have concentrations different from those of standard reference materials."		EPA	40 CFR 72.2
NIST Traceable equipment	This regulation states that the operator shall record applicable information "..expected transmitter output during accuracy test (reference value from NIST-traceable equipment), including units of measure;.." as part of the record keeping requirements for continuous emissions monitoring.		EPA	40 CFR 75.59(b)(2)(iii)
NIST Traceability certificates	This regulation states that "the designated representative for an affected unit may apply to the Administrator for an alternative to any standard incorporated by reference and prescribed in this part. The designated representative shall include the following information in an application..." "Information demonstrating that the proposed alternative produces data acceptable for use in the Acid Rain Program, including accuracy and precision statements, NIST traceability certificates or protocols, or other supporting data, as applicable to the proposed alternative" in addition to other information, as part of the reporting requirements for continuous emissions monitoring.		EPA	40 CFR 75.66(c)(3)
Traceability/Reference Materials	Reference is made to a NIST OU as a source of list of vendors and cylinder gases for NIST traceable reference materials as part of the specifications and test procedures for continuous emissions monitoring		EPA	40 CFR 75, Appendix A 5.1.3
Reference Materials	Refers to a NIST OU for information about the "Research Gas Mixture (RGM) program" as part of the specifications and test procedures for continuous emissions monitoring		EPA	40 CFR 75, Appendix A 5.1.5
Reference Materials	This regulation refers to NIST/EPA-Approved Certified Reference Materials stating that existing certified reference materials (CRMs) that are still within their certification period may be used as calibration gas as part of the specifications and test procedures for continuous emissions monitoring		EPA	40 CFR 75, Appendix A 5.1.7
Traceability to NIST standards	This regulation refers to procedures in various standards to verify flowmeter accuracy. It further states that the EPA "Administrator may also approve other procedures that use equipment traceable to National Institute of Standards and Technology standards ". This requirement is part of the initial certification requirements for all fuel flowmeters when following optional SO2 emissions data protocol for gas-fired and oil-fired units for continuous emissions monitoring.		EPA	40 CFR 75, Appendix D 2.1.5.1

Traceability to NIST standards	Regulation states that while conducting transmitter or transducer accuracy tests for orifice-, nozzle- and venturi- type flowmeters "Calibrate the differential pressure transmitter or transducer, static pressure transmitter or transducer, and temperature transmitter or transducer, as applicable, using equipment that has a current certificate of traceability to NIST standards" **(MANDATORY).** This requirement is part of the initial certification requirements for all fuel flowmeters when following optional SO2 emissions data protocol for gas-fired and oil-fired units for continuous emissions monitoring.		EPA	40 CFR 75, Appendix D 2.1.6.1(a)
NIST Traceable reference value	Regulation states that while conducting transmitter or transducer accuracy tests for orifice-, nozzle- and venturi- type flowmeters he calibration of each transmitter or transducer should be checked "by comparing its readings to that of the NIST traceable equipment at least once at each of the following levels: the zero-level and at least two other upscale levels (e.g., “mid” and “high”), such that the full range of transmitter or transducer readings corresponding to normal unit operation is represented .."**(MANDATORY).** This requirement is part of the initial certification requirements for all fuel flowmeters when following optional SO2 emissions data protocol for gas-fired and oil-fired units for continuous emissions monitoring.		EPA	40 CFR 75, Appendix D 2.1.6.1(a)
NIST Traceable equipment	This sub-section refers to the NIST traceable reference value for determination of the accuracy of the transmitter or transducer as a percentage of the full scale, in the equation used to determine the accuracy **(MANDATORY)**. This requirement is part of the initial certification requirements for all fuel flowmeters when following optional SO2 emissions data protocol for gas-fired and oil-fired units for continuous emissions monitoring.		EPA	40 CFR 75, Appendix D 2.1.6.1(b)
Reference to NIST standard for statement of accuracy	Reference is made to a NBS lead in reference fuel to make a statement on the accuracy of the measurement, as "The analysis of National Bureau of Standards (NBS) lead in reference fuel of known concentrations in a single laboratory has resulted in found values deviating from the true value for 11 determinations of 0.0322 g Pb/gal by an average of 0.56% with a standard deviation of 6.8%, for 15 determinations of 0.0519 g Pb/gal by an average of -1.1% with a standard deviation of 5.8%, and for 7 determinations of 0.0725 g Pb/gal by an average of 3.5% with a standard deviation of 4.8%". This statement applies to automated method test for determination of lead in gasoline by Atomic Absorption Spectrometry, as part of the regulations for fuels and fuel additives.		EPA	40 CFR 80 - Appendix B (Subpart J); Method 2, 10.2.1
NBS Lead-in-reference fuel standard	This regulation stipulates that the suitability of a calibration curve used in the test procedure for testing of lead in gasoline by X-ray spectrometry should be checked each day "by analyzing several National Bureau of Standards (NBS) lead-in-reference-fuel standards or other suitable standards".		EPA	40 CFR 80 - Appendix B (Subpart J); Method 3, 7.1

Appendix 5

NBS Lead-in-reference fuel standard	It is required that "quality control standards, such as NBS standard reference materials, should be analyzed at least once every testing session" when testing of lead in gasoline by X-ray spectrometry **(MANDATORY)**.		EPA	40 CFR 80 - Appendix B (Subpart J); Method 3, 7.4
Traceability to NBS Standard	This regulation states that span gases used in weekly checks of analyzers used as part of emission control system performance warranty short tests, "shall be traceable to NBS standards ±2% and have" in addition to other requirements for concentration **(MANDATORY).** This regulation is a subpart of testing for control of air pollution from mobile sources. This regulation further stipulates that "requirements of §85.2233 apply concurrently until December 31, 1993, after which the requirements of §85.2233 are solely in effect" .		EPA	40 CFR 85.2232(e)(4)
Traceability to NBS Standard	This regulation specifies the requirements for span gases for gas calibration conducted as part of the steady state test equipment calibrations, adjustment and quality control conducted in emission control systems performance warranty short tests for control of air pollution from mobile sources. This regulation states that in addition to other requirements, span gases "must be traceable to National Institute of Standards and Technology (NIST) standards within two percent" **(MANDATORY).**	1994	EPA	40 CFR 85.2233(e)(3)
Traceability to NIST standard	Calibration gases- States that calibration gases used in test procedures for Emission Regulations for 1977 and Later Model Year (in this case from 1979 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles "shall be traceable to within 1 percent of NBS gas standards, or other gas standards which have been approved by the Administrator."		EPA	40 CFR 86.114-79 (b)
NIST Gas Standards	Span gases- States that Span gases used in test procedures for Emission Regulations for 1977 and Later Model Year (in this case from 1979 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles " shall be accurate to within 2 percent of true concentration, where true concentration refers to NBS gas standards, or other gas standards which have been approved by the Administrator".		EPA	41 CFR 86.114-79 (c)
Traceability NIST standards	Methanol in air gases- states that methanol in air gases used for response factor determination in test procedures for Emission Regulations for 1977 and Later Model Year (in this case from 1994 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles "shall be traceable to within ±2 percent of NIST (formerly NBS) gas standards, or other standards which have been approved by the Administrator" (**MANDATORY)**.		EPA	40 CFR 86.114-94(d)(1)
Traceability to NIST standard	Calibration gases- States that calibration gases (except for methanol)used in test procedures for Emission Regulations for 1977 and Later Model Year (in this case from 1994 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles "shall be traceable to within 1 percent of NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator."		EPA	40 CFR 86.114-94(b)

Appendix 5

NIST Gas Standards	Span gases -States that Span gases (not including methanol) used in test procedures for Emission Regulations for 1977 and Later Model Year (in this case from 1994 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles " shall be accurate to within two percent of true concentration, where true concentration refers to NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator."		EPA	40 CFR 86.114-94(c)
Traceability to NBS flow calibration device	Flow calibration device-States that test procedures for gas meter or flow instrumentation calibration for particulate, methanol and formaldehyde measurement as part of testing for Emission Regulations for 1977 and Later Model Year (in this case 1994 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles require that "a calibration device be installed in series with the instrument. A critical flow orifice, a bellmouth nozzle, a laminar flow element or an NBS traceable flow calibration device is required as the standard device".		EPA	40 CFR 86.120-94(a)(1)(i)
Traceability	known methane in air concentrations - States that "to determine the total hydrocarbon FID response to methane, known methane in air concentrations traceable to the National Institute of Standards and Technology (NIST) shall be analyzed by the FID"-flame ionization detector, as part of the procedure for hydrocarbon analyzer calibration defined as test procedures for Emission Regulations for 1977 and Later Model Year (in this case 1990 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles **(MANDATORY)**		EPA	40 CFR 86.121-90(d)
Traceability / NBS Standards	NBS weights -states that for calibrating dynamometers as part of the Dynamometer and Engine Equipment Specification for Emission Regulations for New (model year 1979 and later) Gasoline-Fueled and Diesel-Fueled Heavy-Duty Engines; Gaseous Exhaust Test Procedures "a minimum of 6 calibration weights for each range used are required. The weights must be equally spaced and traceable to within 0.5 percent of NBS weights. Laboratories located in foreign countries may certify calibration weights to local government bureau standards" **(MANDATORY)**		EPA	40 CFR 86.312-79(a)(2)
Traceability to NBS standards	NBS weights -provides the option that a master load-cell or transfer standard may be used to verify the in-use torque measurement system as part of the dynamometer calibration procedure for Gaseous Exhaust Test Procedures prescribed for Emission Regulations for New (in this case 1979 and later) Gasoline-Fueled and Diesel-Fueled Heavy-Duty Engines. However, it is further stated "that the master load-cell and read out system must be calibrated with weights at each test weight specified in §86.312–79 and that the calibration weights must be traceable to within 0.1 percent of NBS weights"		EPA	40 CFR 86.333.79 (c)(1)

Appendix 5

Traceability to NIST standard	Analytical Gases - states that "Methanol in air gases used for response factor determination shall be traceable to within ±2 percent of NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator" for test procedures used in Emission Regulations for 1978 and Later New Motorcycles, as part of testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.514-78(c)(1)
Traceability	known methane in air concentrations -"FID response factor to methane"- States that "when the FID analyzer is to be used for the analysis of natural gas-fueled motorcycle hydrocarbon samples, the methane response factor of the analyzer shall be established. To determine the total hydrocarbon FID response to methane, known methane in air concentrations traceable to National Institute of Standards and Technology (NIST) shall be analyzed by the FID. Several methane concentrations shall be analyzed by the FID in the range of concentrations in the exhaust sample." This is required for calibration of hydrocarbon analyzers used in test procedures for Emission Regulations for 1978 (in this case 1990 onwards) and Later New Motorcycles as part of control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.521-90 (e)
NBS Reference standards (optical filters)/Calibration	reference filters- requires that filters used for checking linearity of smokemeters used in Smoke Exhaust Test Procedures in testing for Emission Regulations for New Diesel Heavy-Duty Engines be checked for opacity annually using NBS or equivalent reference filters. This requirement is part of testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.884-11(3)
Traceability to NIST standard	Calibration Gases- States that calibration gases (not including methanol) used in an hydrocarbon analyzer in Evaporative Emission Test Procedures for New (in this case 1985 and newer, until superseded) Gasoline-Fueled, Natural Gas- Fueled, Liquefied Petroleum Gas-Fueled and Methanol-Fueled Heavy-Duty Vehicles "shall be traceable to within one percent of NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator". This requirement is defined for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1214-85(b)
Traceability to NIST Gas Standards	Span Gases - States that Span gases (not including methanol) used in an hydrocarbon analyzer in Evaporative Emission Test Procedures for New (in this case 1985 and newer, until superseded)Gasoline-Fueled, Natural Gas- Fueled, Liquefied Petroleum Gas-Fueled and Methanol-Fueled Heavy-Duty Vehicles "shall be accurate to within two percent of true concentration, where true concentration refers to NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator." This requirement is defined for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1214-85 (c)

Appendix 5

Traceability to NIST gas standard	Methanol in air gases- States that Methanol in air gases used for response factor determination in hydrocarbon analyzers in Evaporative Emission Test Procedures for New (in this case 1985 and newer, until superseded) Gasoline-Fueled, Natural Gas-Fueled, Liquefied Petroleum Gas-Fueled and Methanol-Fueled Heavy-Duty Vehicles shall be traceable to within ±2 percent of NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator." This requirement is defined for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1214-85 (d)(2)
Traceability	FID Response Factor Methane -States that "When the FID analyzer to be used for the analysis of natural gas-fueled vehicle hydrocarbon samples has been calibrated using propane, the methane response factor of the analyzer shall be established. To determine the total hydrocarbon FID response to methane, known methane in air concentrations traceable to National Institute of Standards and Technology (NIST) shall be analyzed by the FID. " This is required for calibration of hydrocarbon analyzers used in Evaporative Emission Test Procedures for New (in this case , 1990 and newer until superseded) Gasoline-Fueled, Natural Gas- Fueled, Liquefied Petroleum Gas-Fueled and Methanol-Fueled Heavy-Duty Vehicles as part of control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1221-90 (e)
NIST Traceable standards for calibration	Calibration- This regulation states that an application for approval of an alternate test system that would consistently and reliably produce emission test results that are at least equivalent to those described in 40CFR 86.1306-07 (Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Particulate Exhaust Test Procedures) should include a section that "shall describe all of the installation, calibration, operation, and maintenance procedures in a step-by-step format. Note that empirical calibration with respect to another prescribed or approved measurement system is not acceptable. Calibration should be performed with NIST traceable standards, or equivalent national standards".		EPA	40 CFR 86.1306-07(d)(5)(iii)
NIST Traceable standards for calibration	Calibration- This regulation states that for an application for approval of an alternate test system that would consistently and reliably produce emission test results that are at least equivalent to those described in 40CFR 86.1306-07 (Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Particulate Exhaust Test Procedures) comparison of results from the alternate system and from the prescribed system (or other system approved by the Administrator) need to be included. "The two systems must be calibrated independently to NIST traceable standards or equivalent national standards for this comparison.".....		EPA	40 CFR 86.1306-07(d)(5)(iv)
Traceability / calibration - NBS "true" value	Reference is part of the dynamometer and engine equipment specification for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines. Requires that "Engine flywheel torque readout shall be accurate to within ±3 percent of the NBS “true” value torque", or certain other defined accuracies.		EPA	40 CFR 86.1308-84 (a)(2)

Appendix 5

Traceability / calibration - NBS "true" value	Reference is part of the dynamometer and engine equipment specification for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines. States that "Engine flywheel torque values used for cycle evaluation shall be accurate to within ±3.6 percent of NBS “true” values...." to provide a more convenient option for the test procedures.			40 CFR 86.1308-84 (c)(2)
Traceability	Weights traceable to NIST - Refers to NBS traceable weights to define to define the NBS "true" value torque referred to in 41 CFR 86.1308-84 para (a)(2) and para (c)(2).		EPA	40 CFR 86.1308-84 (e)
Traceability to NBS weight standards	Requires that calibration weights used for each range of torque measuring device be "traceable to NBS weights" in dynamometer and engine equipment specification for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40CFR 86.1308-84 (e)(1)(i)
Traceability to NIST	Requires that "dewpoint shall be measured with an instrument that exhibits an accuracy of at least ±0.25 °C NIST traceable as stated by the instrument manufacturer" for establishing ambient conditions for filter stabilization and weighing; as a requirement for Filter stabilization and microbalance workstation environmental conditions, microbalance specifications, and particulate matter filter handling and weighing procedures as part of the gaseous and particulate exhaust test procedures for emission regulations for new Otto-Cycle and Diesel heavy-duty engines.		EPA	40 CFR 86.1312-2007(a)(1)(i)
Traceability to NIST	Requires that "dewpoint shall be measured with an instrument that exhibits an accuracy of at least ±0.25 °C NIST traceable as stated by the instrument manufacturer" for verifying the immediate microbalance work environment; as a requirement for Filter stabilization and microbalance workstation environmental conditions, microbalance specifications, and particulate matter filter handling and weighing procedures as part of the gaseous and particulate exhaust test procedures for emission regulations for new Otto-Cycle and Diesel heavy-duty engines.		EPA	40 CFR 86.1312-2007(a)(1)(ii)
Traceability/calibration	certification and calibration procedures - Specifications for microbalances used for determination of the weight of filters requires that "all certification and calibration procedures shall be NIST traceable, or traceable to an equivalent national standard"; as a requirement for Filter stabilization and microbalance workstation environmental conditions, microbalance specifications, and particulate matter filter handling and weighing procedures as part of the gaseous and particulate exhaust test procedures for emission regulations for new Otto-Cycle and Diesel heavy-duty engines.		EPA	40 CFR 86.1312-2007(b)

Appendix 5

Traceability to NBS gas standards	Calibration gases - Requires that calibration gases used in gas analyzers for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines "shall be accurate to within ±1 percent of NBS gas standards, or other gas standards which have been approved by the Administrator"		EPA	40 CFR 86.1314-84 (f))(2)
Traceability to NBS gas standards	Span Gases - Requires that span gases used in gas analyzers for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines "shall be accurate to within ±2 percent of NBS gas standards, or other gas standards which have been approved by the Administrator"		EPA	40 CFR 86.1314-84(f)(3)
Traceability to NBS gas standards	States that "the use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ±1.5 percent of NBS gas standards, or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used for blending must be “named” to an accuracy of at least ±1 percent, traceable to NBS or other approved gas standards." This is for use in gas analyzers for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines		EPA	40 CFR 86.1314-84 (g)
Traceability to NIST gas standard	Calibration gases -Requires that calibration gases used in gas analyzers for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1994 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines (not including methanol) shall be traceable to within one percent of NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator.		EPA	40 CFR 86.1314-94(g)(2)
Traceability to NIST gas standard	Span gases - Requires that span gases (not including methanol) used in gas analyzers for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1994 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines "shall be accurate to within two percent of true concentration, where true concentration refers to NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator."		EPA	40 CFR 86.1314-94(g)(3)

Traceability	Methanol in air gases - Requires that Methanol in air gases used for response factor determination shall be traceable to within ±2 percent of NIST (formerly NBS) gas standards, or other standards which have been approved by the Administrator" as part of the gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1994 and newer, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1314-94(g)(4)(i)
Traceability to NIST/NBS gas standards	known methane in air concentrations - States that "the use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ±1.5 percent of NBS gas standards, or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used for blending must be "named" to an accuracy of at least ±1 percent, traceable to NBS or other approved gas standards". This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1994 and newer, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1314-94
Traceability to NBS/calibration	CVS calibration - requires that "the CVS is calibrated using an accurate flowmeter and restrictor valve. The flowmeter calibration shall be traceable to the NBS, and will serve as the reference value (NBS "true" value) for the CVS calibration. (Note: In no case should an upstream screen or other restriction which can affect the flow be used ahead of the flowmeter unless calibrated throughout the flow range with such a device.) The CVS calibration procedures are designed for use of a "metering venturi" type flowmeter. Large radius or ASME flow nozzles are considered equivalent if traceable to NBS measurements. Other measurement systems may be used if shown to be equivalent under the test conditions in this action and traceable to NBS measurements." This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and later, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1319-84(a)
Traceability	Requires that air flow sensor read out tolerances for calibration data measurements must be ±0.5% of NBS "true" value. **(MANDATORY if this technique is used)**. This measurement is part of the PDP calibration is one of the required measurements that establishes flow rate of the CVS pump. This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and later, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.			40 CFR 86.1319-84(c)(4)

Appendix 5

Traceability / calibration	CVS calibration - requires that "the CVS is calibrated using an accurate flowmeter and restrictor valve. The flowmeter calibration shall be traceable to the NBS, and will serve as the reference value (NBS "true" value) for the CVS calibration. The CVS calibration procedures are designed for use of a "metering venturi" type flowmeter. Large radius or ASME flow nozzles are considered equivalent if traceable to NBS measurements. Other measurement systems may be used if shown to be equivalent under the test conditions in this section and traceable to NBS measurements. Measurements of the various flowmeter parameters are recorded and related to flow through the CVS. Procedures used by EPA for both PDP–CVS and CFV–CVS are outlined below. Other procedures yielding equivalent results may be used if approved in advance by the Administrator". This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1990 and later, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1319-90(a)
Traceability / calibration	Requires that air flow sensor read out tolerances for calibration data measurements must be ±0.5% of NBS "true" value. (**MANDATORY if this technique is used).** This measurement is part of the PDP calibration is one of the required measurements that establishes flow rate of the CVS pump. This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1990 and later, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1319-90(c)(4)
Traceability	Requires that air flow sensor read out tolerances for flow calibration measurements must be ±0.5% of NBS "true" value. **(MANDATORY)**. This measurement is part of the CFV calibration is one of the required measurements that establishes the value of the calibration coefficient at measured values of pressure, temperature and air flow. This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1990 and later, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.			40 CFR 86.1319-90(d)(3)
Traceability / calibration	NBS traceable flow calibration- Requires the use of gas meters or flow instrumentation to determine flow through the particulate filters, methanol impingers and formaldehyde impingers while sampling for particulate, methanol and formaldehyde emissions as part of Gaseous and Particulate Exhaust Test Procedures for Emission Regulations for New (in this case 1990 and later, until superseded) Otto-Cycle and Diesel Heavy-Duty Engines. The regulation states that the instruments shall be calibrated initially and periodically by installing a "calibration device in series with the instrument. A critical flow orifice, a bellmouth nozzle, or a laminar flow element or an NBS traceable flow calibration device is required as the standard device". This regulation covers testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1320-90 (a)(1)(i)

Traceability	known methane in air concentrations - States that "when the FID analyzer is to be used for the analysis of natural gas-fueled vehicle hydrocarbon samples, the methane response factor of the analyzer shall be established. To determine the total hydrocarbon FID response to methane, known methane in air concentrations traceable to National Institute of Standards and Technology (NIST) shall be analyzed by the FID" **(MANDATORY)**. This is required for calibration of the hydrocarbon analyzer for gaseous and particulate exhaust test procedures used for emission regulations for new Otto-Cycle and diesel heavy-duty engines used for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1321-94(d)
Traceability	Dynamometer specifications and calibration weights as stated under Emission Test Equipment Provisions for control of emissions from new and in-use nonroad compression-ignition engines require that "a minimum of six calibration weights for each range used are required. The weights must be spaced to reflect good engineering judgment such that they cover the range of weights required and must be traceable to within 0.5 percent of NIST weights. Laboratories located in foreign countries may certify calibration weights to local government bureau standards."		EPA	40 CFR 89.306(b)
Traceability/calibration	Requires that "calibration gas values are to be derived from NIST Standard Reference Materials (SRMs) or other standardized gas samples...". This requirement for analytical gases is stated under the emissions test equipment provisions for control of emissions from new and in-use nonroad compression-ignition engines.		EPA	40 CFR 89.312(c)(1)
Traceability/calibration	Requires that "The true concentration of a span gas must be within ±2 percent of the NIST gas standard. The true concentration of a calibration gas must be within ±1 percent of the NIST gas standard. The use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ±1.5 percent of NIST gas standards, or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used (or blending) must be “named” to an accuracy of at least ±1 percent, traceable to NIST or other approved gas standards. All concentrations of calibration gas shall be given on a volume basis (volume percent or volume ppm)." This requirement for analytical gases is stated under the emissions test equipment provisions for control of emissions from new and in-use nonroad compression-ignition engines.		EPA	40 CFR 89.312(c)(1)
Traceability/calibration	States that "the CVS is calibrated using an accurate flowmeter and restrictor valve where the flowmeter calibration must be traceable to NIST measurements, and will serve as the reference value (NIST “true” value) for the CVS calibration". This requirement is for CVS calibrations for dilute sampling procedures stated for test procedures for exhaust emissions in testing for control of emissions from new and in-use nonroad compression-ignition engines.		EPA	40 CFR 89.422(a)(1)

Appendix 5

Traceability	States that "The CVS calibration procedures are designed for use of a “metering venturi” type flowmeter. Large radius or ASME flow nozzles are considered equivalent if traceable to NIST measurements. Other measurement systems may be used if shown to be equivalent under the test conditions in this section and traceable to NIST measurements." This requirement is for CVS calibrations for dilute sampling procedures stated for test procedures for exhaust emissions in testing for control of emissions from new and in-use nonroad compression-ignition engines.		EPA	40 CFR 89.422(a)(2)
Traceability	Requires that air flow sensor read out tolerances for calibration data measurements must be ±0.5% of NBS "true" value. (**MANDATORY** if this technique is used). This measurement is part of the PDP calibration is one of the required measurements that establishes flow rate of the CVS pump. This requirement is for CVS calibrations for dilute sampling procedures used for test procedures for exhaust emissions in testing for control of emissions from new and in-use nonroad compression-ignition engines.		EPA	40 CFR 89.422(c)(4)
Traceability/calibration	The regulation states that to ensure dynamometer calibration accuracy a minimum of three calibration weights for each range used is required. The weights must be equally spaced and traceable to within 0.5 percent of National Institute for Standards and Testing (NIST) weights. Laboratories located in foreign countries may certify calibration weights to local government bureau standards". This regulation is included in the emission test equipment provisions for control of emissions from nonroad spark-ignition engines at or below 19kW.		EPA	40 CFR 90.305(b)(2)
Traceability/calibration/ SRMs	Specifies accuracy requirements for divider gases, if used, as part of emission test equipment provisions for control of emissions from nonroad spark-ignition engines at or below 19kW. The regulations states that "the use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ± 1.5 percent of NIST gas standards or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used for blending must be “named” to an accuracy of at least ± one percent, traceable to NIST or other approved gas standards".		EPA	40 CFR 90.314(c)(Note)
Traceability/SRMs	Specifies requirements for span gases, if used, as part of emission test equipment provisions for control of emissions from nonroad spark-ignition engines at or below 19kW. States that "The span gases must be accurate to within ± two percent of NIST gas standards or other gas standards which have been approved by the Administrator.".		EPA	40 CFR 90.314(c)(i)
Traceability/calibration	States that for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from nonroad spark-ignition engines at or below 19 kW, the CVS has to be calibrated using an accurate flowmeter and restrictor valve. The "flowmeter calibration must be traceable to the National Institute for Standards and Testing (NIST) and serves as the reference value (NIST “true” value) for the CVS calibration" **(MANDATORY)**.		EPA	40 CFR 90.424(a)(1)

Traceability/calibration	States that for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from nonroad spark-ignition engines at or below 19 kW, the CVS has to be calibrated using an accurate flowmeter and restrictor valve. The regulation states that "large radius or American Society of Mechanical Engineers (ASME) flow nozzles are considered equivalent if traceable to NIST measurements. Other measurement systems may be used if shown to be equivalent under the test conditions in the section and traceable to NIST measurements".		EPA	40 CFR 90.424(a)(2)
Traceability/calibration	Regulation requires that sensor-readout tolerances for airflow during calibration data measurements must be ±0.5 percent of NIST value **(MANDATORY)**. This measurement is part of the test configuration required to establish the flow rate of the CVS pump for PDP-CVS calibration for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from nonroad spark-ignition engines at or below 19 kW.		EPA	40 CFR 90.424(c)(4)
Traceability/calibration	Regulation requires that sensor-readout tolerances for airflow during calibration data measurements must be ±0.5 percent of NIST value **(MANDATORY)**. This measurement is part of the test configuration required for flow calibration as part of the CFV-CVS calibration for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from nonroad spark-ignition engines at or below 19 kW.		EPA	40 CFR 90.424(c)(4)
Traceability	The dynamometers specifications and calibration accuracy requirements stated as part of the emissions test provisions for control of emissions from marine spark- ignition engines require that "a minimum of three calibration weights for each range used is required. The weights must be equally spaced and traceable to within 0.5 percent of National Institute of Standards and Testing (NIST) weights. Laboratories located in foreign countries may certify calibration weights to local government bureau standards".		EPA	40 CFR 91.305(b)(2)
Traceability to SRM	This reference pertains to calibration of emission measurement equipment using bag sampling techniques, when emissions are below 15% of the full scale reading. The regulation states emissions test equipment provisions for control of emissions from marine spark-ignition engines. The reference states that "the use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ± 1.5 percent of NIST gas standards or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used for blending must be “named” to an accuracy of at least ± 1 percent, traceable to NIST or other approved gas standards".		EPA	40 CFR 91.314(c)(2)
Traceability to SRM	This regulation states that when span gases are used in analyzers for emissions testing for control of emissions from marine spark-ignition engines the procedure used should "span the full analyzer range using a top range calibration gas. The span gases must be accurate to within ± 2 percent of NIST gas standards or other gas standards which have been approved by the Administrator".		EPA	40 CFR 91.314(c)(2)(i)

Appendix 5

Traceability to SRM	As per this regulation, when calibrating an analyzer for emissions testing for control of emissions from marine spark-ignition engines, "select a calibration gas (a span gas may be used for calibrating the CO2 analyzer) with a concentration between the two lowest non-zero gas divider increments. This gas must be "named" to an accuracy of ± 2 percent of NIST gas standards, or other standards approved by the Administrator".		EPA	40 CFR 91.314(c)(2)(iii)
Traceability	States that for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from marine spark-ignition engines, the CVS has to be calibrated using an accurate flowmeter and restrictor valve. The "flowmeter calibration shall be traceable to the National Institute for Standards and Testing (NIST) and will serve as the reference value (NIST "true" value) for the CVS calibration" **(MANDATORY)**.		EPA	40 CFR 91.424(a)(1)
Traceability	States that for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from marine spark-ignition engines, the CVS has to be calibrated using an accurate flowmeter and restrictor valve. The regulation states that "large radius or American Society of Mechanical Engineers (ASME) flow nozzles are considered equivalent if traceable to NIST measurements. Other measurement systems may be used if shown to be equivalent under the test conditions in the section and traceable to NIST measurements".		EPA	40 CFR 91.424(a)(2)
Traceability	Regulation requires that sensor-readout tolerances for airflow during calibration data measurements must be ±0.5 percent of NIST value **(MANDATORY).** This measurement is part of the test configuration required to establish the flow rate of the CVS pump for PDP-CVS calibration for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from marine spark-ignition engines.		EPA	40 CFR 91.424(c)(4)
Traceability	Regulation requires that sensor-readout tolerances for airflow during calibration data measurements must be ±0.5 percent of NIST value **(MANDATORY)**. This measurement is part of the test configuration required for flow calibration as part of the CFV-CVS calibration for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from marine spark-ignition engines.		EPA	40 CFR 91.424(d)(3)
Traceability	Defines accuracy as "the difference between the measured value and the true value, where the true value is determined from NIST traceable measurements where possible, or otherwise determined by good engineering practice"		EPA	40 CFR 92.102
Traceability	This regulation requires that in addition to certain general requirements, for purposes of engine testing, the engine or dynamometer readout signals for speed and torque shall also meet the following accuracy specifications, amongst others:" Engine flywheel torque readout shall be accurate to either within ±3 percent of the NIST "true" value torque, or the following accuracies, whichever provides the most accurate readout:(A) ±20 ft.-lbs. of the NIST "true" value if the full scale value is 9000 ft.-lbs. or less. (B) ±30 ft.-lbs., of the NIST "true" value if the full scale value is greater than 9000 ft.-lbs". This specification for engine testing is defined as a test procedure for control of air pollution from locomotives and locomotive engines.		EPA	40 CFR 92.106(b)(1)(ii)

Appendix 5

Traceability/SRM	As per this regulation, calibration gases used as analytical gases in test procedures for control of air pollution from locomotives and locomotive engines, "shall be accurate to within ±1 percent of NIST gas standards, or other gas standards which have been approved by the Administrator".		EPA	40 CFR 92.112(h)(2)
Traceability/SRM	As per this regulation, span gases used as analytical gases in test procedures for control of air pollution from locomotives and locomotive engines, "shall be accurate to within ±2 percent of NIST gas standards, or other gas standards which have been approved by the Administrator.".		EPA	40 CFR 92.112(h)(3)
Traceability/SRM	As per this regulation, for analytical gases in test procedures for control of air pollution from locomotives and locomotive engines, "the use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ±1.5 percent of NIST gas standards, or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used for blending must be "named" to an accuracy of at least ±1 percent, traceable to NIST or other approved gas standards.".		EPA	40 CFR 92.112(j)
Traceability	This reference defines NIST "true" value torque for dynamometer equipment calibration as part of the calibration of engine output measurement system for test procedures used in control of air pollution from locomotives and locomotive engines. The NIST "true" value torque is defined as "the torque calculated by taking the product of an NIST traceable weight or force and a sufficiently accurate horizontal lever arm distance, corrected for the hanging torque of the lever arm".		EPA	40 CFR 92.116(b)(1)
Traceability	Regulation specifies the requirement of calibration weights as "a minimum of six calibration weights for each range of torque measuring device used are required. The weights must be approximately equally spaced and each must be traceable to NIST weights within 0.1 percent. Laboratories located in foreign countries may certify calibration weights to local government bureau standards. Certification of weight by state government Bureau of Weights and Measures is acceptable. Effects of changes in gravitational constant at the test site may be accounted for if desired." This is used for dynamometer equipment calibration as part of the calibration of engine output measurement system for test procedures used in control of air pollution from locomotives and locomotive engines.		EPA	40 CFR 92.116(b)(1)(i)(A)
Traceability	States calibration requirements for a master load cell shall be precalibrated or calibrated with known weights traceable to NIST within 0.1 percent … This requirement is for equipment calibration as part of the calibration of engine output measurement system for test procedures used in control of air pollution from locomotives and locomotive engines.		EPA	40 CFR 92.116(b)(1)(ii)(A)

Traceability	This regulation requires that the calibration weights used to calibrate the master load cell and read out system for dynamometer equipment calibration as part of the calibration of engine output measurement system for test procedures used in control of air pollution from locomotives and locomotive engines must be traceable to within 0.1 percent of NIST weights. **(MANDATORY)**		EPA	40 CFR 92.116(c)(3)(i)
Traceability/calibration	This regulation requires that for calibration of gas meters or flow instruments used for particle measurement in test procedures used to control air pollution from locomotive and locomotive engines, the calibration device should be installed in series with the instrument. “A critical flow orifice, a bellmouth nozzle, or a laminar flow element or an NIST traceable flow calibration device is required as the standard device." **(MANDATORY)**		EPA	40 CFR 92.117(a)(1)(i)
Traceability to SRM	This regulation defines procedures for smoke meter testing and calibration used in test procedures for control of air pollution from locomotives and locomotive engines. The regulation specifies that "Calibrated neutral density filters having approximately 10, 20, and 40 percent opacity shall be employed to check the linearity of the instrument. The filter(s) shall be inserted in the light path perpendicular to the axis of the beam and adjacent to the opening from which the beam of light from the light source emanates, and the recorder response shall be noted. Filters with exposed filtering media should be checked for opacity every six months; all other filters shall be checked every year, using NIST or equivalent reference filters".		EPA	40 CFR 92.122(b)
Traceability to SRM	This regulation states that for calibrating exhaust emissions sample analyzers that will be used for readings below 15% full scale deflection, in order to ensure accuracy of the calibration curves the calibration procedure should involve amongst other steps selection of a" calibration gas (a span gas may be used for calibrating the CO2 analyzer) with a concentration between the two lowest non-zero gas divider increments. This gas must be “named” to an accuracy of ±1.0 percent (±2.0 percent for CO2 span gas) of NIST gas standards, or other standards approved by the Administrator." This is part of the procedure to ensure emissions measurement accuracy in test procedures used to control air pollution from locomotives and locomotive engines.		EPA	40 CFR 92.127(b)(1)(iii)
Traceability to SRM	This regulation defines the test procedures for category 3 marine engines as part of the test procedures for control of emissions from marine compression-ignition engines. The regulation states that "standards used for calibration shall be traceable to NIST standards. (Other national standards may be used if they have been shown to be equivalent to NIST standards.)".**(MANDATORY)**		EPA	40 CFR 94.109(a)(5)
Traceability	This regulation defines a stock solution as "a solution containing an analyte that is prepared using a reference material traceable to EPA, the National Institute of Science and Technology (NIST), or a source that will attest to the purity and authenticity of the reference material" in the glossary of definitions and purposes under the guidelines establishing test procedures for analysis of pollutants, with particular reference to "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater".		EPA	40 CFR 136 App. A (25)

Appendix 5

NBS testing labs	This section of the subchapter requires that all tests pertaining to deck coverings have to be conducted at the NBS or other laboratories designated by the Coast Guard for purposes of inspection and testing of deck coverings for merchant vessels.		DHS/USCG	46 CFR 164.006-4(a)
NBS testing labs	Reference is made to the NBS labs as the site of testing materials to be approved for use as deck covering in merchant vessels.		DHS/USCG	46 CFR 164.006-5(d)
NBS testing labs	This reference states that all tests and retests pertaining to structural insulations have to be conducted at the NBS or other laboratories designated by the Coast Guard.		DHS/USCG	46 CFR 164.007-4(a)
NBS testing labs	Reference is made to the Fire Research Section of NBS as the site of testing materials to be approved for use as structural insulations.		DHS/USCG	46 CFR 164.007-9(c)
NBS testing labs	Reference is made to the NBS or other labs designated by the Coast Guard as the site for all tests and retests for bulkhead panels.		DHS/USCG	46 CFR 164.008-3(a)
NBS testing labs	Procedures for testing of materials as bulkhead panels at the Fire Research Section of NBS, and related administrative procedures are defined.		DHS/USCG	46 CFR 164.008-7(c)and(d)
NBS time standards	The FCC stipulates that "The primary standard of frequency for radio frequency measurements is the standard frequency maintained by the National Bureau of Standards or the standard signals of Stations WWV, WWVB, and WWVH of the National Bureau of Standards".		FCC	47 CFR 73.1540
Calibration	The NBS is stated as the source of calibration services for DoE acquisition officers or its authorized contractors.		DOE	48 CFR 908.7113

Appendix 6
SRM References to NIST and NBS in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
NBS Material No. 577	Specifies spectrophotometric measurements as "All measurements are made in an ultraviolet spectrophotometer in optical cells of 5 centimeters in length, and in the range of 255 millimicrons to 310 millimicrons, under the same instrumental conditions. The standard reference absorbance is the absorbance at 275 millimicrons of a standard reference solution of naphthalene (National Bureau of Standards Material No. 577 or equivalent in purity) containing a concentration of 1.4 milligrams per liter in purified isooctane, measured against isooctane of the same spectral purity in 5-centimeter cells. (This absorbance will be approximately 0.30.)" as a test for compliance that food additive combustion product gas may be safely used in the processing and packaging of the foods for the purpose of removing and displacing oxygen.		HHS/FDA	21 CFR 173.350(e)
SRM 2670	Refers to SRM 2670 as a source of reference materials that maybe available for use in QC/QA analyses of Cadmium in Urine under the Occupational Safety and Health Standards for Hazardous and Toxic Materials. The reference reads "National Institute of Standards and Technology (NIST), Dept. of Commerce, Gaithersburg, MD; tel: (301) 975–6776. (Prepared as SRM 2670 freeze-dried urine [metals]; set includes normal and elevated levels of metals; cadmium is certified for elevated level of 88.0 µg/l in reconstituted urine.)".		DOL/OSHA	29 CFR 1910.1027 3.3.1.1
SRM 1582	NIST SRM 1582 petroleum crude oil is stated as the Standard crude oil for Reverse Phase Extraction (RPE) Method for Detection of Oil Contamination in Non-Aqueous Drilling Fluids (NAF), under the regulations in the oil and gas extraction point source category.		EPA	40 CFR 435 Appendix 6; 7.3
SRM	Definitions -defines "traceable" as a local standard has been compared and certified either directly or via not more than one intermediate standard, to a primary standard such as a National Bureau of Standards Standard Reference Material (NBS SRM), or a USEPA/NBS-approved Certified Reference Material (CRM) - and hence references NBS SRMs.		EPA	40 CFR 50.1

NBS SRM 1625	In the dynamic calibration procedures used as part of the Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method), under the National Primary and Secondary Ambient Air Quality Standards, "Atmospheres containing accurately known concentrations of sulfur dioxide are prepared using permeation devices. In the systems for generating these atmospheres, the permeation device emits gaseous SO2 at a known, low, constant rate, provided the temperature of the device is held constant (±0.1 °C) and the device has been accurately calibrated at the temperature of use. The SO2 permeating from the device is carried by a low flow of dry carrier gas to a mixing chamber where it is diluted with SO2-free air to the desired concentration and supplied to a vented manifold." Further, "Permeation devices" as described above "may be prepared or purchased and in both cases must be traceable either to a National Bureau of Standards (NBS) Standard Reference Material (SRM 1625, SRM 1626, SRM 1627) or to an NBS/EPA-approved commercially available Certified Reference Material (CRM)."		EPA	40 CFR 50 Appendix A 10.3
NBS SRM 1626	In the dynamic calibration procedures used as part of the Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method), under the National Primary and Secondary Ambient Air Quality Standards, "Atmospheres containing accurately known concentrations of sulfur dioxide are prepared using permeation devices. In the systems for generating these atmospheres, the permeation device emits gaseous SO2 at a known, low, constant rate, provided the temperature of the device is held constant (±0.1 °C) and the device has been accurately calibrated at the temperature of use. The SO2 permeating from the device is carried by a low flow of dry carrier gas to a mixing chamber where it is diluted with SO2-free air to the desired concentration and supplied to a vented manifold." Further, "Permeation devices" as described above "may be prepared or purchased and in both cases must be traceable either to a National Bureau of Standards (NBS) Standard Reference Material (SRM 1625, SRM 1626, SRM 1627) or to an NBS/EPA-approved commercially available Certified Reference Material (CRM)."		EPA	40 CFR 50 Appendix A 10.3

NBS SRM 1627	In the dynamic calibration procedures used as part of the Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method), under the National Primary and Secondary Ambient Air Quality Standards, "Atmospheres containing accurately known concentrations of sulfur dioxide are prepared using permeation devices. In the systems for generating these atmospheres, the permeation device emits gaseous SO2 at a known, low, constant rate, provided the temperature of the device is held constant (±0.1 °C) and the device has been accurately calibrated at the temperature of use. The SO2 permeating from the device is carried by a low flow of dry carrier gas to a mixing chamber where it is diluted with SO2-free air to the desired concentration and supplied to a vented manifold." Further, "Permeation devices" as described above "may be prepared or purchased and in both cases must be traceable either to a National Bureau of Standards (NBS) Standard Reference Material (SRM 1625, SRM 1626, SRM 1627) or to an NBS/EPA-approved commercially available Certified Reference Material (CRM)."		EPA	40 CFR 50 Appendix A 10.3
NBS SRM 1629	In stating the Measurement Principle and Calibration Procedure for the Measurement of Nitrogen Dioxide in the Atmosphere (Gas Phase Chemiluminescence), under the National Primary and Secondary Ambient Air Quality Standards, for calibration using gas phase titration of an NO standard with ozone, the NO concentration standard should be a "Gas cylinder standard containing 50 to 100 ppm NO in N2 with less than 1 ppm NO2". Further, "This standard must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), an NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM) ". Similarly, for calibration using NO2 permeation devices "Calibration standards are required for both NO and NO2. The reference standard for the calibration may be either an NO or NO2 standard, and must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), and NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM)".		EPA	40 CFR 50 Appendix F 1.3.1, 2.3.1

NBS SRM 1683	In stating the Measurement Principle and Calibration Procedure for the Measurement of Nitrogen Dioxide in the Atmosphere (Gas Phase Chemiluminescence), under the National Primary and Secondary Ambient Air Quality Standards, for calibration using gas phase titration of an NO standard with ozone, the NO concentration standard should be a "Gas cylinder standard containing 50 to 100 ppm NO in N2 with less than 1 ppm NO2". Further, "This standard must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), an NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM) ". Similarly, for calibration using NO2 permeation devices "Calibration standards are required for both NO and NO2. The reference standard for the calibration may be either an NO or NO2 standard, and must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), and NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM)".		EPA	40 CFR 50 Appendix F 1.3.1, 2.3.1
NBS SRM 1684	In stating the Measurement Principle and Calibration Procedure for the Measurement of Nitrogen Dioxide in the Atmosphere (Gas Phase Chemiluminescence), under the National Primary and Secondary Ambient Air Quality Standards, for calibration using gas phase titration of an NO standard with ozone, the NO concentration standard should be a "Gas cylinder standard containing 50 to 100 ppm NO in N2 with less than 1 ppm NO2". Further, "This standard must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), an NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM) ". Similarly, for calibration using NO2 permeation devices "Calibration standards are required for both NO and NO2. The reference standard for the calibration may be either an NO or NO2 standard, and must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), and NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM)".		EPA	40 CFR 50 Appendix F 1.3.1, 2.3.1

NBS standards	Requires the use of "NBS-certified standards whenever possible", for verifying the concentrations of generated test atmospheres, (in particular Carbon dioxide, methane, xylene) as part of the Procedures for Testing Performance Characteristics of Automated Methods SO2, CO, O3, and NO2, under testing for ambient air monitoring reference and equivalent methods. The regulations further state that "if NBS standards are not available, obtain 2 standards from independent sources which agree to within 2 percent; or obtain one standard and submit it to an independent laboratory for analysis which must agree within 2 percent of the supplier's nominal analysis". Carbon dioxide, methane, xylene		EPA	40 CFR 53.22
SRM	States that "working and transfer standards and equipment used for auditing must be different from the standards and equipment used for calibration and spanning. The auditing standards and calibration standards may be referenced to the same NIST, SRM, CRM, or primary UV photometer" as part of the procedure to determine accuracy of automated methods under the data quality assessment requirements for Prevention of Significant Deterioration (PSD) Air Monitoring for Ambient Air Quality Surveillance.		EPA	40 CFR 58; Appendix B 3.2
SRM	Requires "the use of cylinder gases that have been certified by comparison to National Institute of Standards and Technology (NIST) gaseous standard reference material (SRM) or NIST/EPA approved gas manufacturer's certified reference material (CRM) following EPA Traceability Protocol Number 1", as part of the specification for evaluating the acceptability of SO2 and NOX continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in the regulations. This is stated as part of the Specifications and Test Procedures for SO2 and NOX Continuous Emission Monitoring Systems in Stationary Sources.		EPA	40CFR 60 AppendixB 2.16.2.4
SRM 930D	States that an attenuator used to check the daily calibration drift and calibration error of a COMS can be designated as a primary if calibrated on a 6-month frequency through the assignment of a luminous transmittance value where the spectrophotometer calibration has been verified through use of a NIST 930D Standard Reference Material (SRM). This is stated as part of the performance specifications for Standards of Performance for New Stationary Sources.		EPA	40CFR 60 AppendixB 1.7.1(2)(i)

SRM	Defines Standard reference material or SRM as "a calibration gas mixture issued and certified by NIST as having specific known chemical or physical property values."		EPA	40 CFR 72.2
SRM	Defines Standard reference material-equivalent compressed gas primary reference material (SRM-equivalent PRM) as "those gas mixtures listed in a declaration of equivalence in accordance with section 2.1.2 of the "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards," September 1997, EPA–600/R–97/121."		EPA	40 CFR 72.2
SRM	Reference is made to NIST SRMs as a source of calibration gases as part of the specifications and test procedures for continuous emissions monitoring		EPA	40 CFR 75, Appendix A 5.1.2
Reference Material	Reference is made to a NIST OU as a source of list of vendors and cylinder gases for SRM-Equivalent Compressed Gas Primary Reference Material (PRM) as part of the specifications and test procedures for continuous emissions monitoring		EPA	40 CFR 75, Appendix A 5.1.1
SRM/RM	Reference is made to analysis of NBS SRM 1876 and RM 8410 as a measure of accuracy and comparability. This analysis has to be conducted at least once per analyst per year as a quality control/quality assurance procedure to be performed along with the sample analysis as indicators that the materials used are adequate and the operations are within acceptable limits. This is part of the requirements listed under "Interim Transmission Electron Microscopy Analytical Methods—Mandatory and Nonmandatory—and Mandatory Section to Determine Completion of Response Actions" as a mandatory Transmission Electron Microscopy method for asbestos related analyses.**(MANDATORY)**		EPA	40 CFR 763 (II.)(I) Table III.
SRM/RM	Reference is made to analysis of NBS SRM 1876 and RM 8411 as a measure of accuracy and comparability. This analysis has to be conducted at least once per analyst per year as a quality control/quality assurance procedure to be performed along with the sample analysis as indicators that the materials used are adequate and the operations are within acceptable limits. This is part of the requirements listed under "Interim Transmission Electron Microscopy Analytical Methods—Mandatory and Nonmandatory—and Mandatory Section to Determine Completion of Response Actions" as a non-mandatory Transmission Electron Microscopy method for asbestos related analyses.		EPA	40 CFR 763 (III.)(K) Table III.

JCPDS-ICDD	Reference is made to the standard reference powder diffraction patterns contained in "JCPDS-International Center for Diffraction Data Powder Diffraction File, U.S. Department of Commerce, National Bureau of Standards, and Joint Committee on Powder Diffraction Studies, Swarthmore, PA", against which all samples that exhibit diffraction peaks in the diagnostic regions for asbestiform minerals are submitted to a full (5°–60° 2Θ; 1° 2Θ/min) qualitative XRD scan, and their diffraction patterns are compared to verify initial peak assignments and to identify possible matrix interferences when subsequent quantitative analysis will be performed. This is required when X-ray powder diffraction is used as an interim method for determination of asbestos in bulk insulation samples for testing of asbestos containing materials in schools.		EPA	40 CFR 763 Appendix E 2.10 Ref. 3
NBS Lead-in-fuel reference standard	It is required that "quality control standards, such as NBS standard reference materials, should be analyzed at least once every testing session" when testing of lead in gasoline by X-ray spectrometry **(MANDATORY)**.		EPA	40 CFR 80 - Appendix B (Subpart J); Method 3, 7.4
SRM	Gas specifications: States that calibration gases used in Gaseous Exhaust Test Procedures for Emission Regulations for New (model years 1979 and later) Gasoline-Fueled and Diesel-Fueled Heavy-Duty Engines are to have "calibration gas values derived from NBS "Standard Reference Materials" (SRMs) or other gas standards approved by the Administrator. The uncertainty of the assigned calibration gas values shall not exceed 2.0 percent of the assigned value. The uncertainty is defined as the sum of the precision errors (at the 90 percent confidence level) and the bias errors. Precision and bias errors apply to both the equipment and the derivation procedures."		EPA	40 CFR 86.308-79 (b)

SRM	Gas specifications: States that span gases used in Gaseous Exhaust Test Procedures for Emission Regulations for New (model years 1979 and later) Gasoline-Fueled and Diesel-Fueled Heavy-Duty Engines are to have "Span gas values derived from NBS “Standard Reference Materials” (SRMs) or other gas standards approved by the Administrator. The uncertainty of the assigned calibration gas values shall not exceed 3.0 percent of the assigned value. The uncertainty is defined as the sum of the precision errors (at the 90 percent confidence level) and the bias errors. Precision and bias errors apply to both the equipment and the derivation procedures".		EPA	40 CFR 86.308-79(c)
SRM	Requires that "calibration gas values are to be derived from NIST “Standard Reference Materials” (SRMs) and are to be single blends as specified.." This requirement for analytical gases is included in the emission test equipment provisions for control of emissions from nonroad spark-ignition engines at or below 19kW.		EPA	40 CFR 90.312(c)(1)
SRM	This regulation states that "the true concentration of a span gas must be within ± two percent of the NIST gas standard. The true concentration of a calibration gas must be within ± one percent of the NIST gas standard". This requirement for analytical gases is included in the emission test equipment provisions for control of emissions from nonraod spark-ignition engines at or below 19kW.		EPA	40 CFR 90.312(c)(3)
SRM	Specifies requirements for calibration gases, as part of emission test equipment provisions for control of emissions from nonroad spark-ignition engines at or below 19 kW. Requires the selection of "a calibration gas (a span gas may be used for calibrating the CO2 analyzer) with a concentration between the two lowest non-zero gas divider increments. This gas must be “named” to an accuracy of ± one percent of NIST gas standards or other standards approved by the Administrator".		EPA	40 CFR 90.314(c)
SRM	This regulation states that for calibration gases used in emission test equipment for control of emissions from marine spark-ignition engines, the "calibration gas values are to be derived from NIST “Standard Reference Materials” (SRMs) or other local gas standards and are to be single blends as specified...".		EPA	40 CFR 91.312(c)(1)

SRM	This regulation states that for calibration gases used in emission test equipment for control of emissions from marine spark-ignition engines that "the true concentration of a span gas must be within ± 2 percent of the NIST gas standard. The true concentration of a calibration gas must be within ± 1 percent of the NIST gas standard" **(MANDATORY)**.		EPA	40 CFR 91.312(c)(3)
NBS 378	Requires that oil furnace black (NBS 378) used in the formulation of rubber compound standard styrene butadiene rubber (SBR) brake cups, should have properties identical with those supplied by the NBS *DOES NOT STATE WHAT KIND OF NBS PRODUCT (e.g., SRM, RM, etc?)*		DOT/NHTSA	49 CFR 571.116 S7.6
NBS 370	Requires that zinc oxide (NBS 370)used in the formulation of rubber compound standard styrene butadiene rubber (SBR) brake cups, should have properties identical with those supplied by the NBS *DOES NOT STATE WHAT KIND OF NBS PRODUCT (e.g., SRM, RM, etc?)*		DOT/NHTSA	49 CFR 571.116 S7.6
NBS 371	Requires that sulfur (NBS 371)used in the formulation of rubber compound standard styrene butadiene rubber (SBR) brake cups, should have properties identical with those supplied by the NBS *DOES NOT STATE WHAT KIND OF NBS PRODUCT (e.g., SRM, RM, etc?)*		DOT/NHTSA	49 CFR 571.116 S7.6
NBS 372	Requires that stearic acid (NBS 372) used in the formulation of rubber compound standard styrene butadiene rubber (SBR) brake cups, should have properties identical with those supplied by the NBS *DOES NOT STATE WHAT KIND OF NBS PRODUCT (e.g., SRM, RM, etc?)*		DOT/NHTSA	49 CFR 571.116 S7.6
NBS 384	Requires that n-tertiary butyl-2-benzothiazole sulfenamide (NBS 384)used in the formulation of rubber compound standard styrene butadiene rubber (SBR) brake cups, should have properties identical with those supplied by the NBS *DOES NOT STATE WHAT KIND OF NBS PRODUCT (e.g., SRM, RM, etc?)*		DOT/NHTSA	49 CFR 571.116 S7.6

Appendix 7
References to NIST and NBS Special Publications in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
SP 500-172	Reference is made to NIST SP 500-172 "Computer Security Training Guidelines" as a source of information for providing training for employees responsible for the management or use of computer systems that process sensitive information.		OPM	5 CFR 930.302
SP 250	This regulation states that "NIST Special Publication 250, "Calibration and Related Measurement Services of the National Institute of Standards & Technology" is hereby **incorporated by reference**, pursuant to 5 U.S.C. 552(a)(1) and 1 CFR Part 51. SP 250 states the authority under which NIST performs various types of measurement services including calibrations and tests and charges fees therefore, states the general conditions under which the public may secure such services, describes these services in considerable detail, and lists the fees to be charged, and sets out the instructions for requesting them in an appendix which is reviewed, revised and reissued semi-annually (December and June). The Director, Office of the Federal Register, approved the **incorporation by reference** on December 28, 1967."	NDG	DOC/NIST	15 CFR 200.115(a)
SP 260	This regulation provides a description of NIST Special Publication 260, "Catalog of NIST Standard Reference Materials," and specifies that SP260 and its supplements are **incorporated by reference** pursuant to 5 U.S.C. 552(a)(1) and 1 CFR Part 51	NDG	DOC/NIST	15 CFR 230.7(a)
NBS Special Pub	Ross, M. *The Asbestos Minerals: Definitions, Description, Modes of Formation, Physical and Chemical Properties and Health Risk to the Mining Community,* Nation Bureau of Standards Special Publication, Washington, DC, 1977, is referred to in the description of the method performance of the Polarized Light Microscopy of Asbestos (Non-Mandatory) under the safety and health regulations for construction.	1977	DOL/OSHA	29 CFR 1926.1101 Appendix K 5.9
NBS SP 442	NBS SP 442 "Giam, C.S., and Chan, H.S. "Control of Blanks in the Analysis of Phthalates in Air and Ocean Biota Samples," U.S. National Bureau of Standards, Special Publication 442, pp. 701–708, 1976" is referred to in specifying Method 606 which is applicable for determination of certain phthalate esters as one of the Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater	1976	EPA	40 CFR 136 Appendix A Method 606

NBS SP 442	NBS SP 442 "Giam, C.S., and Chan, H.S. “Control of Blanks in the Analysis of Phthalates in Air and Ocean Biota Samples,” U.S. National Bureau of Standards, Special Publication 442, pp. 701–708, 1976" is referred to in specifying Method 608 which is applicable for determination of certain organochlorines and PCBs as one of the Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater	1976	EPA	40 CFR 136 Appendix A Method 608
NBS SP 506	Reference is made to "J. B. Krause and W. H. Ashton, Misidentification of asbestos in talc, pp. 339–353, in: Proceedings of Workshop on Asbestos: Definitions and Measurement Methods (NBS Special Publication 506), C. C. Gravatt, P. D. LaFleur, and K. F. Heinrich (eds.), Washington, DC: National Measurement Laboratory, National Bureau of Standards, 1977 (issued 1978)" to elucidate possible reasons for interferences in XRD analyses of asbestiform materials, and related specimen preparation. This is in the context of X-ray powder diffraction being used as an interim method for determination of asbestos in bulk insulation samples for testing of asbestos containing materials in schools.	1978	EPA	40 CFR 763 Appendix E 2.10 Ref. 11
NBS SP 506	Reference is made to "H. D. Stanley, The detection and identification of asbestos and asbesti-form minerals in talc, pp. 325–337, in Proceedings of Workshop on Asbestos: Definitions and Measurement Methods (NBS Special Publication 506), C. C. Gravatt, P. D. LaFleur, and K. F. Heinrich (eds.), Washington, DC, National Measurement Laboratory, National Bureau of Standards, 1977 (issued 1978)" in explaining the difficulties associated with definitive identification of the asbestos minerals by comparison with standard reference diffraction patterns due to alterations in the crystal lattice associated with differences in isomorphous substitution and degree of crystallinity, particularly for the amphiboles. This is in the context of X-ray powder diffraction being used as an interim method for determination of asbestos in bulk insulation samples for testing of asbestos containing materials in schools.	1978	EPA	42 CFR 763 Appendix E 2.10 Ref. 12

NBS SP 506	Reference is made to "J. C. Haartz, B. A. Lange, R. G. Draftz, and R. F. Scholl, Selection and characterization of fibrous and nonfibrous amphiboles for analytical methods development, pp. 295–312, in: Proceedings of Workshop on Asbestos: Definitions and Measurement Methods (NBS Special Publication 506), C. C. Gravatt, P. D. LaFleur, and K. F. Heinrich (eds.), Washington, DC: National Measurement Laboratory, National Bureau of Standards, 1977 (issued 1978)" to underscore the problem of obtaining and characterizing suitable reference materials for asbestos analysis. Though such analytical reference materials maybe available, it is believed that they are not available in large quantities for routine analyses. This is in the context of X-ray powder diffraction being used as an interim method for determination of asbestos in bulk insulation samples for testing of asbestos containing materials in schools.	1978	EPA	43 CFR 763 Appendix E 2.10 Ref. 17
NBS SP 440	This subpart **incorporates by reference** "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440 for specifications pertaining to Buoyant Apparatus for Merchant Vessels to be used as life saving equipment	1976	DHS/USCG	46 CFR 160.010-1
NBS SP 440	This subpart **incorporates by reference** "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440 for specifications pertaining to Hand Red Flare Distress Signals to be used as life saving equipment.	1976	DHS/USCG	46 CFR 160.021-1
NBS SP440	Reference is made to NBS publication "Color Names Dictionary" to define the colors in tests for chromaticity of Hand Red Flare Distress Signals to be used as life saving equipment.	1976	DHS/USCG	46CFR 160.021-4(d)(7)
NBS SP 440	This subpart **incorporates by reference** "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, December 1976, for specifications pertaining to Floating Orange Smoke Distress Signals (5 Minutes) to be used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.022-1
NBS SP 440	Reference is made to NBS publication "Color Names Dictionary" (colors 34–39 and 48–54) to define the specifications for orange color of smoke for Floating Orange Smoke Distress Signals (5 Minutes) to be used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.022-4 (d)(7)
NBS SP 440	This subpart **incorporates by reference** "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, Dictionary 1976, for specifications pertaining to Pistol-Projected Parachute Red Flare Distress Signals to be used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.024-1

NBS SP440	Reference is made to NBS publication "Color Names Dictionary" to define the colors in tests for chromaticity of Pistol–Projected Parachute Red Flare Distress Signals to be used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.024-4(d)(4)
NBS SP 440	This subpart **incorporates by reference** "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, December 1976, for specifications pertaining to Hand-Held Rocket-Propelled Parachute Red Flare Distress Signals to be used as life saving equipment.	1976	DHS/USCG	
NBS SP 440	This subpart **incorporates by reference** "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, December 1976, for specifications pertaining to Hand Orange Smoke Distress Signals to be used as life saving equipment.	1976	DHS/USCG	46 CFR 160.037-1
NBS SP 440	This subpart **incorporates by reference** "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, December 1976 for specifications pertaining to Floating Orange Smoke Distress Signal (15 minutes) in use as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.057-1(a)(1)
NBS SP 440	Reference is made to NBS publication "Color Names Dictionary" (colors 34–39 and 48–54) to define the specifications for orange color of smoke for Floating Orange Smoke Distress Signals (15 Minutes) to be used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.057-4(d)(8)
NBS SP 440	This subpart **incorporates by reference**, "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, for specifications pertaining to Hybrid Inflatable Personal Flotation Devices in use as life saving equipment.	1976	DHS/USCG	46 CFR 160.077-5
NBS SP 440	This subpart **incorporates by reference** NBS Special Publication 440 Color: Universal Language and Dictionary of Names, 1976, for specifications pertaining to Inflatable Liferafts (SOLAS) in use as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.151-5
NBS SP 440	This regulation refers to NBS SP 440, to define the color of the canopy required for inflatable liferafts (SOLAS) in use as lifesaving equipment. The particular color referred to is color 34 in SP 440	1976	DHS/USCG	46 CFR 160.151-15(e)
NBS SP 440	NBS SP 440 is referred to by the statement that "The primary color of the appendages must be vivid reddish orange (color number 34 of NBS Special Publication 440), or a fluorescent color of a similar hue" to define the requirements that appendages on inflatable liferafts (SOLAS) should meet to resist capsizing from winds and waves.	1976	DHS/USCG	46 CFR 160.151-17(a)(2)(vii)

NBS SP 440	This subpart **incorporates by reference** National Bureau of Standards Special Publication 440—Color, Universal Language and Dictionary of Names; December 1976, as part of the definition of specification for immersion suits in use as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.171-3
NBS SP 440	This subchapter refers to NBS SP 440 to specify the requirements for the primary color of the exterior surface of each thermal protective aid (vivid reddish orange, color number 34 of National Bureau of Standards Publication 440). This forms part of the requirements for immersion suits used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.171-9(h)
NBS SP 440	This subpart **incorporates by reference** National Bureau of Standards Special Publication 440—Color, Universal Language and Dictionary of Names, for specifications pertaining to thermal protective aids used as lifesaving equipment.		DHS/USCG	46 CFR 160.174-3(f)
NBS SP 440	This subchapter refers to NBS SP 440 to specify the requirements for the primary color of the exterior surface of each thermal protective aid (vivid reddish orange, color number 34 of National Bureau of Standards Publication 440). This forms part of the requirements for thermal protective aids used as lifesaving equipment.		DHS/USCG	46 CFR 160.174-9(h)
NBS SP 440	This subpart **incorporates by reference** Special Pub. 440, Color: Universal Language and Dictionary of Names; “The Universal Color Language” and “The Color Names Dictionary”, 1976—160.176–9, for specifications pertaining to inflatable lifejackets in use as lifesaving equipment.		DHS/USCG	46 CFR 160.176-4
NBS SP 440	Reference is made to NBS SP 440 to define the amongst the general features of inflatable lifejackets, the color on the external surfaces as being "primarily vivid reddish orange as defined by sections 13 and 14 of the “Color Names Dictionary.."	1976	DHS/USCG	46 CFR 160.176-9(a)(10)
NBS SP 440	This part **incorporates by reference** NBS Special Pub. 440 “Color: Universal Language and Dictionary of Names”, 1976	1976	DHS/USCG	46 CFR 169.115(c)(2)

Appendix 8
References to NIST and NBS Publications (assorted) in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
NIST 85-3273	Reference is made to NIST Publication (NIST IR 85-3273) "Life Cycle Costing Manual for Federal Energy Management Program" in stating the methodological assumptions for "estimating and comparing the life cycle costs of Federal buildings, for determining the life cycle cost effectiveness of energy conservation measures and water conservation measures, and for rank ordering life cycle cost effective measures in order to design a new Federal building or to retrofit an existing Federal building."		DOE/ Energy Conservation	10 CFR 436.14(a)
NIST test procedures on engine oil - penalties	Prohibited acts - A manufacturer or other seller may represent, on a label on a container of processed used oil, that such oil is substantially equivalent to new oil for use as engine oil only if the manufacturer has determined that the oil is substantially equivalent to new oil for use as engine oil in **accordance with the NIST test procedures** prescribed under §311.4 of this part, and has based the representation on that determination**(MANDATORY)**	1996	FTC	16 CFR 311.6
NBSIR 84-7833	Regulation refers to guidelines in NBSIR 84-2833 "Data requirements for the Seismic Review of LNG facilities" to produce the required report on earthquake hazards and engineering, "if the LNG import/export facility is to be located at a site in zones 2, 3, or 4 of the Uniform Building Code's Seismic Risk Map of the United States, or where there is a risk of surface faulting or ground liquefaction" in filing Applications for Authorization to Construct, Operate or Modify Facilities Used for the Export or Import of Natural Gas".**(MANDATORY)**		FERC	18 CFR 153.8(a)(6)
NBS DOC FF1-70	Standard test method for Flammability of Finished Textile Floor Covering Materials - also available as ASTM D2859–76, **incorporated by reference** -NBS standard has been stated under "Supplementary specific procedural requirements under HUD building product standards and certification program for carpet and carpet with attached cushion". (mandatory)	1970	HUD	24 CFR 200.942

Reference publications	"Appendix B to §1910.145(f)—References for Further Information The following references provide information which can be helpful in understanding the requirements contained in various sections of the standard: …..3. Glass, R.A. and others, Some Criteria for Colors and Signs in Workplaces, National Bureau of Standards, Washington DC, 1983…..5. Howett, G.L., Size of Letters Required for Visibility as a Function of Viewing Distance and Observer Acuity, National Bureau of Standards, Washington DC, July 1983…..6. Lerner, N.D. and Collins, B.L., The Assessment of Safety Symbol Understandability by Different Testing Methods, National Bureau of Standards, Washington DC, 1980…..7. Lerner, N.D. and Collins, B.L., Workplace Safety Symbols, National Bureau of Standards, Washington DC, 1980…..12. Symbols for Industrial Safety, National Bureau of Standards, Washington DC, April 1982."	1980-1983	DOL/OSHA	29CFR 1910.145
Publication on fire alarms and communication systems	I. Appendix general references. The following references provide information which can be helpful in understanding the requirements contained in all of the sections of subpart L: J. Employee alarm systems: … 8. Fire Alarm and Communication Systems. National Bureau of Standards. Washington, D.C., April 1978.	1978	DOL/OSHA	29 CFR 1910.165 Appendix C to Subpart L
NBS Report BSS-121	Reference is made to NBS Report BSS-121 as a source of definitions, in part, related to classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. This relates to regulations under the safety and health regulations for construction.		DOL/OSHA	29 CFR 1926 Appendix A(b)
NBS report on shoring and sloping of trenches and excavations	Reference is made to National Bureau of Standards (NBS) report, “Recommended Technical Provisions for Construction Practice in Shoring and Sloping of Trenches and Excavations” for defining the dimensions of timber members in the section on the basis and limitations of data that can be used in timber shoring as a method of preventing cave-ins in trenches that do not exceed 20ft. in depth. This part is under the safety and health regulations for construction.		DOL/OSHA	29 CFR 1926 Appendix C (d)(1)(i)

NBS Journal of Research 86:361-366	States that the TSCA (Toxic Substances Control Act) partition coefficient (n-octanol/water), generator column test method is based on the DCCLC technique for determining the aqueous solubility of organic compounds referred to in the NBS publication "DeVoe, H. et al. "Generator Columns and High Pressure Liquid Chromatography for Determining Aqueous Solubilities and Octanol-Water Partition Coefficients of Hydrophobic Substances," Journal of Research of the National Bureau of Standards, 86:361–366 (1981)" . This regulation states that product property test guidelines for identification of specific chemical substance and mixture testing requirements.	1981	EPA	40 CFR 799.6756(b)(3)
NBS Journal of Research 86:361-366	Refers to NBS publication "DeVoe, H. et al. "Generator Columns and High Pressure Liquid Chromatography for Determining Aqueous Solubilities and Octanol-Water Partition Coefficients of Hydrophobic Substances," Journal of Research of the National Bureau of Standards, 86:361–366 (1981)" to state how an accurate measurement of the sample loop may be accomplished by using a spectrophotometric method as part of the product property test guidelines for identification of specific chemical substance and mixture testing requirements in response to the TSCA.	1981	EPA	40 CFR 799.6756(c)(3)(iii)(C)(1)
NBS Journal of Research 86:361-366	Refers to NBS publication "DeVoe, H. et al., Generator columns and high pressure liquid chromatography for determining aqueous solubilities and octanol-water partition coefficients of hydrophobic substances. Journal of Research, National Bureau of Standards, 86:361–366 (1981)" to state how accurate measurements of a sample loop can be accomplished when using spectrophotometric methods. The same publication is also referred to define the principle of the test method based on the dynamic coupled column liquid chromatographic (DCCLC) technique for determining the aqueous solubility of organic compounds". These references are in support of tests intended to meet the testing requirements of the Toxic Substances Control Act (TSCA), as part of the testing requirements for identification of specific chemical substances and mixtures.	1981	EPA	40 CFR 799.6786(e)(1)

Appendix 8

NBS IR 81-2406	Reference is made to the NBS publication, "Wasik, S.P. et al., Octanol/Water Partition Coefficient and Aqueous Solubilities of Organic Compounds. NBS Report NBSIR 81–2406. Washington, DC: National Bureau of Standards, U.S. Department of Commerce (1981)". This publication is referred to define the "principle of the test method based on the dynamic coupled column liquid chromatographic (DCCLC) technique for determining the aqueous solubility of organic compounds". Also, this reference has been used to obtain data for water solubilities at 25 °C for a number of reference chemicals and stated as part of this regulation. These references are in support of tests intended to meet the testing requirements of the Toxic Substances Control Act (TSCA), as part of the testing requirements for identification of specific chemical substances and mixtures.		EPA	40 CFR 799.6786(e)(11)
NBSIR 81-2406	States that the TSCA (Toxic Substances Control Act) partition coefficient (n-octanol/water), generator column test method is based on the DCCLC technique for determining the aqueous solubility of organic compounds referred to in the NBS publication "Wasik, S.P. et al. Octanol/water partition coefficient and aqueous solubilities of organic compounds, Report NBSIR 81–2406 (1981) National Bureau of Standards, U.S. Department of Commerce, Washington, DC" . This regulation states that product property test guidelines for identification of specific chemical substance and mixture testing requirements in response to the TSCA.	1981	EPA	40 CFR 799.6756(b)(3)
NBSIR 81-2406	Refers to the NBS publication "Wasik, S.P. et al. Octanol/water partition coefficient and aqueous solubilities of organic compounds, Report NBSIR 81–2406 (1981) National Bureau of Standards, U.S. Department of Commerce, Washington, DC" as the source of information on n-Octanol/Water Partition Coefficient at 25 °C for some reference compounds so that the generator column method can be calibrated, and to allow the chemical laboratory the opportunity to compare its results with these values. This regulation states that product property test guidelines for identification of specific chemical substance and mixture testing requirements.	1981	EPA	40 CFR 799.6756(b)(4)(ii)
NBS publication	Humidity Calculations - defines the saturation vapor pressure (PWB) of water at the wet-bulb temperature using equation in an NBS publication. (ed. Note: No information on what publication, except to state editors of publication as Wexler, (A.), and Greenspan, (L.)) as part of Gaseous Exhaust Test Procedures use in Emission Regulations for New (in this case 1979 and later) Gasoline-Fueled and Diesel-Fueled Heavy-Duty Engines.		EPA	40 CFR 86.344-79(d)(1)

Appendix 8

NBS Report 4792	This subpart **incorporates by reference** "Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals," National Bureau of Standards Report 4792, July 1956, for specifications pertaining to Floating Orange Smoke Distress Signals (5 Minutes) to be used as lifesaving equipment.	1956	DHS/USCG	46 CFR 160.022-1
NBS Report 4792	Reference is made to National Bureau of Standards Report No. 4792 to define the apparatus to be used for determining the volume and density of smoke in testing of Floating Orange Smoke Distress Signals (5 Minutes) to be used as lifesaving equipment.	1956	DHS/USCG	46 CFR 160.022-4 (d)(8)
NBS Report 4792	This subpart **incorporates by reference** "Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals," National Bureau of Standards Report 4792, July 1956 for specifications pertaining to Hand Orange Smoke Distress Signals to be used as life saving equipment.	1956	DHS/USCG	46 CFR 160.037-1
NBS Report 4792	This subpart refers to equipment described in "Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals," National Bureau of Standards Report 4792, July 1956 for specifications pertaining to the volume and density of smoke for use in the technical test specifications for testing of Hand Orange Smoke Distress Signals to be used as life saving equipment.	1956	DHS/USCG	46 CFR 160.037-4
NBS Simplified Practice Recommendation R178-41	Reference is made to the publication National Bureau of Standards Simplified Practice Recommendation: No. R178–41, Packaging of First-aid Unit Dressings and Treatments, as a source of applicable specifications/publications for first-aid kits for merchant vessels.		DHS/USCG	46 CFR 160.041-1
NBS Simplified Practice Recommendation R178-41	Reference is made to the NBS Simplified Practice Recommendations (R178-41) for Packaging of First-aid Unit Dressings and Treatments, to define size of first-aid kits for merchant vessels to be used as life-saving equipment.		DHS/USCG	46 CFR 160.041-2
NBS Simplified Practice Recommendation R178-41	Reference is made to the NBS Simplified Practice Recommendations (R178-41) for Packaging of First-aid Unit Dressings and Treatments, to define the type of carton (standard commercial unit type) for first-aid kits for merchant vessels to be used as life-saving equipment.		DHS/USCG	46 CFR 160.041-4

NBS Report 4792	This subpart **incorporates by reference** "Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals," National Bureau of Standards Report 4792, July 1956, for specifications pertaining to Floating Orange Smoke Distress Signals (15 minutes) in use as lifesaving equipment.	1956	DHS/USCG	46 CFR 160.057-1
NBS Report 4792	Reference is made to National Bureau of Standards Report No. 4792 to define the apparatus to be used for determining the volume and density of smoke in testing of Floating Orange Smoke Distress Signals (15 Minutes) to be used as lifesaving equipment.	1956	DHS/USCG	46 CFR 160.057-4(d)(9)
NBS Building Materials and Structures Report 150	Reference is made to the NBS Building Materials and Structures Report 150 as a source of fire tests that may be used in addition to the usual fire tests to determine adequacy of a portable fire extinguisher to be listed and labeled as a "marine type" extinguisher as part of the requirements for engineering equipment.		DHS/USCG	46 CFR 162.028-3(m)
NBS Technical Note 101	In defining the Procedure for Calculating PCS Signal Levels at Microwave Receivers, the PCS to microwave path loss is calculated using a model derived from the NBS Tech. Note 101. This is applicable to cellular communication station design.	1967 (updated 1982 and 1985).	FCC	47 CFR 24 Appendix I to Subpart E
NBS Technical Note 101	The propagation model used in the procedure for calculating PCS signal levels at Microwave receivers is calculated using the Longley-Rice Propagation Model Version 1.2.2, which in turn is derived from the NBS Technical Note 101.	1967	FCC	47 CFR 24.253 Appendix I 4.
NBS Technical Note 101	This reference requires the prediction of Power Flux Density (PFD) based on a point-to-point propagation model by P.L. Rice, A.G. Longley, K.A. Norton, and A.P. Barsis, "Transmission loss predictions for troposphere communication circuits", National Bureau of Standards Technical Note 101, Volumes I and II. This relates to frequency assignment for the purpose of communication in the 821MHz to 824 MHz and 866 MHz to 869 MHz frequency bands along the US-Canada border.		FCC	47 CFR 90.619(c)(3)(i)

Appendix 9
References to Weights and Measures Handbooks (Handbooks 44, 105-1 and 133) in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
Handbook 44	Reference is made to NBS Handbook 44 for stating the requirements that weigh scales must comply with (**mandatory**): "Scales. All scales shall comply with National Bureau of Standards Handbook 44. (Latest revision)." The accuracy and graduation marking of scales is also defined (tables taken from the "currently effective 1973 revision)".		USDA/AMS	7 CFR 58.128(m)
Handbook 44	Reference is made to NIST Handbook 44 for defining the design requirements of moisture meters used in official grain moisture determination and certification. Handbook 44 (1991 edition) is **incorporated by reference** and this paragraph also identifies those sections in Handbook 44 not incorporated by reference.	1991	USDA/GIPSA	7 CFR 801.12
Handbook 44	References are made to various NIST Handbooks related to weights and measures, including Handbook 44, and certain sections are incorporated by reference. It is stated that "(a) The requirements set forth in this part 802 describe certain specifications, tolerances, and other technical requirements for grain weighing equipment and related grain handling systems used in performing Class X and Class Y weighing services, official inspection services, and commercial services under the Act. All scales used for official grain weight and inspection certification services provided by FGIS shall meet applicable requirements contained in the FGIS Weighing Handbook, the General Code, the Scales Code, the Automatic Bulk Weighing Systems Code, and the Weights Code of the 2002 edition of National Institute of Standards and Technology (NIST) Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices" (Handbook 44); and NIST Handbook 105–1 (1990 Edition), "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures," (Handbook 105–1). These requirements are confirmed to be met by having National Type Evaluation Program or Federal Grain Inspection Service type approval. Scales used for commercial purposes will be required to meet only the applicable requirements of the 2002 edition of the NIST Handbook 44. Pursuant to the provisions of 5 U.S.C. 552(a), with the exception of the Handbook 44 requirements listed in paragraph (b) of this section, the materials in Handbooks 44	1990	USDA/GIPSA	7 CFR 802.0(a)

	and 105–1 are **incorporated by reference** as they exist on the date of approval and a notice of any change in these materials will be published in the Federal Register."			
Handbook 44	Reference is made to NIST Handbook 44 to state that "All scales used by stockyard owners, market agencies, dealers, packers, and live poultry dealers to weigh livestock, livestock carcasses, live poultry, or feed for the purposes of purchase, sale, acquisition, payment, or settlement shall be installed, maintained, and operated to ensure accurate weights. Such scales shall meet applicable requirements contained in the General Code, Scale Code, and Weights Code of the 1996 edition of National Institute of Standards and Technology (NIST) Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices," which is hereby **incorporated by reference**."	1996	USDA/GIPSA	9 CFR 201.71(a)
Handbook 44	Scale requirements for accurate weights, repairs, adjustments, and replacement after inspection refer to NIST Handbook 44, and state that "All scales used to weigh meat products sold or otherwise distributed in commerce in federally inspected meat establishments shall be installed, maintained and operated to insure accurate weights. Such scales shall meet the applicable requirements contained in National Institute of Standards and Technology Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices", 1999 Edition, November 1998, which is incorporated by reference." **(MANDATORY), incorporated by reference**	1998	USDA/FSIS	9 CFR 317.20(a)

Handbook 44	As part of the regulations on labeling, marking devices and containers, this regulation refers to NIST Handbook 44 to ensure accuracy of the weighing scales and states that "No scale shall be used at a federally inspected establishment to weigh meat products unless it has been found upon test and inspection, as specified in NIST Handbook 44, to provide accurate weight. If a scale is re-inspected or retested and found to be inaccurate, or if any repairs, adjustments or replacements are made to a scale, it shall not be used until it has been inspected and tested by a USDA official, or a State or local government weights and measures official, or State registered or licensed scale repair firm or person, and it must meet all accuracy requirements as specified in NIST Handbook 44. If a USDA inspector has put a retain tag on a scale it can only be removed by a USDA inspector. As long as the tag is on the scale, it shall not be used."**(MANDATORY)**		USDA/FSIS	9 CFR 317.20 (c)
Handbook 44	Reference is made to Handbook 44 in stating that "The operator of each official establishment that weighs meat food products shall cause such scales to be tested for accuracy, in accordance with the technical requirements of NIST Handbook 44, at least once during the calendar year...." **(MANDATORY)**		USDA/FSIS	9CFR 317.21 (a)
Handbook 44	Reference is made to Handbook 44 in stating that "The operator of each official establishment shall display on or near each scale a valid certification of the scale's accuracy from a State or local government's weights and measures authority or from a State registered or licensed scale repair firm or person, or shall have alternative documented procedures showing that the scale has been tested for accuracy in accordance with the requirements of NIST Handbook 44."		USDA/FSIS	9CFR 317.21 (b)

Handbook 44	Defining the scale requirements for accurate weights, repairs, adjustment, and replacement after inspection, this regulation requires that "All scales used to weigh poultry products sold or otherwise distributed in commerce in federally inspected poultry plants shall be installed, maintained, and operated to insure accurate weights. Such scales shall meet the applicable requirements contained in National Institute of Standards and Technology (NIST) Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices", 1999 Edition, November 1998, which is incorporated by reference...."**(MANDATORY), incorporated by reference**	1998	USDA/FSIS	9 CFR 381.121c(a)
Handbook 44	Defining the scale requirements for accurate weights, repairs, adjustment, and replacement after inspection, this regulation requires that "No scale shall be used at a federally inspected establishment to weigh poultry products unless it has been found upon test and inspection as specified in NIST Handbook 44 to provide accurate weight. If a scale is inspected or tested and found to be inaccurate, or if any repairs, adjustments or replacements are made to a scale, it shall not be used until it has been re-inspected and retested by a USDA official, or a State or local government weights and measures official, or a State registered or licensed scale repair firm or person, and it must meet all accuracy requirements as specified in NIST Handbook 44".	1998	USDA/FSIS	9 CFR 381.121c(c)
Handbook 44	Reference is made to NIST Handbook 44 to state that "the operator of each official establishment that weighs poultry food products shall cause such scales to be tested for accuracy in accordance with the technical requirements of NIST Handbook 44, at least once during the calendar year". It is further required that "The operator of each official establishment shall display on or near each scale a valid certification of the scale's accuracy from a State or local government's weights and measures authority or from a State registered or licensed scale repair firm or person, or shall have alternative documented procedures showing that the scale has been tested for accuracy in accordance with the requirements of NIST Handbook 44." **(MANDATORY)**		USDA/FSIS	9 CFR 381.121d

Handbook 44	Measure Container Code, section 4.45 Measure Containers; Exemptions from required label statements - Mentions that certain frozen foods "when measured by and packaged in 1/2-liquid pint and 1/2-gallon measure-containers, as defined in the "Measure Container Code of National Bureau of Standards Handbook 44," Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, Sec. 4.45 "Measure-Containers," which is **incorporated by reference**, are exempt from the requirements of § 101.105(b)(2) of this chapter (i.e., that statements of fluid measure shall be in terms of the U.S. gallon of 231 cubic inches and quart, pint, and fluid ounce subdivisions thereof, and shall (i) In the case of frozen food that is sold and consumed in a frozen state, express the volume at the frozen temperature) to the extent that net contents of 8-fluid ounces and 64-fluid ounces (or 2 quarts) may be expressed as 1/2 pint and 1/2 gallon.	NDG	HHS/FDA	21 CFR 1.24(a)(6)(i)
Handbook 44	Measure Container Code, section 4.45 Measure Containers; Exemptions from required label statements - mentions that the certain frozen foods referred to in 21CFR1.24(a)(6)(i) when measured by and packaged in 1-liquid pint, 1-liquid quart, and 1/2-gallon measure-containers, as defined in the "Measure Container Code of National Bureau of Standards Handbook 44," Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, Sec. 4.45 "Measure-Containers," which is **incorporated by reference,** are exempt from the dual net-contents declaration requirement of § 101.105(j) containing labeling requirements for packages containing less than 4 pounds or 1 gallon and labeled in terms of weight or fluid measure.	NDG	HHS/FDA	21 CFR 1.24(a)(6)(ii)

Handbook 44	Measure Container Code, section 4.45 Measure Containers; Exemptions from required label statements. States that frozen foods referred in 21 CFR1.24(a)(6)(i) when measured by and packaged in 1/2-liquid pint, 1-liquid pint, 1-liquid quart, 1/2-gallon, and 1-gallon measured-containers, as defined in the "Measure Container Code of National Bureau of Standards Handbook 44," Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, Sec. 4.45 "Measure-Containers," which is **incorporated by reference**, are exempt from the requirement of § 101.105(f) (i.e., The declaration shall appear as a distinct item on the principal display panel, shall be separated (by at least a space equal to the height of the lettering used in the declaration) from other printed label information appearing above or below the declaration and (by at least a space equal to twice the width of the letter "N" of the style of type used in the quantity of contents statement) from other printed label information appearing to the left or right of the declaration. It shall not include any term qualifying a unit of weight, measure, or count (such as "jumbo quart" and "full gallon") that tends to exaggerate the amount of the food in the container. It shall be placed on the principal display panel within the bottom 30 percent of the area of the label panel in lines generally parallel to the base on which the package rests as it is designed to be displayed: Provided, That on packages having a principal display panel of 5 square inches or less, the requirement for placement within the bottom 30 percent of the area of the label panel shall not apply when the declaration of net quantity of contents meets the other requirements of this part.)	NDG	HHS/FDA	21 CFR 1.24(a)(6)(iii)
Handbook 44	Refers to Handbook 44 to define the requirements of the scale used to measure the weight of Hazardous Air Pollutants Auxiliary Blowing Agent (HAP ABA) as part of the monitoring requirements for national emission standards for hazardous air pollutants for flexible polyurethane foam production.	1998	EPA	40 CFR 63.1303(e)(3)

(Appendix 9 –contd.)

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
Handbook 105-1	References are made to various NIST Handbooks related to weights and measures, including Handbook 105-1, and certain sections are incorporated by reference. It is stated that "(a) The requirements set forth in this part 802 describe certain specifications, tolerances, and other technical requirements for grain weighing equipment and related grain handling systems used in performing Class X and Class Y weighing services, official inspection services, and commercial services under the Act. All scales used for official grain weight and inspection certification services provided by FGIS shall meet applicable requirements contained in the FGIS Weighing Handbook, the General Code, the Scales Code, the Automatic Bulk Weighing Systems Code, and the Weights Code of the 2002 edition of National Institute of Standards and Technology (NIST) Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices" (Handbook 44); and NIST Handbook 105–1 (1990 Edition), "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures," (Handbook 105–1). These requirements are confirmed to be met by having National Type Evaluation Program or Federal Grain Inspection Service type approval. Scales used for commercial purposes will be required to meet only the applicable requirements of the 2002 edition of the NIST Handbook 44. Pursuant to the provisions of 5 U.S.C. 552(a), with the exception of the Handbook 44 requirements listed in paragraph (b) of this section, the materials in Handbooks 44 and 105–1 are **incorporated by reference** as they exist on the date of approval and a notice of any change in these materials will be published in the Federal Register."	1990	USDA/GIPSA	7 CFR 802.0(a)

Handbook 133	Reference is made to NIST Handbook 133 for purposes of definitions, and procedures to be used in determining net weight and net weight compliance. Certain sections of Handbook 133 are incorporated by reference, and this sub-section states the exceptions (i.e., not incorporated by reference). This sub-section states, in part, "definitions, and procedures to be used in determining net weight and net weight compliance are described in the National Institute of Standards and Technology (NIST) Handbook 133, “Checking the Net Contents of Packaged Goods,” Third Edition, September 1988, and Supplements 1, 2, 3, and 4 dated September 1990, October 1991, October 1992, and October 1994, respectively, which are incorporated by reference, with the exception of the NIST Handbook 133 and Supplements 1, 3, and 4 requirements listed in paragraphs (b) and (c) of this section. Those provisions incorporated by reference herein, are considered mandatory requirements."	1988	USDA/FSIS	9 CFR 317.19(a)
Handbook 133	Excludes certain parts of Handbook 133 that are not relevant for this regulation.			9 CFR 317.19(b)

Handbook 133	Excludes certain requirements of Supplements 1, 3 and 4 of Handbook 133 that are not relevant to this regulation.			9 CFR 317.19(c)
Handbook 133	In stating the definition and procedures for determining net weigh compliance in regulations pertaining to poultry product inspections, reference is made to NIST Handbook 133 as, "For the purpose of §381.121b of this part, the reasonable variations allowed, definitions, and procedures to be used in determining net weight and net weight compliance are described in the National Institute of Standards and Technology (NIST) Handbook 133, "Checking the Net Contents of Packaged Goods," Third Edition, September 1988, and Supplements 1, 2, 3, and 4 dated September 1990, October 1991, October 1992, and October 1994, respectively, which are incorporated by reference, with the exception of the NIST Handbook 133 and Supplements 1 and 3 requirements listed in paragraphs (b) and (c) of this section. Those provisions, incorporated by reference herein, are considered mandatory requirements"	1988	USDA/FSIS	9 CFR 381.121b(a)

Handbook 133	In stating the definition and procedures for determining net weigh compliance in regulations pertaining to poultry product inspections, specifies those requirements of NIST Handbook 133 that are not incorporated by reference (In context of Handbook 133 and its supplements IBR as stated in 9 CFR 381.121b(a)		USDA/FSIS	9 CFR 381.121b(b)
Handbook 133	In stating the definition and procedures for determining net weigh compliance in regulations pertaining to poultry product inspections, specifies those requirements of Supplement 1 dated September 1990, Supplement 3 dated October 1992, and Supplement 4 dated October 1994, of NIST Handbook 133 that are not incorporated by reference (In context of Handbook 133 and its supplements IBR as stated in 9 CFR 381.121b(a).		USDA/FSIS	9 CFR 381.121b(c)

Appendix 10
References to Accreditation, National Voluntary Laboratory Accreditation Program (NVLAP) and National Voluntary Conformity Assessment System Evaluation (NVCASE) in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
NVLAP	Reference is made to the NVLAP program as the accreditation body which accredits laboratories where testing for the Energy Efficiency Program can be conducted. It also recognizes laboratories accredited by ABs having a MRA with NVLAP for testing of Efficiency of Electrical Motors.		DOE/Energy Efficiency	10 CFR 431.25
Fastener Quality Act	This regulation states the procedures for petitioning for approval of documents related to certification, accreditation, laboratory accreditation and approval of accreditation bodies in support of the Fastener Quality Act.		DOC/NIST	15 CFR 280.101
Fastener Quality Act	This regulation, in support of the Fastener Quality Act, requires that "An accreditation body accrediting third parties who certify manufacturing systems as fastener quality assurance systems as described in section 3(7)(B)(iii)(I) of the Act (15 U.S.C. 5402(7)(B)(iii)(I)) shall affirm to the Director, NIST, that it meets the requirements of ISO/IEC Guide 61" and similarly, "An accreditation body accrediting laboratories as described in section 3(1)(B) of the Act (15 U.S.C. 5402(1)(B)) shall affirm to the Director, NIST, that it meets the requirements of ISO/IEC Guide 58".		DOC/NIST	15 CFR 280.102
NVLAP Accreditation	Reference is made to the NVLAP program in stating that HUD may require accreditation of testing laboratories for certain products by a program such as the NVLAP for HUD building product certification requirements.		HUD	24 CFR 200.935(d)(3)

NVLAP Accreditation	States that periodic testing for quality control will be conducted on "select samples for testing, and testing shall be conducted, in accordance with the applicable standards in a laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Bureau of Standards, U.S. Department of Commerce" (mandatory)		HUD	24 CFR 200.942(c)(1)
NVLAP Accreditation	Requires that "Every six months, three samples and one annual field sample of carpet shall be submitted to the Administrator for testing in a laboratory accredited by the National Voluntary Laboratory Accreditation Program of the U.S. Department of Commerce" as part of a periodic testing and quality assurance inspection protocol under Supplementary specific requirements under the HUD building product standards and certification program for carpet (mandatory).		HUD	24 CFR 200.945
NVLAP	Asbestos -- B) Performing tests of the material containing PACM which demonstrate that no ACM is present in the material..... Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA) or an equivalent nationally-recognized round robin testing program.		DOL/OSHA	29 CFR 1910.1001

NVLAP accreditation	This regulation requires that for performing tests of the material containing PACM (Presumed Asbestos Containing Material) which demonstrate that no ACM (asbestos containing material) is present in the material "Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA) or an equivalent nationally-recognized round robin testing program" for testing related to asbestos exposure.		DOL/OSHA	29 CFR1926.1101(j)(5)(ii)(B)
Proficiency Testing	Reference is made to NIST having conducted proficiency testing of laboratories on a national scale for method performance of the Polarized Light Microscopy of Asbestos (Non-Mandatory) under the safety and health regulations for construction.		DOL/OSHA	29 CFR 1926.1101 Appendix K 1.4.1
NBS Accredited Laboratories	This regulation pertains to analysis of asbestos containing materials in schools and states that "Local education agencies shall have bulk samples, collected under §763.86 and submitted for analysis, analyzed for asbestos using laboratories accredited by the National Bureau of Standards (NBS). Local education agencies shall use laboratories which have received interim accreditation for polarized light microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Analysis Quality Assurance Program until the NBS PLM laboratory accreditation program for PLM is operational."		EPA	40 CFR 763.87(a)

NBS Accredited Laboratories	This regulation pertains to response actions to asbestos containing materials in schools and states that "Local education agencies shall have air samples collected under this section analyzed for asbestos using laboratories accredited by the National Bureau of Standards to conduct such analysis using transmission electron microscopy (TEM) or, under circumstances permitted in this section, laboratories enrolled in the American Industrial Hygiene Association Proficiency Analytical Testing Program for phase contrast microscopy (PCM)."		EPA	40 CFR 763.90(h)(2)(ii)
Accreditation	This regulation refers to the NIST NVLAP and states that "EPA recommends that transmission electron microscopy (TEM) be used for analysis of final air clearance samples, and that sample analyses be performed by laboratories accredited by the National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP)" as part of the air monitoring requirements in the procedures to determine airborne concentrations of asbestos fibers, as part of the Asbestos Model Accreditation Plan for States.		EPA	40 CFR 763 Appendix C I.B.2(h)
Accreditation (NVCASE)	NIST/NVCASE is referred to as the accreditation body of Telecommunication Certification Bodies (TCBs) designated by the FCC. TCBs can be accredited under the "NVCASE program or other recognized programs based on ISO/IEC Guide 65, to comply with the Commission's qualification criteria for TCBs". Further per this paragraph "NIST may, in accordance with its procedures, allow other appropriately qualified accrediting bodies to accredit TCBs and testing laboratories".		FCC	47 CFR 2.960(b)

TCBs	The FCC requires TCBs (Telecommunication Certification Bodies) to "participate in any consultative activities, identified by the Commission or NIST, to facilitate a common understanding and interpretation of applicable regulations", as part of the requirements for TCBs.		FCC	47 CFR 2.962(c)(5)
Designation of TCBs	The NIST role in the FCC designation of an organization as a TCB (Telecommunication Certification Bodies), or withdrawal of the designation, is recognized.		FCC	47 CFR 2.962(e)
Accreditation	FCC will designate as a TCB (Telecommunication Certification Body) any organization that meets the qualification criteria and is accredited by NIST or its recognized accreditor		FCC	47 CFR 68.160
Accreditation (NVCASE)	TCBs shall be accredited by the NIST under its NVCASE program, or other recognized programs based on ISO/IEC Guide 65, to comply with the Commission's qualification criteria for TCBs. NIST may, in accordance with its procedures, allow other appropriately qualified accrediting bodies to accredit TCBs and testing laboratories.		FCC	47 CFR 68.160
Accreditation	The FCC requires TCBs to "participate in any consultative activities, identified by the Commission or NIST, to facilitate a common understanding and interpretation of applicable regulations" as part of the requirements for TCBs.		FCC	47 CFR 68.162 (c)(5)
Accreditation Of TCBs	The NIST role in the FCC designation of an organization as a TCB, or withdrawal of the designation, is recognized.		FCC	47 CFR 68.162 (e)

Appendix 11
References to Voluntary Product Standards (VPS) and Commercial Standards (CS) in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
NBS Voluntary Product Standard 36-70	"Body Measurements for Sizing Boys Apparel (formerly CS 155-50)" - The CPSC uses the stated NBS voluntary product standard for defining "tight-fitting garments" in their standard for flammability of children's sleepwear. The NBS Voluntary standard covers standard size designations, size classifications, and body measurements for the sizing of boys' apparel.	1971	CPSC	16 CFR 1616.2(b)
NBS Voluntary Product Standard 54-72	"Body Measurements for Sizing Girls Apparel (sizes 7-14) (formerly CS 153-48)" - The CPSC uses the stated NBS voluntary product standard for defining "tight-fitting garments" in their standard that provides a test method to determine flammability of children's sleepwear (sizes 7-14). This Voluntary Product Standard establishes a nationally recognized sizing system for girls, based on body measurements.	1973	CPSC	16 CFR 1616.2(b)
Voluntary Product Standard	Definition of voluntary product standards- states that "If there exists a voluntary product standard promulgated pursuant to the procedures found in 15 CFR part 10 by the Department of Commerce, quantitatively defining the meaning of the term serving with respect to a particular food, then any label representation as to the number of servings in such packaged food shall correspond with such quantitative definition. (Copies of published standards are available upon request from the National Bureau of Standards, Department of Commerce, Washington, DC 20234.)"		HHS/FDA	21 CFR 501.8(b)
PS 1-83	Reference is made to NIST PS 1-83 "Product Standard for Construction and Industrial Plywood with Typical APA Trademarks" as a standard that has been **incorporated by reference** in the HUD Minimum Property Standards (MPS) in 24 CFR part 200.	1983	HUD	24 CFR 200, Appendix A
PS 2-92	Reference is made to NIST PS 2-92 "Performance Standard for Wood-Based Structural-Use Panels" as a standard that has been **incorporated by reference** in the HUD Minimum Property Standards (MPS) in 24 CFR part 200.	1992	HUD	24 CFR 200, Appendix A

Voluntary Public Standard 1-83	Construction and Industrial Plywood - States that " All plywood made to specifications of Voluntary Product Standard, PS 1–83, "Construction and Industrial Plywood" (published by the U.S. Department of Commerce, National Bureau of Standards (May 1984)) and grade marked as PS 1–83 shall conform to the requirements of PS 1–83, except that all veneers may be D-grade" as a supplementary specific requirements under the HUD building product standards and certification program for plywood and other performance rated wood-based structural-use panels (**mandatory**).		HUD	24 CFR 200.944
Voluntary Public Standard 20-94	States that lumber shall be grade marked in compliance with VPS 20-94 American Softwood Lumber Standard as a Supplementary specific requirements under the HUD building product standards and certification program for the grade marking of lumber. This VPS has been **incorporated by reference.**	1994	HUD	24 CFR 200.943(a)(1)
Voluntary Product Standard 1-83	In specifying Body and Frame Construction Requirements under Manufactured Home Construction and Safety Standards, this regulation refers to Voluntary Product Standard, Construction and Industrial Plywood -PS-1-83 (standards for wood and wood products). Materials meeting this standard when appropriate are considered acceptable unless otherwise specified herein or unless substantial doubt exists as to conformance.		HUD	24 CFR 3280.304(b)(1)
Public Standard 2-92	In specifying Body and Frame Construction Requirements under Manufactured Home Construction and Safety Standards, this regulation refers to Performance Standard for Wood-Based Structural Use Panels—PS–2–92, APA. Materials meeting this standard when appropriate are considered acceptable unless otherwise specified herein or unless substantial doubt exists as to conformance.		HUD	24 CFR 3280.304
CS 138-55	Reference is made to NIST CS 138–55 "Insect Wire Screening" as a standard that has been **incorporated by reference** in the HUD Minimum Property Standards (MPS) in 24 CFR part 200.	1955	HUD	24 CFR 200, Appendix A
CS 242-62	Reference is made to NIST CS 242–62 "1 3/4" Steel Doors & Frames" as a standard that has been **incorporated by reference** in the HUD Minimum Property Standards (MPS) in 24 CFR part 200.	1962	HUD	24 CFR 200, Appendix A
CS 202-56	Industrial Lifts and Hinged Loading Ramps " Powered dockboards shall be designed and constructed in accordance with Commercial Standard CS202–56 (1961) "Industrial Lifts and Hinged Loading Ramps published by the U.S. Department of Commerce, which is incorporated by reference as specified in §1910.6."	1961	DOL/OSHA	29 CFR 1910.30 (3)

Appendix 12
References to NIST and NBS Products on Computer Security in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
NBS Computer Security guidelines	The paragraph refers to "standards" issued by the NBS on computer security and states that "managers of automated personnel records shall establish administrative, technical, physical, and security safeguards for data about individuals in automated records, including input and output documents, reports, punched cards, magnetic tapes, disks, and on-line computer storage. The safeguards must be in writing to comply with the *standards on automated data processing physical security issued by the National Bureau of Standards, U.S. Department of Commerce*"		OPM	5 CFR 293.107(a)
NBS Computer Security guidelines	This regulation refers to guidelines developed by the DoC(NBS) and other government agencies to ensure safety of information in manual and computer based systems. The regulation states that "whenever records in the manual or computer-based record systems, including input and output documents, punched cards, and magnetic tapes or disks, are not under the personal control of an authorized person, they will be stored in lockable containers and/or in a secured room, or in alternative storage systems which furnish an equivalent or greater degree of physical security. In this regard, the Commission may refer to security guidelines prepared by the General Services Administration, the Department of Commerce (National Bureau of Standards), or other agencies with appropriate knowledge and expertise".		FERC	18 CFR 3b.204(b)
NBS Computer Security guidelines	As per the Privacy Act of 1974, this regulation states that amongst other requirements "when the records subject to the Act are maintained in computerized form, safeguards shall be utilized based on those recommended in the National Bureau of Standard's booklet “Computer Security Guidelines for Implementing the Privacy Act of 1974” (May 30, 1975), and any supplements thereto, which are adequate and appropriate to assuring the integrity of the records". "The Act requires that records subject to the Act be maintained with appropriate administrative, technical and physical safeguards to ensure the security and confidentiality of records and to protect against any anticipated threats or hazards to their security or integrity which could result in substantial harm, embarrassment, inconvenience or unfairness to any individual on whom information is maintained".	1975	Foreign Relations	22 CFR 1101.5(c)

NBS Publication - computer security	"(c) When maintained in computerized form, student records shall be maintained, at a minimum, subject to safeguards based on those recommended in the National Bureau of Standards' booklet, “Computer Security Guidelines for Implementing the Privacy Act of 1974” (May 30, 1975), and any supplements to it, which are adequate and appropriate to assure the integrity of records in the system."	1974	Indian Affairs	25 CFR 43.22(c)
NBS Computer Security guidelines	"(c) Records maintained in computerized form. When maintained in computerized form, records subject to the Privacy Act shall be maintained, at a minimum, subject to safeguards based on those recommended in the National Bureau of Standards booklet “Computer Security Guidelines for Implementing the Privacy Act of 1974” (May 30, 1975), and any supplements thereto, which are adequate and appropriate to assuring the integrity of records in the system."	1975	Indians	25CFR 700.263
NBS Security Guidelines	"(a) The Office Administrator or Security Officer shall be responsible for issuing regulations governing the security of systems of records. To the extent that such regulations govern the security of automated systems of records, the regulations shall be consistent with the guidelines developed by the National Bureau of Standards."		Judicial Administration	28 CFR 700.24
Security standards	This regulation states that "Automated systems shall comply with the security standards ***promulgated*** by the National Bureau of Standards" to meet the requirements of accurate and secure maintenance of records under the Privacy Act.		Treasury	31 CFR 1.22(d)(3)(i)
Security standards	security and privacy requirements established by the NIST for electronic data interchange-This regulation cites security and privacy requirements established by the National Institute of Standards and Technology (NIST) for electronic data interchange, and permit the use of electronic signatures on travel documents under the Agency Travel Accountability Requirements, if the stated regulations are met.		Public Contracts and Property Management	41 CFR 301-71.3
NBS Computer Security guidelines	This regulation refers to a NBS publication on computer security guidelines and states that "When maintained in computerized form, records subject to the Privacy Act shall be maintained, at a minimum, subject to safeguards based on those recommended in the National Bureau of Standard's booklet “Computer Security Guidelines for Implementing the Privacy Act of 1974” (May 30, 1975), and any supplements thereto, which are adequate and appropriate to assuring the integrity of records in the system."	1975	Interior	43 CFR 2.51(c)
NBS FIPS publication	Reference is made to the NBS FIPS publication as the source of information regarding a state's identifying code when collecting and monitoring support payments from non-custodial parents.		HHS	45 CFR 303.7(c)(7)(iv)

NBS FIPS publication	Reference is made to the NBS FIPS publication as the source of state's identifying code for purposes of notification to the OCSE of liability for past-due support.		HHS	45 CFR 303.72(b)(2)(iv)
NBS FIPS Pub. 1-1	Reference is made to the NBS FIPS Publication 1-1 which specifies the information interchange requirements of the ASCII. These information interchange requirements have to be met by support systems used in conjunction with automatic on-board recorders used to record a driver's hours of service, to be capable of providing federal, state or local officials summaries of an individual driver's hours of service records.		DOT/FMCSA	49 CFR 395.15(b)(3)

Appendix 13
References to Circular 484 in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
Circular 484	Spectrophotometry - Refers to NBS Circular 484 **(incorporated by reference)** , for establishing the absorbance accuracy (performance requirement) of a spectophotometer used for determination of ultraviolet absorbance of petroleum naptha. The regulation specifies the ultraviolet absorbance limits of petroleum naptha that can be used in or on foods.	1949	HHS/FDA	21 CFR 172.250(b)(3)
Circular 484	Spectrophotometry - Refers to NBS Circular 484 **(incorporated by reference)**, for establishing the absorbance accuracy (performance requirement) of a spectophotometer used for determination of ultraviolet absorbance of synthetic fatty alcohols. The regulation specifies the ultraviolet absorbance limits of synthetic fatty alcohols (for safe use) that can be used in or on foods.		HHS/FDA	21 CFR 172.864
Circular 484	Spectrophotometry - Refers to NBS Circular 484 **(incorporated by reference)**, for establishing the absorbance accuracy (performance requirement) of a spectophotometer used for determination of ultraviolet absorbance of petroleum wax. The regulation specifies the ultraviolet absorbance limits of petroleum wax (for safe use) that can be used in or on foods.	1949	HHS/FDA	21 CFR 172.886
Circular 484	Refers to NBS Circular 484 **(incorporated by reference)**, for establishing the absorbance accuracy (performance requirement) of a spectophotometer using potassium chromate for reference standard; used for determination of ultraviolet absorbance of mineral oil. The regulation specifies the ultraviolet absorbance limits of mineral oil that can be safely used as a component of nonfood articles intended for use in contact with food.		HHS/FDA	21 CFR 178.3620(c)(3)(iii)
Circular 484	Refers to "National Bureau of Standards Circular 484, Spectrophotometry, U.S. Department of Commerce, 1949" for establishing procedure used to determine accuracy of absorbance limits in the analytical method for determining ultraviolet absorbance limits and pyrene content of mineral oil that can be safely used as a component of nonfood articles intended for use in contact with food.	1949	HHS/FDA	21 CFR 178.3620(d)(3)(I)(F)

Circular 484	Spectrophotometry - Refers to a procedure described NBS Circular 484 **(incorporated by reference)**; for determination of UV absorbance accuracy of spectrophotometer while establishing accuracy limits in measurement of polyhydric alcohol esters of oxidatively refined (Gersthofen process) montan wax in order to be safely used as components of articles intended for use in contact with food.	1949	HHS/FDA	21 CFR 178.3770(a)(4)
Circular 484	Spectrophotometry -refers to NBS circular 484 **(incorporated by reference)** for establishing the absorbance accuracy (performance requirement) of a spectophotometer used for determination of ultraviolet absorbance of lubricants. The regulation specifies the ultraviolet absorbance limits for safe use of lubricants used in the manufacture of metallic articles that contact foods.	1949	HHS/FDA	21 CFR 178.3910(a)(4)(iii)

Appendix 14
References to Handbook 69 in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
NBS Handbook 69	Radiation exposure, " Determination of exclusion area, low population zone, and population center distance."- Refers to the NBS Handbook 69 (1959) in reference to determination of radiation exposure for determination of exclusion area, low population zone and population center distance as part of Reactor Site criteria.	1959	DOE/NRC	10 CFR 100.11
NBS Handbook 69	Reference is made to NBS Handbook 69 dated June 5, 1959, in the context of determination of radiation exposure status. The citation reads "A whole body dose of 25 rem has been stated to correspond numerically to the once in a lifetime accidental or emergency dose for radiation workers which, according to NCRP recommendations at the time could be disregarded in the determination of their radiation exposure status (see NBS Handbook 69 dated June 5, 1959). However, its use is not intended to imply that this number constitutes an acceptable limit for an emergency dose to the public under accident conditions. Rather, this dose value has been set forth in this section as a reference value, which can be used in the evaluation of plant design features with respect to postulated reactor accidents, in order to assure that such designs provide assurance of low risk of public exposure to radiation, in the event of such accidents"	1959	DOE/NRC	10 CFR 50.34(a)(7)
Handbook 69	Reference is made to "National Bureau of Standards Handbook No. 69 entitled “Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure,” issued June 5, 1959" to define the conditions which occupations involving exposure to radioactive substances and to ionizing radiations are considered particularly hazardous and detrimental to health for minors between 16 and 18 years of age, as part of the child labor regulations, orders and statements of interpretation.	1959	DOL/WHD	29 CFR 570.57(a)(1)

NBS Handbook 69	Reference to NBS Handbook 69, in defining "Man-made beta particle and photon emitters" as all radionuclides emitting beta particles and/or photons listed in Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure, NBS Handbook 69, except the daughter products of thorium-232, uranium-235 and uranium-238, as part of the definitions under the National Primary Drinking Water Regulations.	1963	EPA	40 CFR 141.2
NBS Handbook 69	Reference is made to the NBS Handbook 69 to state that "Except for the radionuclides listed in table A, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents must be calculated on the basis of 2 liter per day drinking water intake using the 168 hour data list in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS (National Bureau of Standards) Handbook 69 as amended August 1963, U.S. Department of Commerce" **(MANDATORY) incorporated by reference**	1963	EPA	40 CFR 141.66(d)(2)
Handbook 69	This regulation states that "All new activities and modification of existing facilities which involve the continuous release of radioactive materials in effluents to air, water or sanitary sewerage systems will not exceed 1 percent of the activity concentration as specified in National Council on Radiation Protection and Measurement Report No. 22 (National Bureau of Standards Handbook No. 69) and 10 CFR part 20 when averaged over 1 month..." as part of policies and procedures applicable to radioactive materials and nuclear accidents and incidents.		DOD	32 CFR 650.139(h)(i)

Appendix 15
References to Handbook 28 in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
Handbook 28	Refers to NBS Publication Handbook H28 "Screw Thread Standards for Federal Service"- 1512 to specify mechanical requirements for attachment hardware under requirements for bicycles. The regulation states "All threaded hardware shall be of sufficient quality to allow adjustments and maintenance. Recommended quality thread form is specified in Handbook H28..."		CPSC	16 CFR 1512.4(d)
Handbook H-28	NBS Handbook H-28 "Handbook of Screw-Thread Standards for Federal Services(1957), 1957, December 1966 Edition is **incorporated by reference** for this subpart, with references in Title 49 sections 179.2; 178.45; 178.46. "National Institute of Standards and Technology, Department of Commerce, 5285 Port Royal Road, Springfield, VA 22151, USDC".	1957	DOT/RSPA	49 CFR 171.7
Handbook H-28	Specification for 3T seamless steel cylinders requires all opening to be threaded. The threads (taper and straight) have to be in compliance with the requirements of NBS Handbook H-28 **(mandatory) incorporated by reference.**	1957	DOT/RSPA	49 CFR 178.45(f)(5)ii-iv
Handbook H-28	Specifications for 3AL seamless aluminum cylinders require that all openings must be threaded and the threads (tapered or straight) must conform to the requirements of NBS Handbook H-28 **(mandatory) incorporated by reference.**	1957	DOT/RSPA	49 CFR 178.46(e)(5)ii-iv
Handbook H-28	NBS Handbook H-28 is referred to for defining the abbreviation "NPT" to "mean an American Standard Taper Pipe Thread conforming to the requirements of NBS Handbook H–28" for specifications for tank cars **(incorporated by reference).**	1957	DOT/RSPA	49 CFR 179.2(a)(8)

Appendix 16
References to Handbook 81 in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
NBS Handbook 81	This regulation states that "Guy wires of poles supporting high-voltage transmission lines shall meet the requirements for grounding or insulator protection of the National Electrical Safety Code, part 2, entitled “Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines” (also referred to as National Bureau of Standards Handbook 81, November 1, 1961) and Supplement 2 thereof issued March 1968, which are hereby **incorporated by reference** and made a part hereof" as part of the safety and health standards for surface metal and non-metal mines.	1961	DOL/MSHA	30 CFR 56.12047
NBS Handbook 81	This regulation states that "Guy wires of poles supporting high-voltage transmission lines shall meet the requirements for grounding or insulator protection of the National Electrical Safety Code, part 2, entitled “Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines” (also referred to as National Bureau of Standards Handbook 81, Nov. 1, 1961), and Supplement 2 thereof issued March 1968, which are hereby **incorporated by reference** and made a part hereof" as part of the safety and health standards for underground metal and non-metal mines.	1961	DOL/MSHA	30 CFR 57.12047
National Electrical Safety Code (NBS Handbook 81?)	Reference is made to the National Electrical Safety Code as "High-voltage powerlines located above driveways, haulageways, and railroad tracks shall be installed to provide the minimum vertical clearance specified in National Electrical Safety Code, provided, however, "that in no event shall any high-voltage powerline be installed less than 15 feet above ground". The National Electrical Safety Code is the NBS Handbook 81.	1971	DOL/MSHA	30 CFR 77.807-1

Appendix 17
References to the National Technology Transfer and Advancement Act in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
NTTAA	This regulation states the responsibilities of the National Institute of Standards and Technology pertaining to the ICSP to coordinate Federal, state and local conformity assessment activities with private sector conformity assessment activities (Guidance on Federal Conformity Assessment, under Authority of Section 12, PL 104-113).		DOC/NIST	15 CFR 287.3
NTTAA	This regulation states the responsibilities of Federal agencies pertaining to their role under the ICSP in working with NIST and private sector bodies. (Guidance on Federal Conformity Assessment, under Authority of Section 12, PL 104-113).		DOC/NIST	15 CFR 287.4
NTTAA	Defines the responsibilities of Agency Standards Executive vis-à-vis working with NIST under the ICSP pertaining to the ICSP to coordinate Federal, state and local conformity assessment activities with private sector conformity assessment activities (Guidance on Federal Conformity Assessment, under Authority of Section 12, PL 104-113).		DOC/NIST	15 CFR 287.5

Appendix 18
References to Handbook 91 in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
NBS Handbook 91	This subpart **incorporates by reference** "Experimental Statistics", National Bureau of Standards Handbook No. 91 (October 1966) for specifications pertaining to pollution prevention equipment.	1966	DHS/USCG	46 CFR 162.050-4
NBS Handbook 91	Reference is made to NBS Handbook 91 to define the procedure to be used in measurements of oil content of samples (containing oil in samples) supplied by the USCG, for testing pertaining to pollution prevention equipment.		DHS/USCG	46 CFR 162.050-15(f)(3)

Appendix 19
References to Handbook 96 in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
Handbook 96	Refers to handbook 96 “Inspection of Processed Photographic Record Films for Aging Blemishes” to define the procedures to be used for regular inspection of aging of photographic film and processed photographic film as part of a records retention schedule.		DOT/MA	46 CFR 380.21
Presumably Handbook 96	Reference states that "Film used for photographing copies shall be of permanent record-type meeting in all respects the minimum specifications of the National Bureau of Standards, and all processes recommended by the manufacturer shall be observed to protect it from deterioration or accidental destruction", as part of the general requirements for copies and records - presumably a reference to NBS Handbook 96, "Inspection of Processed Photographic Record Films for Aging Blemishes”.		DOT/FMCSA	49 CFR 390.31(b)(4)

Appendix 20
References to Handbook 150 in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
Handbook 150-01	Reference is made to the "NVLAP Handbook 150–01, "Energy Efficient Lighting Products, Lamps and Luminaires, August 1993"	1993	DOE	10 CFR 430.22(c)(2)
Handbooks 150, 150-10	Reference is made to NIST Handbook 150 "National Voluntary Laboratory Accreditation Program Procedures and General Requirements," and Handbook 150-10 (supplement to Handbook 150, 08/1995) in referring to the technical requirements of the National Voluntary Laboratory Accreditation Program for the Efficiency of Electric Motors field of accreditation (Supplement 150-10), and all general NIST/NVLAP procedures, criteria, and policies (Handbook 150).	1995	DOE/Energy Efficiency	10 CFR 431.25

Appendix 21
References to Handbook 136 in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
Handbook 136	In defining the minimum criteria for equipment used in industrial radiographic operations, this regulation refers to NBS Handbook 136, and states that "Each radiographic exposure device, source assembly or sealed source, and all associated equipment must meet the requirements specified in American National Standards Institute, N432–1980 "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography," (published as NBS Handbook 136, issued January 1981). This publication has been approved for incorporation by reference....." **(MANDATORY), Incorporated by Reference**	1981	DOE/NRC	10 CFR 34.20(a)(1)

Appendix 22
Compiled list of NIST and NBS products and services in the Code of Federal Regulations

Document Number	Title of Document	Edition Date	Incorporated By	Location in CFR
Computer Security guidelines	The paragraph refers to "standards" issued by the NBS on computer security and states that "managers of automated personnel records shall establish administrative, technical, physical, and security safeguards for data about individuals in automated records, including input and output documents, reports, punched cards, magnetic tapes, disks, and on-line computer storage. The safeguards must be in writing to comply with the *standards on automated data processing physical security issued by the National Bureau of Standards, U.S. Department of Commerce*"		OPM	5 CFR 293.107(a)
SP 500-172	Reference is made to NIST SP 500-172 "Computer Security Training Guidelines" as a source of information for providing training for employees responsible for the management or use of computer systems that process sensitive information.		OPM	5 CFR 930.302
Handbook 44	Reference is made to NBS Handbook 44 for stating the requirements that weigh scales must comply with (mandatory): "Scales. All scales shall comply with National Bureau of Standards Handbook 44. (Latest revision)." The accuracy and graduation marking of scales is also defined (tables taken from the "currently effective 1973 revision)".		USDA	7 CFR 58.128(m)
Handbook 44	Reference is made to NIST Handbook 44 for defining the design requirements of moisture meters used in official grain moisture determination and certification. Handbook 44 (1991 edition) **is incorporated by reference** and this paragraph also identifies those sections in Handbook 44 not incorporated by reference.	1991	USDA/GIPSA	7 CFR 801.12
Traceability / calibration	References are made to the NBS program for the Certification of Capability of State Measurement Laboratories for describing the criteria by which state, county and city labs could be automatically approved by the Grain Inspection, Packers and Stockyard Administration as qualified metrology labs and Type Evaluation Labs		USDA/GIPSA	7 CFR 802.1

Handbook 105-1	References are made to various NIST Handbooks related to weights and measures, including Handbook 105-1, and certain sections are incorporated by reference. It is stated that "(a) The requirements set forth in this part 802 describe certain specifications, tolerances, and other technical requirements for grain weighing equipment and related grain handling systems used in performing Class X and Class Y weighing services, official inspection services, and commercial services under the Act. All scales used for official grain weight and inspection certification services provided by FGIS shall meet applicable requirements contained in the FGIS Weighing Handbook, the General Code, the Scales Code, the Automatic Bulk Weighing Systems Code, and the Weights Code of the 2002 edition of National Institute of Standards and Technology (NIST) Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices" (Handbook 44); and NIST Handbook 105–1 (1990 Edition), "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures," (Handbook 105–1). These requirements are confirmed to be met by having National Type Evaluation Program or Federal Grain Inspection Service type approval. Scales used for commercial purposes will be required to meet only the applicable requirements of the 2002 edition of the NIST Handbook 44. Pursuant to the provisions of 5 U.S.C. 552(a), with the exception of the Handbook 44 requirements listed in paragraph (b) of this section, the materials in Handbooks 44 and 105–1 are **incorporated by reference** as they exist on the date of approval and a notice of any change in these materials will be published in the Federal Register."	1990	USDA/GIPSA	7 CFR 802.0(a)

Handbook 44	References are made to various NIST Handbooks related to weights and measures, including Handbook 44, and certain sections are incorporated by reference. It is stated that "(a) The requirements set forth in this part 802 describe certain specifications, tolerances, and other technical requirements for grain weighing equipment and related grain handling systems used in performing Class X and Class Y weighing services, official inspection services, and commercial services under the Act. All scales used for official grain weight and inspection certification services provided by FGIS shall meet applicable requirements contained in the FGIS Weighing Handbook, the General Code, the Scales Code, the Automatic Bulk Weighing Systems Code, and the Weights Code of the 2002 edition of National Institute of Standards and Technology (NIST) Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices" (Handbook 44); and NIST Handbook 105–1 (1990 Edition), "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures," (Handbook 105–1). These requirements are confirmed to be met by having National Type Evaluation Program or Federal Grain Inspection Service type approval. Scales used for commercial purposes will be required to meet only the applicable requirements of the 2002 edition of the NIST Handbook 44. Pursuant to the provisions of 5 U.S.C. 552(a), with the exception of the Handbook 44 requirements listed in paragraph (b) of this section, the materials in Handbooks 44 and 105–1 are **incorporated by reference** as they exist on the date of approval and a notice of any change in these materials will be published in the Federal Register."	1990	USDA/GIPSA	7 CFR 802.0(a)
Handbook 44	Reference is made to NIST Handbook 44 to state that "All scales used by stockyard owners, market agencies, dealers, packers, and live poultry dealers to weigh livestock, livestock carcasses, live poultry, or feed for the purposes of purchase, sale, acquisition, payment, or settlement shall be installed, maintained, and operated to ensure accurate weights. Such scales shall meet applicable requirements contained in the General Code, Scale Code, and Weights Code of the 1996 edition of National Institute of Standards and Technology (NIST) Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices," which is hereby **incorporated by reference**."	1996	USDA/GIPSA	9 CFR 201.71(a)

Handbook 133	Reference is made to NIST Handbook 133 for purposes of definitions, and procedures to be used in determining net weight and net weight compliance. Certain sections of Handbook 133 are incorporated by reference, and this sub-section states the exceptions (i.e., not incorporated by reference). This sub-section states, in part, "definitions, and procedures to be used in determining net weight and net weight compliance are described in the National Institute of Standards and Technology (NIST) Handbook 133, "Checking the Net Contents of Packaged Goods," Third Edition, September 1988, and Supplements 1, 2, 3, and 4 dated September 1990, October 1991, October 1992, and October 1994, respectively, which are incorporated by reference, with the exception of the NIST Handbook 133 and Supplements 1, 3, and 4 requirements listed in paragraphs (b) and (c) of this section. Those provisions **incorporated by reference** herein, are considered **mandatory requirements**."	1988	USDA/FSIS	9 CFR 317.19(a)
Handbook 133	Excludes certain parts of Handbook 133 that are not relevant for this regulation.			9 CFR 317.19(b)
Handbook 133	Excludes certain requirements of Supplements 1, 3 and 4 of Handbook 133 that are not relevant to this regulation.			9 CFR 317.19(c)
Handbook 44	Scale requirements for accurate weights, repairs, adjustments, and replacement after inspection refer to NIST Handbook 44, and state that "All scales used to weigh meat products sold or otherwise distributed in commerce in federally inspected meat establishments shall be installed, maintained and operated to insure accurate weights. Such scales shall meet the applicable requirements contained in National Institute of Standards and Technology Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices", 1999 Edition, November 1998, which is incorporated by reference." **(MANDATORY), incorporated by reference**	1998	USDA/FSIS	9 CFR 317.20(a)
Handbook 44	As part of the regulations on labeling, marking devices and containers, this regulation refers to NIST Handbook 44 to ensure accuracy of the weighing scales and states that "No scale shall be used at a federally inspected establishment to weigh meat products unless it has been found upon test and inspection, as specified in NIST Handbook 44, to provide accurate weight. If a scale is reinspected or retested and found to be inaccurate, or if any repairs, adjustments or replacements are made to a scale, it shall not be used until it has been inspected and tested by a USDA official, or a State or local government weights and measures official, or State registered or licensed scale repair firm or person, and it must meet all accuracy requirements as specified in NIST Handbook 44. If a USDA inspector has put a retain tag on a scale it can only be removed by a USDA inspector. As long as the tag is on the scale, it shall not be used."**(MANDATORY)**		USDA/FSIS	9 CFR 317.20 (c)

Handbook 44	Reference is made to Handbook 44 in stating that "The operator of each official establishment that weighs meat food products shall cause such scales to be tested for accuracy, in accordance with the technical requirements of NIST Handbook 44, at least once during the calendar year...." **(MANDATORY)**		USDA/FSIS	9CFR 317.21 (a)
Handbook 44	Reference is made to Handbook 44 in stating that "The operator of each official establishment shall display on or near each scale a valid certification of the scale's accuracy from a State or local government's weights and measures authority or from a State registered or licensed scale repair firm or person, or shall have alternative documented procedures showing that the scale has been tested for accuracy in accordance with the requirements of NIST Handbook 44."		USDA/FSIS	9CFR 317.21 (b)
Handbook 133	In stating the definition and procedures for determining net weigh compliance in regulations pertaining to poultry product inspections, reference is made to NIST Handbook 133 as, "For the purpose of §381.121b of this part, the reasonable variations allowed, definitions, and procedures to be used in determining net weight and net weight compliance are described in the National Institute of Standards and Technology (NIST) Handbook 133, "Checking the Net Contents of Packaged Goods," Third Edition, September 1988, and Supplements 1, 2, 3, and 4 dated September 1990, October 1991, October 1992, and October 1994, respectively, which are incorporated by reference, with the exception of the NIST Handbook 133 and Supplements 1 and 3 requirements listed in paragraphs (b) and (c) of this section. Those provisions, **incorporated by reference herein, are considered mandatory requirements**"	1988	USDA/FSIS	9 CFR 381.121b(a)
Handbook 133	In stating the definition and procedures for determining net weigh compliance in regulations pertaining to poultry product inspections, specifies those requirements of NIST Handbook 133 that are not incorporated by reference (In context of Handbook 133 and its supplements IBR as stated in 9 CFR 381.121b(a)		USDA/FSIS	9 CFR 381.121b(b)
Handbook 133	In stating the definition and procedures for determining net weigh compliance in regulations pertaining to poultry product inspections, specifies those requirements of Supplement 1 dated September 1990, Supplement 3 dated October 1992, and Supplement 4 dated October 1994, of NIST Handbook 133 that are not incorporated by reference (In context of Handbook 133 and its supplements IBR as stated in 9 CFR 381.121b(a).		USDA/FSIS	9 CFR 381.121b(c)

Handbook 44	Defining the scale requirements for accurate weights, repairs, adjustment, and replacement after inspection, this regulation requires that "All scales used to weight poultry products sold or otherwise distributed in commerce in federally inspected poultry plants shall be installed, maintained, and operated to insure accurate weights. Such scales shall meet the applicable requirements contained in National Institute of Standards and Technology (NIST) Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices", 1999 Edition, November 1998, which is incorporated by reference...."**(MANDATORY), incorporated by reference**	1998	USDA/FSIS	9 CFR 381.121c(a)
Handbook 44	Defining the scale requirements for accurate weights, repairs, adjustment, and replacement after inspection, this regulation requires that "No scale shall be used at a federally inspected establishment to weigh poultry products unless it has been found upon test and inspection as specified in NIST Handbook 44 to provide accurate weight. If a scale is inspected or tested and found to be inaccurate, or if any repairs, adjustments or replacements are made to a scale, it shall not be used until it has been reinspected and retested by a USDA official, or a State or local government weights and measures official, or a State registered or licensed scale repair firm or person, and it must meet all accuracy requirements as specified in NIST Handbook 44".	1998	USDA/FSIS	9 CFR 381.121c(c)
Handbook 44	Reference is made to NIST Handbook 44 to state that "he operator of each official establishment that weighs poultry food products shall cause such scales to be tested for accuracy in accordance with the technical requirements of NIST Handbook 44, at least once during the calendar year". It is further required that "The operator of each official establishment shall display on or near each scale a valid certification of the scale's accuracy from a State or local government's weights and measures authority or from a State registered or licensed scale repair firm or person, or shall have alternative documented procedures showing that the scale has been tested for accuracy in accordance with the requirements of NIST Handbook 44." **(MANDATORY)**		USDA/FSIS	9 CFR 381.121d
NBS Handbook 69	Radiation exposure, " Determination of exclusion area, low population zone, and population center distance."- Refers to the NBS Handbook 69 (1959) in reference to determination of radiation exposure for determination of exclusion area, low population zone and population center distance as part of Reactor Site criteria.	1959	DOE/NRC	10 CFR 100.11

Handbook 136	In defining the minimum criteria for equipment used in industrial radiographic operations, this regulation refers to NBS Handbook 136, and states that "Each radiographic exposure device, source assembly or sealed source, and all associated equipment must meet the requirements specified in American National Standards Institute, N432–1980 "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography," (published as NBS Handbook 136, issued January 1981). This publication has been approved for incorporation by reference....." **(MANDATORY), Incorporated by Reference**	1981	DOE/NRC	10 CFR 34.20(a)(1)
Calibration	This regulation requires that dosimetry equipment must be calibrated using a system or source traceable to NIST as one option of a condition to be met. The second condition that needs to be satisfied requires that "the system must have been calibrated within the previous 4 years. Eighteen to thirty months after that calibration, the system must have been intercompared with another dosimetry system that was calibrated within the past 24 months by NIST or by a calibration laboratory accredited by the AAPM - American Association of Physicists in Medicine ."		DOE/NRC	10 CFR 35.630(a)(1,2)
Handbook 150-01	Reference is made to the "NVLAP Handbook 150–01, "Energy Efficient Lighting Products, Lamps and Luminaires, August 1993"	1993	DOE/Energy Conservation	10 CFR 430.22(c)(2)
Calibration	In defining the test methods and measurements as part of the Uniform Test Method for Measuring Average Lamp Efficacy (LE) and Color Rendering Index (CRI) of Electric Lamps, this regulation requires that "all lumen measurements made with instruments calibrated to the devalued NIST lumen after January 1, 1996, shall be multiplied by 1.011"		DOE	Appendix R to Subpart B of 10 CFR 430 (4)
Handbooks 150, 150-10	Reference is made to NIST Handbook 150"National Voluntary Laboratory Accreditation Program Procedures and General Requirements," and Handbook 150-10 (supplement to Handbook 150, 08/1995) in referring to the technical requirements of the National Voluntary Laboratory Accreditation Program for the Efficiency of Electric Motors field of accreditation (Supplement 150-10), and all general NIST/NVLAP procedures, criteria, and policies (Handbook 150).		DOE/Energy Efficiency	10 CFR 431.25
NVLAP	Reference is made to the NVLAP program as the accreditation body of which accredits laboratories where testing for the Energy Efficiency Program can be conducted. It also recognizes laboratories accredited by ABs having a MRA with NVLAP for testing of Efficiency of Electrical Motors.		DOE/Energy Efficiency	10 CFR 431.25

NIST 85-3273	Reference is made to NIST Publication (NIST IR 85-3273) "Life Cycle Costing Manual for Federal Energy Management Program" in stating the methodological assumptions for "estimating and comparing the life cycle costs of Federal buildings, for determining the life cycle cost effectiveness of energy conservation measures and water conservation measures, and for rank ordering life cycle cost effective measures in order to design a new Federal building or to retrofit an existing Federal building."		DOE/Energy Conservation	10 CFR 436.14(a)
NBS Handbook 69	Reference is made to NBS Handbook 69 dated June 5, 1959, in the context of determination of radiation exposure status. The citation reads "A whole body dose of 25 rem has been stated to correspond numerically to the once in a lifetime accidental or emergency dose for radiation workers which, according to NCRP recommendations at the time could be disregarded in the determination of their radiation exposure status (see NBS Handbook 69 dated June 5, 1959). However, its use is not intended to imply that this number constitutes an acceptable limit for an emergency dose to the public under accident conditions. Rather, this dose value has been set forth in this section as a reference value, which can be used in the evaluation of plant design features with respect to postulated reactor accidents, in order to assure that such designs provide assurance of low risk of public exposure to radiation, in the event of such accidents"	1959	DOE/NRC	10 CFR 50.34(a)(7)
Traceability	This regulation states the requirements for calibration and checking of measurement systems used in the "Measurement of Airplane Noise Received on the Ground". In particular, this regulation states that "Within six months of each test series the output of the noise generator must be determined by a method traceable to the U.S. National Institute of Standards and Technology or to an equivalent national standards laboratory as determined by the FAA...".		DOT/FAA	14 CFR 36 Appendix A (A36.3.9.5)
Traceability	This regulation states the requirements for calibration and checking of measurement systems used in the "Measurement of Airplane Noise Received on the Ground". In particular, this regulation states that "Within six months of each test series the output of the sound calibrator must be determined by a method traceable to the U.S. National Institute of Standards and Technology or to an equivalent national standards laboratory as determined by the FAA...".		DOT/FAA	14 CFR 36 Appendix A (A36.3.9.7)
Traceability	This regulation states the requirements for calibration and checking of measurement systems used in the "Measurement of Airplane Noise Received on the Ground". In particular, this regulation states that "Alternatively, within six months of each test series the insertion loss of the windscreen may be determined by a method traceable to the U.S. National Institute of Standards and Technology or an equivalent national standards laboratory as determined by the FAA...".		DOT/FAA	14 CFR Appendix H A36.3.9.10

	In defining the calibrations required while measuring helicopter noise received at the ground, this section in the Appendix requires that "A performance calibration analysis of each piece of calibration equipment, including pistonphones, reference microphones, and voltage insert devices, must have been made during the six calendar months preceding the beginning of each day's test series. Each calibration must be traceable to the National Bureau of Standards."**(MANDATORY)**		DOT/FAA	14 CFR Appendix H H36.109 (e)(7)
Traceability	This section of the Appendix to the regulation pertains to measurement of helicopter noise received on the ground. In defining the calibration requirements of the measuring system and components of the recording system, the regulation states that "A performance calibration analysis of each piece of calibration equipment, including acoustic calibrators, reference microphones, and voltage insertion devices, must have been made during the six calendar months preceding the beginning of the helicopter flyover series. Each calibration shall be traceable to the National Institute of Standards and Technology."**(MANDATORY)**		DOT/FAA	14 CFR 36 Appendix J (J36.107 (e)(2)(iii))
Calibration	As part of the specifications in the Test Method To Determine the Flammability and Flame Propagation Characteristics of Thermal/Acoustic Insulation Materials when exposed to both a radiant heat source and a flame, this part (Part VI, Appendix F to 14CFR25) requires that the standard transducer used for the calorimeter calibration, must in turn be calibrated against a primary standard traceable to NIST.		DOT/FAA	14 CFR 25 Appendix F PartVI(b)(7)(ii)(C)
SP 250	This regulation states that "NIST Special Publication 250, "Calibration and Related Measurement Services of the National Institute of Standards & Technology" is hereby **incorporated by reference**, pursuant to 5 U.S.C. 552(a)(1) and 1 CFR Part 51. SP 250 states the authority under which NIST performs various types of measurement services including calibrations and tests and charges fees therefore, states the general conditions under which the public may secure such services, describes these services in considerable detail, and lists the fees to be charged, and sets out the instructions for requesting them in an appendix which is reviewed, revised and reissued semi-annually (December and June). The Director, Office of the Federal Register, approved the incorporation by reference on December 28, 1967."	NDG	DOC/NIST	15 CFR 200.115(a)
SP 260	This regulation provides a description of NIST Special Publication 260, "Catalog of NIST Standard Reference Materials," and specifies that SP260 its supplement are **incorporated by reference** pursuant to 5 U.S.C. 552(a)(1) and 1 CFR Part 51	NDG	DOC/NIST	15 CFR 230.7(a)
Accreditation	This regulation states the procedures for petitioning for approval of documents related to certification, accreditation, laboratory accreditation and approval of accreditation bodies in support of the Fastener Quality Act.		DOC/NIST	15 CFR 280.101

Accreditation	This regulation in support of the Fastener Quality Act requires that "An accreditation body accrediting third parties who certify manufacturing systems as fastener quality assurance systems as described in section 3(7)(B)(iii)(I) of the Act (15 U.S.C. 5402(7)(B)(iii)(I)) shall affirm to the Director, NIST, that it meets the requirements of ISO/IEC Guide 61" and similarly, "An accreditation body accrediting laboratories as described in section 3(1)(B) of the Act (15 U.S.C. 5402(1)(B)) shall affirm to the Director, NIST, that it meets the requirements of ISO/IEC Guide 58".		DOC/NIST	15 CFR 280.102
NTTAA	This regulation states the responsibilities of the National Institute of Standards and Technology pertaining to the ICSP to coordinate Federal, state and local conformity assessment activities with private sector conformity assessment activities (Guidance on Federal Conformity Assessment, under Authority of Section 12, PL 104-113).		DOC/NIST	15 CFR 287.3
NTTAA	This regulation states the responsibilities of Federal agencies pertaining to their role under the ICSP in working with NIST and private sector bodies. (Guidance on Federal Conformity Assessment, under Authority of Section 12, PL 104-113).		DOC/NIST	15 CFR 287.4
NTTAA	Defines the responsibilities of Agency Standards Executive vis-à-vis working with NIST under the ICSP pertaining to the ICSP to coordinate Federal, state and local conformity assessment activities with private sector conformity assessment activities (Guidance on Federal Conformity Assessment, under Authority of Section 12, PL 104-113).		DOC/NIST	
NBS Calibration	This regulation stipulates the procedures used to calibrate radiation instruments used in test procedures for measuring critical radiant flux. The procedures state that for total heat flux meters "the total flux meter shall be calibrated by the National Bureau of Standards, (direct request for such calibration services to the: Radiometric Physics Division, 534, National Bureau of Standards (NBS), Washington, DC 20234.), or, alternatively, its calibration shall be developed by transfer calibration methods with an NBS calibrated flux meter."...**(MANDATORY)**. These procedures are stated as part of the interim safety standards for cellulose insulation.		CPSC	16 CFR 1209.8(b)
Unknown	This regulation states that "The National Bureau of Standards in 1972 estimated that 600,000 young children have unduly high lead blood content" as part of the CPSC's findings about the risk of injury to children due to lead poisoning. ***No further reference is made to the source of this information, i.e., no citation.***		CPSC	16 CFR 1303.5(a)(5)
Handbook 28	Refers to NBS Publication Handbook H28 "Screw Thread Standards for Federal Service"- 1512 to specify mechanical requirements for attachment hardware under requirements for bicycles. The regulation states "All threaded hardware shall be of sufficient quality to allow adjustments and maintenance. Recommended quality thread form is specified in Handbook H28..."		CPSC	16 CFR 1512.4(d)

NIST report - NIST Test Procedure published through API	To determine the substantial equivalency of processed used oil with new oil for use as engine oil, manufacturers or their designees **must use the test procedures** that were reported to the Commission by the National Institute of Standards and Technology ("NIST") on July 27, 1995, entitled "Engine Oil Licensing and Certification System," American Petroleum Institute ("API") Publication 1509, Thirteenth Edition, January, 1995. **Incorporated by Reference(MANDATORY)**	1995	FTC	16 CFR 311.4
NIST report - NIST Test Procedure published through API	Labeling requirements - A manufacturer or other seller may represent, on a label on a container of processed used oil, that such oil is substantially equivalent to new oil for use as engine oil only if the manufacturer has determined that the oil is substantially equivalent to new oil for use as engine oil in accordance with the **NIST test procedures** prescribed under §311.4 of this part, and has based the representation on that determination **(MANDATORY)**.	1995	FTC	16 CFR 311.5
NIST test procedures- used to establish penalties in case of non-compliance	Prohibited acts - A manufacturer or other seller may represent, on a label on a container of processed used oil, that such oil is substantially equivalent to new oil for use as engine oil only if the manufacturer has determined that the oil is substantially equivalent to new oil for use as engine oil in **accordance with the NIST test procedures** prescribed under §311.4 of this part, and has based the representation on that determination**(MANDATORY)**	1996	FTC	16 CFR 311.6
NBS Voluntary Product Standard 36-70	"Body Measurements for Sizing Boys Apparel (formerly CS 155-50)" - The CPSC uses the stated NBS voluntary product standard for defining "tight-fitting garments" in their standard for flammability of children's sleepwear. The NBS Voluntary standard covers standard size designations, size classifications, and body measurements for the sizing of boys' apparel.	1971	CPSC	16 CFR 1616.2(b)
NBS Voluntary Product Standard 54-72	"Body Measurements for Sizing Girls Apparel (sizes 7-14) (formerly CS 153-48)" - The CPSC uses the stated NBS voluntary product standard for defining "tight-fitting garments" in their standard that provides a test method to determine flammability of children's sleepwear (sizes 7-14). This Voluntary Product Standard establishes a nationally recognized sizing system for girls, based on body measurements.	1973	CPSC	16 CFR 1616.2(b)

NBSIR 84-7833	Regulation refers to guidelines in NBSIR 84-2833 "Data requirements for the Seismic Review of LNG facilities" to produce the required report on earthquake hazards and engineering, "if the LNG import/export facility is to be located at a site in zones 2, 3, or 4 of the Uniform Building Code's Seismic Risk Map of the United States, or where there is a risk of surface faulting or ground liquefaction" in filing Applications for Authorization to Construct, Operate or Modify Facilities Used for the Export or Import of Natural Gas".**(MANDATORY)**		FERC	18 CFR 153.8(a)(6)
Security guidelines	This regulation refers to guidelines developed by the DoC(NBS) and other government agencies to ensure safety of information in manual and computer based systems. The regulation states that "whenever records in the manual or computer-based record systems, including input and output documents, punched cards, and magnetic tapes or disks, are not under the personal control of an authorized person, they will be stored in lockable containers and/or in a secured room, or in alternative storage systems which furnish an equivalent or greater degree of physical security. In this regard, the Commission may refer to security guidelines prepared by the General Services Administration, the Department of Commerce (National Bureau of Standards), or other agencies with appropriate knowledge and expertise".		FERC	18 CFR 3b.204(b)
Handbook 44	Measure Container Code, section 4.45 Measure Containers; Exemptions from required label statements - Mentions that certain frozen foods "when measured by and packaged in 1/2-liquid pint and 1/2-gallon measure-containers, as defined in the "Measure Container Code of National Bureau of Standards Handbook 44," Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, Sec. 4.45 "Measure-Containers," which is **incorporated by reference**, are exempt from the requirements of § 101.105(b)(2) of this chapter (i.e., that statements of fluid measure shall be in terms of the U.S. gallon of 231 cubic inches and quart, pint, and fluid ounce subdivisions thereof, and shall (i) In the case of frozen food that is sold and consumed in a frozen state, express the volume at the frozen temperature.) to the extent that net contents of 8-fluid ounces and 64-fluid ounces (or 2 quarts) may be expressed as 1/2 pint and 1/2 gallon.	NDG	HHS/FDA	21 CFR 1.24(a)(6)(i)
Handbook 44	Measure Container Code, section 4.45 Measure Containers; Exemptions from required label statements - mentions that the certain frozen foods referred to in 21CFR1.24(a)(6)(i) when measured by and packaged in 1-liquid pint, 1-liquid quart, and 1/2-gallon measure-containers, as defined in the "Measure Container Code of National Bureau of Standards Handbook 44," Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, Sec. 4.45 "Measure-Containers," which is **incorporated by reference,** are exempt from the dual net-contents declaration requirement of § 101.105(j) containing labeling requirements for packages containing less than 4 pounds or 1 gallon and labeled in terms of weight or fluid measure.	NDG	HHS/FDA	21 CFR 1.24(a)(6)(ii)

Handbook 44	Measure Container Code, section 4.45 Measure Containers; Exemptions from required label statements - Mentions that frozen foods referred in 21 CFR1.24(a)(6)(i) when measured by and packaged in 1/2-liquid pint, 1-liquid pint, 1-liquid quart, 1/2-gallon, and 1-gallon measured-containers, as defined in the "Measure Container Code of National Bureau of Standards Handbook 44," Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, Sec. 4.45 "Measure-Containers," which is **incorporated by reference**, are exempt from the requirement of § 101.105(f) (i.e., The declaration shall appear as a distinct item on the principal display panel, shall be separated (by at least a space equal to the height of the lettering used in the declaration) from other printed label information appearing above or below the declaration and (by at least a space equal to twice the width of the letter "N" of the style of type used in the quantity of contents statement) from other printed label information appearing to the left or right of the declaration. It shall not include any term qualifying a unit of weight, measure, or count (such as "jumbo quart" and "full gallon") that tends to exaggerate the amount of the food in the container. It shall be placed on the principal display panel within the bottom 30 percent of the area of the label panel in lines generally parallel to the base on which the package rests as it is designed to be displayed: Provided, That on packages having a principal display panel of 5 square inches or less, the requirement for placement within the bottom 30 percent of the area of the label panel shall not apply when the declaration of net quantity of contents meets the other requirements of this part.)	NDG	HHS/FDA	21 CFR 1.24(a)(6)(iii)
Circular 484	Spectrophotometry - Refers to NBS Circular 484 **(incorporated by reference)** , for establishing the absorbance accuracy (performance requirement) of a spectophotometer used for determination of ultraviolet absorbance of petroleum naptha. The regulation specifies the ultraviolet absorbance limits of petroleum naptha that can be used in or on foods.	1949	HHS/FDA	21 CFR 172.250(b)(3)
Circular 484	Spectrophotometry - Refers to NBS Circular 484 **(incorporated by reference)**, for establishing the absorbance accuracy (performance requirement) of a spectophotometer used for determination of ultraviolet absorbance of synthetic fatty alcohols. The regulation specifies the ultraviolet absorbance limits of synthetic fatty alcohols (for safe use) that can be used in or on foods.		HHS/FDA	21 CFR 172.864
Circular 484	Spectrophotometry - Refers to NBS Circular 484 **(incorporated by reference)**, for establishing the absorbance accuracy (performance requirement) of a spectophotometer used for determination of ultraviolet absorbance of petroleum wax. The regulation specifies the ultraviolet absorbance limits of petroleum wax (for safe use) that can be used in or on foods.	1949	HHS/FDA	21 CFR 172.886

NBS Material No. 577	Specifies spectrophotometric measurements as "All measurements are made in an ultraviolet spectrophotometer in optical cells of 5 centimeters in length, and in the range of 255 millimicrons to 310 millimicrons, under the same instrumental conditions. The standard reference absorbance is the absorbance at 275 millimicrons of a standard reference solution of naphthalene (National Bureau of Standards Material No. 577 or equivalent in purity) containing a concentration of 1.4 milligrams per liter in purified isooctane, measured against isooctane of the same spectral purity in 5-centimeter cells. (This absorbance will be approximately 0.30.)" as a test for compliance that food additive combustion product gas may be safely used in the processing and packaging of the foods for the purpose of removing and displacing oxygen.		HHS/FDA	21 CFR 173.350(e)
Circular 484	Refers to NBS Circular 484 **(incorporated by reference)**, for establishing the absorbance accuracy (performance requirement) of a spectophotometer using potassium chromate for reference standard; used for determination of ultraviolet absorbance of mineral oil. The regulation specifies the ultraviolet absorbance limits of mineral oil that can be safely used as a component of nonfood articles intended for use in contact with food.		HHS/FDA	21 CFR 178.3620(c)(3)(iii)
Circular 484	Refers to "National Bureau of Standards Circular 484, Spectrophotometry, U.S. Department of Commerce, 1949" for establishing procedure used to determine accuracy of absorbance limits in the analytical method for determining ultraviolet absorbance limits and pyrene content of mineral oil that can be safely used as a component of nonfood articles intended for use in contact with food.		HHS/FDA	21 CFR 178.3620(d)(3)(I)(F)
Circular 484	Spectrophotometry - Refers to a procedure described NBS Circular 484 **(incorporated by reference)**; for determination of UV absorbance accuracy of spectrophotometer while establishing accuracy limits in measurement of polyhydric alcohol esters of oxidatively refined (Gersthofen process) montan wax in order to be safely used as components of articles intended for use in contact with food.	1949	HHS/FDA	21 CFR 178.3770(a)(4)
Circular 484	Spectrophotometry -refers to NBS circular 484 **(incorporated by reference)** for establishing the absorbance accuracy (performance requirement) of a spectophotometer used for determination of ultraviolet absorbance of lubricants. The regulation specifies the ultraviolet absorbance limits for safe use of lubricants used in the manufacture of metallic articles that contact foods.	1949	HHS/FDA	21 CFR 178.3910(a)(4)(iii)
Voluntary Product Standard	Definition of voluntary product standards- states that "If there exists a voluntary product standard promulgated pursuant to the procedures found in 15 CFR part 10 by the Department of Commerce, quantitatively defining the meaning of the term serving with respect to a particular food, then any label representation as to the number of servings in such packaged food shall correspond with such quantitative definition. (Copies of published standards are available upon request from the National Bureau of Standards, Department of Commerce, Washington, DC 20234.)"		HHS/FDA	21 CFR 501.8(b)

Traceability	An audiometer calibration set is identified as "a device that consists of an acoustic cavity of known volume, a sound level meter, a microphone with calibration traceable to the National Bureau of Standards, oscillators, frequency counters, microphone amplifiers, and a recorder. The device can measure selected audiometer test frequencies at a given intensity level, and selectable audiometer attenuation settings at a given test frequency." This is within the context of identification of diagnostic devices, particularly Ear, Nose and Throat devices.		HHS/FDA	21 CFR 874.1080(a)
Traceability / calibration	This sub-section defines "Traceable to a national standard means an instrument is calibrated at either the National Institute of Standards and Technology (NIST) or at a calibration laboratory that participates in a proficiency program with NIST at least once every 2 years and the results of the proficiency test conducted within 24 months of calibration show agreement within ± 3 percent of the national standard in the mammography energy range."		HHS/FDA	21 CFR 900.2
NBS Publication	As per the Privacy Act of 1974, this regulation states that amongst other requirements "when the records subject to the Act are maintained in computerized form, safeguards shall be utilized based on those recommended in the National Bureau of Standard's booklet “Computer Security Guidelines for Implementing the Privacy Act of 1974” (May 30, 1975), and any supplements thereto, which are adequate and appropriate to assuring the integrity of the records". "The Act requires that records subject to the Act be maintained with appropriate administrative, technical and physical safeguards to ensure the security and confidentiality of records and to protect against any anticipated threats or hazards to their security or integrity which could result in substantial harm, embarrassment, inconvenience or unfairness to any individual on whom information is maintained".			22 CFR 1101.5(c)
Accreditation	Reference is made to the NVLAP program in stating that HUD may require accreditation of testing laboratories for certain products by a program such as the NVLAP for HUD building product certification requirements.		HUD	24 CFR 200.935(d)(3)
Traceability	This regulation requires that as part of laboratory qualifications applicable to all testing laboratories participating in the program including manufacturer's laboratories and the administrator's own laboratories when designated in the specific program, each laboratory shall, "Provide a description of the applicable standards and calibration equipment being used and the calibration procedures followed, including *National Bureau of Standards traceability*, when applicable. List outside organizations providing calibration services, if used."		HUD	24 CFR 200.935(e)(2)(iii)
CS 138-55	Reference is made to NIST CS 138–55 "Insect Wire Screening" as a standard that has been **incorporated by reference** in the HUD Minimum Property Standards (MPS) in 24 CFR part 200.	1955	HUD	24 CFR 200, Appendix A

CS 242-62	Reference is made to NIST CS 242–62 "1 3/4" Steel Doors & Frames" as a standard that has been **incorporated by reference** in the HUD Minimum Property Standards (MPS) in 24 CFR part 200.	1962	HUD	24 CFR 200, Appendix A
PS 1-83	Reference is made to NIST PS 1-83 "Product Standard for Construction and Industrial Plywood with Typical APA Trademarks" as a standard that has been **incorporated by reference** in the HUD Minimum Property Standards (MPS) in 24 CFR part 200.	1983	HUD	24 CFR 200, Appendix A
PS 2-92	Reference is made to NIST PS 2-92 "Performance Standard for Wood-Based Structural-Use Panels" as a standard that has been **incorporated by reference** in the HUD Minimum Property Standards (MPS) in 24 CFR part 200.	1992	HUD	24 CFR 200, Appendix A
DOC FF1-70	Standard test method for Flammability of Finished Textile Floor Covering Materials - also available as ASTM D2859–76, **incorporated by reference** - NBS standard has been stated under "Supplementary specific procedural requirements under HUD building product standards and certification program for carpet and carpet with attached cushion". (mandatory)	1970	HUD	24 CFR 200.942
NVLAP Accreditation	States that periodic testing for quality control will be conducted on "select samples for testing, and testing shall be conducted, in accordance with the applicable standards in a laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Bureau of Standards, U.S. Department of Commerce" (mandatory)		HUD	24 CFR 200.942(c)(1)
Voluntary Public Standard 1-83	Construction and Industrial Plywood - States that " All plywood made to specifications of Voluntary Product Standard, PS 1–83, "Construction and Industrial Plywood" (published by the U.S. Department of Commerce, National Bureau of Standards (May 1984)) and grade marked as PS 1–83 shall conform to the requirements of PS 1–83, except that all veneers may be D-grade" as a supplementary specific requirements under the HUD building product standards and certification program for plywood and other performance rated wood-based structural-use panels (mandatory).		HUD	24 CFR 200.944
Voluntary Public Standard 20-94	States that lumber shall be grademarked in compliance with VPS 20-94 American Softwood Lumber Standard as a Supplementary specific requirements under the HUD building product standards and certification program for the grademarking of lumber. This VPS has been **incorporated by reference.**	1994	HUD	24 CFR 200.943(a)(1)
NVLAP Accreditation	NVLAP - carpet -requires that "Every six months, three samples and one annual field sample of carpet shall be submitted to the Administrator for testing in a laboratory accredited by the National Voluntary Laboratory Accreditation Program of the U.S. Department of Commerce" as part of a periodic testing and quality assurance inspection protocol under Supplementary specific requirements under the HUD building product standards and certification program for carpet(mandatory).		HUD	24 CFR 200.945

Voluntary Product Standard 1-83	In specifying Body and Frame Construction Requirements under Manufactured Home Construction and Safety Standards, this regulation refers to Voluntary Product Standard, Construction and Industrial Plywood -PS-1-83 (standards for wood and wood products). Materials meeting this standard when appropriate are considered acceptable unless otherwise specified herein or unless substantial doubt exists as to conformance.		HUD	24 CFR 3280.304(b)(1)
Public Standard 2-92	In specifying Body and Frame Construction Requirements under Manufactured Home Construction and Safety Standards, this regulation refers to Performance Standard for Wood-Based Structural Use Panels—PS–2–92, APA. Materials meeting this standard when appropriate are considered acceptable unless otherwise specified herein or unless substantial doubt exists as to conformance.		HUD	24 CFR 3280.304
NBS weights and measures	"b) All weights and measure shall conform to standards set by the National Bureau of Standards and to standards, if any, set by the tribe and, if not in conflict with tribal regulations, to the standards set by the State". Part of the Health and Sanitation requirements for general business practices on certain Indian reservations.	No date	Indian Affairs	25CFR141.17
NBS Publication - computer security	"(c) When maintained in computerized form, student records shall be maintained, at a minimum, subject to safeguards based on those recommended in the National Bureau of Standards' booklet, “Computer Security Guidelines for Implementing the Privacy Act of 1974” (May 30, 1975), and any supplements to it, which are adequate and appropriate to assure the integrity of records in the system."	1974	Indian Affairs	25 CFR 43.22
NBS Publication - computer security	"(c) Records maintained in computerized form. When maintained in computerized form, records subject to the Privacy Act shall be maintained, at a minimum, subject to safeguards based on those recommended in the National Bureau of Standards booklet “Computer Security Guidelines for Implementing the Privacy Act of 1974” (May 30, 1975), and any supplements thereto, which are adequate and appropriate to assuring the integrity of records in the system."	1974	Indian Affairs	25CFR 700.263
NBS Security Guidelines	"(a) The Office Administrator or Security Officer shall be responsible for issuing regulations governing the security of systems of records. To the extent that such regulations govern the security of automated systems of records, the regulations shall be consistent with the guidelines developed by the National Bureau of Standards."	No date	Judicial Administration	28 CFR 700.24

CS 202-56	Industrial Lifts and Hinged Loading Ramps??? "(3) Powered dockboards shall be designed and constructed in accordance with Commercial Standard CS202–56 (1961) "Industrial Lifts and Hinged Loading Ramps published by the U.S. Department of Commerce, which is incorporated by reference as specified in §1910.6."	1961	DOL/OSHA	29 CFR 1910.30
NBS coupler	*"Appendix E to §1910.95—Acoustic Calibration of Audiometers. This Appendix is Mandatory. Audiometer calibration shall be checked acoustically, at least annually, according to the procedures described in this appendix. The equipment necessary to perform these measurements is a sound level meter, octave-band filter set, and a National Bureau of Standards 9A coupler. In making these measurements, the accuracy of the calibrating equipment shall be sufficient to determine that the audiometer is within the tolerances permitted by American Standard Specification for Audiometers, S3.6–1969."*	No date	DOL/OSHA	29 CFR 1910.95
Reference publications	"Appendix B to §1910.145(f)—References for Further Information The following references provide information which can be helpful in understanding the requirements contained in various sections of the standard: …..3. Glass, R.A. and others, Some Criteria for Colors and Signs in Workplaces, National Bureau of Standards, Washington DC, 1983…..5. Howett, G.L., Size of Letters Required for Visibility as a Function of Viewing Distance and Observer Acuity, National Bureau of Standards, Washington DC, July 1983…..6. Lerner, N.D. and Collins, B.L., The Assessment of Safety Symbol Understandability by Different Testing Methods, National Bureau of Standards, Washington DC, 1980…..7. Lerner, N.D. and Collins, B.L., Workplace Safety Symbols, National Bureau of Standards, Washington DC, 1980…..12. Symbols for Industrial Safety, National Bureau of Standards, Washington DC, April 1982."	1980-1983	DOL/OSHA	29 CFR 1910.145
NVLAP	Asbestos -- B) Performing tests of the material containing PACM which demonstrate that no ACM is present in the material..... Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA) or an equivalent nationally-recognized round robin testing program.		DOL/OSHA	29 CFR 1910.1001
Publication	I. Appendix general references. The following references provide information which can be helpful in understanding the requirements contained in all of the sections of subpart L:J. Employee alarm systems: … 8. Fire Alarm and Communication Systems. National Bureau of Standards. Washington, D.C., April 1978.	1978	DOL/OSHA	1910.165 Appendix C to Subpart L

SRM 2670	Refers to SRM 2670 as a source of reference materials that maybe available for use in QC/QA analyses of Cadmium in Urine under the Occupational Safety and Health Standards for Hazardous and Toxic Materials. The reference reads "National Institute of Standards and Technology (NIST), Dept. of Commerce, Gaithersburg, MD; tel: (301) 975–6776. (Prepared as SRM 2670 freeze-dried urine [metals]; set includes normal and elevated levels of metals; cadmium is certified for elevated level of 88.0 µg/l in reconstituted urine.)".		DOL/OSHA	29 CFR 1910.1027 3.3.1.1
Calibration	Regulations defining the exemptions to the general duties of persons accredited to certificate (sic) vessels' cargo gear refer to traceability to NBS as "Dynamometers or other recording test equipment owned by an accredited person shall have been tested for accuracy within the six months next preceding application for accreditation or renewal of same. Such test shall be performed with calibrating equipment which has been checked in turn so that indications are traceable to the National Bureau of Standards."		DOL/OSHA	29 CFR 1919.10(d)
Traceability/Calibration	Regulations defining the exemptions to the general duties of persons accredited to certificate (sic) shore-based material handling devices refer to traceability to NBS as "All required unit proof load tests shall be carried out by the use of weights as a dead load. Only where this is not possible may dynamometers or other recording test equipment be used. Any such recording test equipment owned by an accredited person shall have been tested for accuracy within the 6 months next preceding application for accreditation or renewal thereof. Such test shall be performed with calibrating equipment which has been checked in turn so that indications are traceable to the National Bureau of Standards"		DOL/OSHA	29 CFR 1919.60(c)
NBS Special Pub	Ross, M. *The Asbestos Minerals: Definitions, Description, Modes of Formation, Physical and Chemical Properties and Health Risk to the Mining Community,* Nation Bureau of Standards Special Publication, Washington, DC, 1977, is referred to in the description of the method performance of the Polarized Light Microscopy of Asbestos (Non-Mandatory) under the safety and health regulations for construction.	1977	DOL/OSHA	29 CFR 1926.1101 Appendix K 5.9
Proficiency Testing	Reference is made to NIST having conducted proficiency testing of laboratories on a national scale for method performance of the Polarized Light Microscopy of Asbestos (Non-Mandatory) under the safety and health regulations for construction.		DOL/OSHA	29 CFR 1926.1101 Appendix K 1.4.1
NBS Report BSS-121	Reference is made to NBS Report BSS-121 as a source of definitions, in part, related to classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. This relates to regulations under the safety and health regulations for construction.		DOL/OSHA	29 CFR 1926 Appendix A(b)

NBS report	Reference is made to National Bureau of Standards (NBS) report, "Recommended Technical Provisions for Construction Practice in Shoring and Sloping of Trenches and Excavations" for defining the dimensions of timber members in the section on the basis and limitations of data that can be used in timber shoring as a method of preventing cave-ins in trenches that do not exceed 20ft. in depth. This part is under the safety and health regulations for construction.		DOL/OSHA	29 CFR 1926 Appendix C (d)(1)(i)
Laboratory accreditation	This regulation requires that for performing tests of the material containing PACM (Presumed Asbestos Containing Material) which demonstrate that no ACM (asbestos containing material) is present in the material "Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA) or an equivalent nationally-recognized round robin testing program" for testing related to asbestos exposure.		DOL/OSHA	29 CFR 1926.1101(j)(5)(ii)(B)
Handbook 69	Reference is made to "National Bureau of Standards Handbook No. 69 entitled "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," issued June 5, 1959" to define the conditions which occupations involving exposure to radioactive substances and to ionizing radiations are considered particularly hazardous and detrimental to health for minors between 16 and 18 years of age, as part of the child labor regulations, orders and statements of interpretation.		DOL/WHD	29 CFR 570.57(a)(1)
NBS Handbook 81	This regulation states that "Guy wires of poles supporting high-voltage transmission lines shall meet the requirements for grounding or insulator protection of the National Electrical Safety Code, part 2, entitled "Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines" (also referred to as National Bureau of Standards Handbook 81, November 1, 1961) and Supplement 2 thereof issued March 1968, which are hereby **incorporated by reference** and made a part hereof" as part of the safety and health standards for surface metal and non-metal mines.	1961	DOL/MSHA	30 CFR 56.12047
NBS Handbook 81	This regulation states that "Guy wires of poles supporting high-voltage transmission lines shall meet the requirements for grounding or insulator protection of the National Electrical Safety Code, part 2, entitled "Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines" (also referred to as National Bureau of Standards Handbook 81, Nov. 1, 1961), and Supplement 2 thereof issued March 1968, which are hereby **incorporated by reference** and made a part hereof" as part of the safety and health standards for underground metal and non-metal mines.	1961	DOL/MSHA	30 CFR 57.12047

Traceability/Calibration	As part of the product testing requirements for testing by third party of the applicants, this regulation states that "Unless otherwise specified in the subpart, test instruments shall be calibrated at least as frequently as, and according to, the instrument manufacturer's specifications, using calibration standards traceable to those set by the National Bureau of Standards, U.S. Department of Commerce or other nationally recognized standards and accurate to at least one significant figure beyond the desired accuracy"		DOL/MSHA	30 CFR 7.4(b)
Traceability/Calibration	As part of the QA requirements for testing by third party or applicants, this regulation states that "Unless otherwise specified in the subparts, calibrate instruments used for the inspection and testing of critical characteristics at least as frequently as, and according to, the instrument manufacturer's specifications, using calibration standards traceable to those set by the National Bureau of Standards, U.S. Department of Commerce or other nationally recognized standards and use instruments accurate to at least one significant figure beyond the desired accuracy"		DOL/MSHA	30 CFR 7.7(b)
Traceability	This regulation requires that "Calibration gas values shall be traceable to the National Institute for Standards and Testing (NIST), "Standard Reference Materials" (SRMs). The analytical accuracy of the calibration gas values shall be within 2.0 percent of NIST gas standards" as part of the test equipment requirements for diesel engines intended for use in underground coal mines**(MANDATORY)**.		DOL/MSHA	30 CFR 7.86(b)(16)
Traceability	This regulation states that "Span gas values shall be traceable to NIST SRMs. The analytical accuracy of the span gas values shall be within 2.0 percent of NIST gas standards" as part of the test equipment requirements for diesel engines intended for use in underground coal mines **(MANDATORY)**.		DOL/MSHA	30 CFR 7.86(b)(17)
Calibration	States that "Light measuring instruments shall be properly calibrated and maintained. Instruments shall be calibrated against standards traceable to the National Bureau of Standards and color corrected to the Commission Internationale de l'Eclairage (CIE) Spectral Luminous Curve" as a requirement for procedures to be followed in measuring luminous intensity **(MANDATORY)**.		DOL/MSHA	30 CFR 75.1719-3
National Electrical Safety Code (NBS Handbook 81?)	Reference is made to the National Electrical Safety Code as "High-voltage powerlines located above driveways, haulageways, and railroad tracks shall be installed to provide the minimum vertical clearance specified in National Electrical Safety Code: Provided, however, That in no event shall any high-voltage powerline be installed less than 15 feet above ground". The National Electrical Safety Code is the NBS Handbook 81.	1971	DOL/MSHA	30 CFR 77.807-1

Security standards	This regulation states that "Automated systems shall comply with the security standards ***promulgated*** by the National Bureau of Standards" to meet the requirements of accurate and secure maintenance of records under the Privacy Act.		Treasury	31 CFR 1.22(d)(3)(i)
Handbook 69	This regulation states that "All new activities and modification of existing facilities which involve the continuous release of radioactive materials in effluents to air, water or sanitary sewerage systems will not exceed 1 percent of the activity concentration as specified in National Council on Radiation Protection and Measurement Report No. 22 (National Bureau of Standards Handbook No. 69) and 10 CFR part 20 when averaged over 1 month..." as part of policies and procedures applicable to radioactive materials and nuclear accidents and incidents.		DOD	32 CFR 650.139(h)(i)
Measurement	Requires that "Engine flywheel torque readout must meet one of the two following standards for accuracy" both of which refer to the NIST true value, to meet the stated dynamometer and engine equipment specifications**(MANDTORY)**.		EPA	40 CFR 1065.105(a)(2)
Traceability	Requires that "Flow meters must have accuracy and precision of ±2 percent of point or better and be traceable to NIST standards" as part of the requirements for equipment and analyzers.		EPA	40 CFR 1065.150(a)
Traceability	For meeting the requirements that analytical gases have to comply with for accuracy and purity specifications the regulation states that "The calibration gases in paragraph (c)(1) of this section must be traceable to within one percent of NIST gas standards or other gas standards we have approved. Span gases in paragraph (c)(1) of this section must be accurate to within two percent of true concentration, where true concentration refers to NIST gas standards, or other gas standards we have approved."		EPA	40 CFR 1065.250(c)(2)
Traceability	States that gases other that those specifically stated can be used provided that they meet the requirements that "they are traceable to within ±2 percent of NIST gas standards or other standards we have approved" as part of the requirements that analytical gases have to comply with to meet accuracy and purity specifications.		EPA	40 CFR 1065.250(c)(3)(i)
Traceability	Requires a knowledge of "the concentration of primary gases used for blending to an accuracy of at least ± 1 percent, traceable to NIST gas standards or other gas standards we have approved" for purposes of "generate calibration and span gases using precision blending devices (gas dividers) to dilute gases with purified nitrogen or with purified synthetic air" as part of the requirements that analytical gases have to comply with to meet accuracy and purity specifications.		EPA	40 CFR 1065.250(c)(4)
Traceability	Exempts the need for approval to be sought for using international calibration standards, if the "standards that have been shown to be traceable to NIST standards". This applies to analyzer and equipment calibration and is stated as part of the test procedures and equipment requirements.		EPA	40 CFR 1065.305(b)

Traceability	For purposes of torque calibration "the NIST “true value” torque is defined as the torque calculated by taking the product of an NIST traceable weight or force and a sufficiently accurate horizontal distance along a lever arm, corrected for the lever arm's hanging torque".		EPA	40 CFR 1065.315
Traceability	Calibration weights used for calibration of torque-measuring devices have to be traceable to NIST weights.		EPA	40 CFR 1065.315 (a)(1), (b)(1)
Measurement	Defines the term "accuracy" to mean "the maximum difference between a measured or calculated value and the true value, where the true value is determined by NIST".			40 CFR 1065.1001
Traceability	A stock solution is defined as "A solution containing an analyte that is prepared using a reference material traceable to EPA, the National Institute of Science and Technology (NIST), or a source that will attest to the purity and authenticity of the reference material" as part of the definitions pertaining to Method 1613, Revision B for the determination of Tetra- Through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS as one of the Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater.		EPA	40 CFR 136 Appendix A; Method 1613, Rev.B 24.2
NBS SP 442	NBS SP 442 "Giam, C.S., and Chan, H.S. “Control of Blanks in the Analysis of Phthalates in Air and Ocean Biota Samples,” U.S. National Bureau of Standards, Special Publication 442, pp. 701–708, 1976" is referred to in specifying Method 608 which is applicable for determination of certain organochlorines and PCBs as one of the Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater	1976	EPA	40 CFR 136 Appendix A Method 608
NBS SP 442	NBS SP 442 "Giam, C.S., and Chan, H.S. “Control of Blanks in the Analysis of Phthalates in Air and Ocean Biota Samples,” U.S. National Bureau of Standards, Special Publication 442, pp. 701–708, 1976" is referred to in specifying Method 606 which is applicable for determination of certain phthalate esters as one of the Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater	1976	EPA	40 CFR 136 Appendix A Method 606
NBS Handbook 69	Reference to NBS Handbook 69, in defining "Man-made beta particle and photon emitters" as all radionuclides emitting beta particles and/or photons listed in Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure, NBS Handbook 69, except the daughter products of thorium-232, uranium-235 and uranium-238, as part of the definitions under the National Primary Drinking Water Regulations.	1963	EPA	40 CFR 141.2

NBS Handbook 69	Reference is made to the NBS Handbook 69 to state that "Except for the radionuclides listed in table A, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents must be calculated on the basis of 2 liter per day drinking water intake using the 168 hour data list in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NBS (National Bureau of Standards) Handbook 69 as amended August 1963, U.S. Department of Commerce" **(MANDATORY) incorporated by reference**	1963	EPA	40 CFR 141.66(d)(2)
Traceability	Method 1650—Adsorbable Organic Halides by Adsorption and Coulometric Titration, and Method 1653—Chlorinated Phenolics in Wastewater by In Situ Acetylation and GCMS define stock solution as "a solution containing an analyte that is prepared using a reference material traceable to EPA, the National Institute of Science and Technology (NIST), or a source that will attest to the purity and authenticity of the reference material".		EPA	40 CFR 430 Appendix A, Method 1650, 18.2; Method 1653, 20.2
EPA/NIST Mass Spec Library	It is advised that the most recent version of the EPA/NIST Mass Spectral Library be available, to be used as part of the data system where the computer system has to be interfaced to the mass spec and the "system must allow the continuous acquisition and storage on machine-readable media of all mass spectra obtained throughout the duration of the chromatographic program". This forms part of the procedures for Determination of Crude Oil Contamination in Non-Aqueous Drilling Fluids by Gas Chromatography/Mass Spectrometry (GC/MS).		EPA	40 CFR 435 Appendix 5; 6.3.4
SRM 1582	NIST SRM 1582 petroleum crude oil is stated as the Standard crude oil for Reverse Phase Extraction (RPE) Method for Detection of Oil Contamination in Non-Aqueous Drilling Fluids (NAF), under the regulations in the oil and gas extraction point source category.		EPA	40 CFR 435 Appendix 6; 7.3
SRM	Definitions -defines "traceable" as a local standard has been compared and certified either directly or via not more than one intermediate standard, to a primary standard such as a National Bureau of Standards Standard Reference Material (NBS SRM), or a USEPA/NBS-approved Certified Reference Material (CRM) - and hence references NBS SRMs		EPA	40 CFR 50.1
NBS Calibration	As part of the calibration procedures for flow measurements defined under the Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method) it is required that "Flow measuring devices used for the on-site flow measurements required in 9.4.2 must be calibrated against a reliable flow or volume standard such as an NBS traceable bubble flowmeter or calibrated wet test meter".		EPA	40 CFR 50 Appendix A 9.4.1

NBS SRM 1625	In the dynamic calibration procedures used as part of the Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method), under the National Primary and Secondary Ambient Air Quality Standards, "Atmospheres containing accurately known concentrations of sulfur dioxide are prepared using permeation devices. In the systems for generating these atmospheres, the permeation device emits gaseous SO2 at a known, low, constant rate, provided the temperature of the device is held constant (±0.1 °C) and the device has been accurately calibrated at the temperature of use. The SO2 permeating from the device is carried by a low flow of dry carrier gas to a mixing chamber where it is diluted with SO2-free air to the desired concentration and supplied to a vented manifold." Further, "Permeation devices" as described above "may be prepared or purchased and in both cases must be traceable either to a National Bureau of Standards (NBS) Standard Reference Material (SRM 1625, SRM 1626, SRM 1627) or to an NBS/EPA-approved commercially available Certified Reference Material (CRM)."		EPA	40 CFR 50 Appendix A 10.3
NBS SRM 1626	In the dynamic calibration procedures used as part of the Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method), under the National Primary and Secondary Ambient Air Quality Standards, "Atmospheres containing accurately known concentrations of sulfur dioxide are prepared using permeation devices. In the systems for generating these atmospheres, the permeation device emits gaseous SO2 at a known, low, constant rate, provided the temperature of the device is held constant (±0.1 °C) and the device has been accurately calibrated at the temperature of use. The SO2 permeating from the device is carried by a low flow of dry carrier gas to a mixing chamber where it is diluted with SO2-free air to the desired concentration and supplied to a vented manifold." Further, "Permeation devices" as described above "may be prepared or purchased and in both cases must be traceable either to a National Bureau of Standards (NBS) Standard Reference Material (SRM 1625, SRM 1626, SRM 1627) or to an NBS/EPA-approved commercially available Certified Reference Material (CRM)."		EPA	40 CFR 50 Appendix A 10.3

NBS SRM 1627	In the dynamic calibration procedures used as part of the Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method), under the National Primary and Secondary Ambient Air Quality Standards, "Atmospheres containing accurately known concentrations of sulfur dioxide are prepared using permeation devices. In the systems for generating these atmospheres, the permeation device emits gaseous SO2 at a known, low, constant rate, provided the temperature of the device is held constant (±0.1 °C) and the device has been accurately calibrated at the temperature of use. The SO2 permeating from the device is carried by a low flow of dry carrier gas to a mixing chamber where it is diluted with SO2-free air to the desired concentration and supplied to a vented manifold." Further, "Permeation devices" as described above "may be prepared or purchased and in both cases must be traceable either to a National Bureau of Standards (NBS) Standard Reference Material (SRM 1625, SRM 1626, SRM 1627) or to an NBS/EPA-approved commercially available Certified Reference Material (CRM)."		EPA	40 CFR 50 Appendix A 10.3
Traceability	APPENDIX B -- REFERENCE METHOD FOR THE DETERMINTION OF PARTICULATE MATTER IN THE ATMOSPHERE (NBS Traceable) - States that equipment required for certifying a flow rate transfer standard includes a positive displacement standard volume meter traceable to the National Bureau of Standards		EPA	40 CFR 50 Appendix B; 9.2.1
NBS SRM traceable	Requirements for reagents used in calibration procedures stated under Measurement Principle and Calibration Procedure for the Measurement of Carbon Monoxide in the Atmosphere (Non-Dispersive Infrared Photometry), defined NATIONAL PRIMARY AND SECONDARY AMBIENT AIR QUALITY STANDARDS under the national primary and secondary ambient air quality standards, it is required that "Cylinder(s) of CO in air containing appropriate concentrations(s) of CO suitable for the selected operating range of the analyzer under calibration; CO standards for the dilution method may be contained in a nitrogen matrix if the zero air dilution ratio is not less than 100:1. The assay of the cylinder(s) must be traceable either to a National Bureau of Standards (NBS) CO in air Standard Reference Material (SRM) or to an NBS/EPA-approved commercially available Certified Reference Material (CRM)."		EPA	40 CFR 50 Appendix C 3.1
Traceability	APPENDIX D -- MEASUREMENT AND CALIBRATION PROCEDURE FOR THE MEASUREMENT OF OZONE (NBS Traceable) - States that in calibration of ozone analyzers, the flow rate through the O3 generator and the dilution air flow rate (FD) be measured with a reliable flow or volume standard traceable to NBS.		EPA	40 CFR 50 Appendix D; 5.5.7

NBS SRM 1629	In stating the Measurement Principle and Calibration Procedure for the Measurement of Nitrogen Dioxide in the Atmosphere (Gas Phase Chemiluminescence), under the National Primary and Secondary Ambient Air Quality Standards, for calibration using gas phase titration of an NO standard with ozone, the NO concentration standard should be a "Gas cylinder standard containing 50 to 100 ppm NO in N2 with less than 1 ppm NO2". Further, "This standard must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), an NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM) ". Similarly, for calibration using NO2 permeation devices "Calibration standards are required for both NO and NO2. The reference standard for the calibration may be either an NO or NO2 standard, and must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), and NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM)".		EPA	40 CFR 50 Appendix F 1.3.1, 2.3.1
NBS SRM 1683	In stating the Measurement Principle and Calibration Procedure for the Measurement of Nitrogen Dioxide in the Atmosphere (Gas Phase Chemiluminescence), under the National Primary and Secondary Ambient Air Quality Standards, for calibration using gas phase titration of an NO standard with ozone, the NO concentration standard should be a "Gas cylinder standard containing 50 to 100 ppm NO in N2 with less than 1 ppm NO2". Further, "This standard must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), an NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM) ". Similarly, for calibration using NO2 permeation devices "Calibration standards are required for both NO and NO2. The reference standard for the calibration may be either an NO or NO2 standard, and must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), and NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM)".		EPA	40 CFR 50 Appendix F 1.3.1, 2.3.1

NBS SRM 1684	In stating the Measurement Principle and Calibration Procedure for the Measurement of Nitrogen Dioxide in the Atmosphere (Gas Phase Chemiluminescence), under the National Primary and Secondary Ambient Air Quality Standards, for calibration using gas phase titration of an NO standard with ozone, the NO concentration standard should be a "Gas cylinder standard containing 50 to 100 ppm NO in N2 with less than 1 ppm NO2". Further, "This standard must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), an NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM) ". Similarly, for calibration using NO2 permeation devices "Calibration standards are required for both NO and NO2. The reference standard for the calibration may be either an NO or NO2 standard, and must be traceable to a National Bureau of Standards (NBS) NO in N2 Standard Reference Material (SRM 1683 or SRM 1684), and NBS NO2 Standard Reference Material (SRM 1629), or an NBS/EPA-approved commercially available Certified Reference Material (CRM)".		EPA	40 CFR 50 Appendix F 1.3.1, 2.3.1
Calibration /traceability	The Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere requires that "the flow rate transfer standard must be suitable for the sampler's operating flow rate and must be calibrated against a primary flow or volume standard that is traceable to the National Bureau of Standards (NBS)". It is further required that a calibration relationship (e.g., an equation or family of curves) be established such that traceability to the primary standard is accurate to within 2 percent over the expected range of ambient conditions (i.e., temperatures and pressures) under which the transfer standard will be used and the transfer standard periodically recalibrated.		EPA	40 CFR 50 Appendix J 7.3, 8.2.2
Traceability	APPENDIX L TO PART 50 -- REFERCNCE METHOD FOR THE DETERMINATION OF FINE PARTICULATE MATTER (NIST Traceable) - States that dimension of the impaction jets used in impactors must be verified by the manufacturer using Class ZZ go/no-go plug gauges that are traceable to NIST, and that standard used for calibrating or verifying the sampler's flow rate measurement device have its own certification and be traceable to a National Institute of Standards and Technology (NIST) primary standard for volume or flow rate.		EPA	40 CFR 50 Appendix L; 7.3.4.1;
Traceability	Requires that a flow rate standard used in the Reference Method for the Determination of Fine Particulate Matter as PM2.5 in the Atmosphere must have its own certification and be traceable to a National Institute of Standards and Technology (NIST) primary standard for volume or flow rate.			40 CFR 50 Appendix L; 9.1.2, 9.2.2
	Appendix M to Part 50 -- Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere - Requires calibration of flow rate transfer standard against a primary flow or volume standard traceable to NIST		EPA	40 CFR 50 Appendix M; 7.3; 8.2.2

Traceability	If using Method 205 "Verification of Gas Dilution Systems for Field Instrument Calibrations" as a recommended test method for state implementation plans under the requirements for preparation, adoption, and submittals of implementation plans, the specifications for the method state that "The gas dilution system shall be recalibrated once per calendar year using NIST-traceable primary flow standards with an uncertainty ≤0.25 percent."		EPA	40 CFR 51 Appendix N; Method 205; 2.1.1
Traceability	Requires that "Span and zero gases should be traceable to National Bureau of Standards reference gases whenever these reference gases are available" defined as part of the minimum specifications of the calibration gases used to meet the requirements of minimum requirements for continuous emission monitoring and recording that each State Implementation Plan has to meet under the requirements for preparation, adoption, and submittals of implementation plans.		EPA	40 CFR 51 Appendix P; 3.3
Traceability	Requires that in calibration of steady-state test equipment "the span gases used for the gas calibration shall be traceable to National Institute of Standards and Technology (NIST) standards ±2%..." This meets the inspection/maintenance program requirements in both ozone and carbon monoxide (CO) nonattainment areas, depending upon population and nonattainment classification or design value. These are part of the requirements for preparation, adoption and submittal of implementation plans.		EPA	40 CFR 51 Subpart S, Appendix A (d)(3)
Traceability	Requires that all calibration gases used in procedures for determining the volatile organic compounds (VOC) content of captured gas stream shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. The procedure is intended to be used as a segment in the development of liquid/gas or gas/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations This procedure pertains to testing for captured VOC emissions, part of the VOM measurement techniques for capture efficiency and relates to the approval and promulgation of implementation plans for Illinois.		EPA	40 CFR 52 Subpart O, Appendix B; G.1; 2.1.9
Traceability	Requires that all calibration gases used in procedures for determining the volatile organic compounds (VOC) content of captured gas streams shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. The test is intended to be used as a segment in the development of a gas/gas protocol in which fugitive emissions are measured for determining VOC capture efficiency (CE) for surface coating and printing operations. This procedure pertains to testing for captured VOC emissions (dilution technique), part of the VOM measurement techniques for capture efficiency and relates to the approval and promulgation of implementation plans for Illinois.		EPA	40 CFR 52 Subpart O, Appendix B; G.2; 2.1.9

Traceability	Requires that all calibration gases used in procedures for determining the fugitive volatile organic compounds (VOC) emissions from a building enclosure (BE) shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. The procedure is intended to be used as a segment in the development of liquid/gas or gas/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations. This procedure forms part of the VOM measurement techniques for capture efficiency and relates to the approval and promulgation of implementation plans for Illinois.		EPA	40 CFR 52 Subpart O, Appendix B; F.2; 2.1.9
Traceability	Requires that all calibration gases used in procedures for determining the input of volatile organic compounds (VOC) shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. The procedure is intended to be used as a segment in the development of liquid/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations. This procedure forms part of the VOM measurement techniques for capture efficiency and relates to the approval and promulgation of implementation plans for Illinois.		EPA	40 CFR 52 Subpart O, Appendix B; F.1; 2.1.9
Traceability	Requires that all calibration gases used in procedures for determining the fugitive volatile organic compounds (VOC) emissions from a temporary total enclosure (TTE) shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. The procedure is intended to be used as a segment in the development of liquid/gas or gas/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations. This procedure forms part of the VOM measurement techniques for capture efficiency and relates to the approval and promulgation of implementation plans for Illinois.		EPA	40 CFR 52 Subpart O, Appendix B; L; 2.2.22
Traceability	Requires that an applicant for a reference or equivalent method determination for testing under the ambient air monitoring reference and equivalent methods regulations "shall maintain and include records of all relevant measuring equipment, including the make, type, and serial number or other identification, and most recent calibration with identification of the measurement standard or standards used and their National Institute of Standards and Technology (NIST) traceability". The intent of these records is to demonstrate "the measurement capability of each item of measuring equipment used for the application and include a description and justification (if needed) of the measurement setup or configuration in which it was used for the tests. The calibration results shall be recorded and identified in sufficient detail so that the traceability of all measurements can be determined and any measurement could be reproduced under conditions close to the original conditions, if necessary, to resolve any anomalies."		EPA	40 CFR 53.4(b)(5)(i)

NBS standards	Requires the use of "NBS-certified standards whenever possible", for verifying the concentrations of generated test atmospheres, (in particular Carbon dioxide, methane, xylene) as part of the Procedures for Testing Performance Characteristics of Automated Methods SO2, CO, O3, and NO2, under testing for ambient air monitoring reference and equivalent methods. The regulations further state that "if NBS standards are not available, obtain 2 standards from independent sources which agree to within 2 percent; or obtain one standard and submit it to an independent laboratory for analysis which must agree within 2 percent of the supplier's nominal analysis". Carbon dioxide, methane, xylene		EPA	40 CFR 53.22
Traceability	"The diameter of the jet of each impactor manufactured for a PM2.5 sampler under the impactor design specifications set forth in 40 CFR part 50, appendix L, shall be verified against the tolerance specified on the drawing, using standard, NIST-traceable ZZ go/no go plug gages" to verify the PM2.5 jet impactor diameter as part of the required specific tests to verify conformance to critical component specifications to demonstrate compliance with design specifications and manufacturing and test requirement, as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods **(Mandatory).**		EPA	40 CFR 53.51(d)(1)
Traceability	Flow rate measurement device used as part of the required test equipment for Leak check test, as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods must have "a range 70 mL/min to 130 mL/min, 2 percent certified accuracy, NIST-traceable" **(mandatory)**.		EPA	40 CFR 53.52(c)(1)
Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in testing for leak checks needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.52(d)
	Flow rate meters used as part of the required test equipment in testing for flow rate accuracy, regulation, measurement accuracy, and cut-off as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods must be "suitable for measuring and recording the actual volumetric sample flow rate at the sampler downtube, with a minimum range of 10 to 25 actual L/min, 2 percent certified, NIST-traceable accuracy." **(mandatory)**.			40 CFR 53.53(c)(1)

Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in testing for flow rate accuracy, regulation, measurement accuracy, and cut-off needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.53(d)
Traceability	Flow rate meters used as part of the required test equipment in testing for proper sampler operation following power interruptions as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods must be "suitable for measuring and recording the actual volumetric sample flow rate at the sampler downtube, with a minimum range of 10 to 25 actual L/min, 2 percent certified, NIST-traceable accuracy." **(mandatory)**.		EPA	40 CFR 53.54(b)(1)
Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in testing for proper sampler operation following power interruptions needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.54(c)
Traceability	Flow rate meters used as part of the required test equipment in testing for the effects of variations in power line voltage and ambient temperature as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods must be "suitable for measuring and recording the actual volumetric sample flow rate at the sampler downtube, with a minimum range of 10 to 25 actual L/min, 2 percent certified, NIST-traceable accuracy." **(mandatory)**.		EPA	40 CFR 53.55(c)(3)
Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in testing for the effects of variations in power line voltage ambient temperature needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.55(d)
Traceability	Flow rate meters used as part of the required test equipment in testing for the effects of variations in ambient pressure as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 in ambient air monitoring reference and equivalent methods must have "minimum range of 10 to 25 L/min, 2 percent certified, NIST-traceable accuracy" **(mandatory)**.		EPA	40 CFR 53.56(c)(2)

Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in testing for the effects of variations in ambient pressure needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.56(d)
Traceability	NIST Traceable temperature sensors are part of the required test equipment for use in tests "intended to measure a candidate sampler's ability to prevent excessive overheating of the PM2.5 sample collection filter (or filters) under conditions of elevated solar insolation..." This testing falls under the "Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" as part of the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.57(c)(4)
Traceability	Proof of traceability to NIST (if required) for all measurement instruments used in the tests to measure a candidate sampler's ability to prevent excessive overheating of the PM2.5 sample collection filter (or filters) under conditions of elevated solar insolation needs to be submitted. This testing constitutes part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5" under the ambient air monitoring reference and equivalent methods.		EPA	40 CFR 53.57(d)
Traceability	This regulation states that documentation is required "showing evidence of appropriately recent calibration, certification of calibration accuracy, and NIST-traceability (if required) of all measurement instruments used in the tests" intended to verify adequate aerosol transport through any modified or air flow splitting components that may be used in a Class I candidate equivalent method sampler such as may be necessary to achieve sequential sampling capability. This is stated as part of the Procedures for Testing Physical (Design) and Performance Characteristics of Reference Methods and Class I Equivalent Methods for PM2.5 under the Ambient Air Monitoring Reference and Equivalent Methods.		EPA	40 CFR 53.59(d)
Traceability	States that "All flow rate measurements used to calculate the test atmosphere concentrations and the test results must be accurate to within ±2 percent, referenced to a NIST-traceable primary standard"**(MANDATORY)**. This requirement is stated for sampler flow rate measurements in the test procedures for a full wind tunnel test for Testing Performance Characteristics of Class II Equivalent Methods for PM2.5 under the Ambient Air Monitoring Reference and Equivalent Methods.		EPA	40 CFR 53.62(c)(8)

Traceability	*Defines 'Traceable'* to mean "a local standard has been compared and certified, either directly or via not more than one intermediate standard, to a National Institute of Standards and Technology (NIST)-certified primary standard such as a NIST-Traceable Reference Material (NTRM) or a NIST-certified Gas Manufacturer's Internal Standard (GMIS)."		EPA	40 CFR 58.1
Traceability	Requires that "gaseous pollutant concentration standards (permeation devices or cylinders of compressed gas) used to obtain test concentrations for CO, SO2, NO, and NO2 must be traceable to either a National Institute of Standards and Technology (NIST) NIST-Traceable Reference Material (NTRM) or a NIST-certified Gas Manufacturer's Internal Standard (GMIS)" as part of the quality assurance requirements for state and local air monitoring station (SLAMS) for Ambient Air Quality Surveillance.		EPA	40CFR 58 Appendix A 2.1(f)2.3.1
Traceability	States that "Gaseous standards (permeation tubes, permeation devices or cylinders of compressed gas) used to obtain test concentrations for CO, SO2, and NO2 must be traceable to either a National Institute of Standards and Technology (NIST) gaseous Standard Reference Material (SRM) or an NIST/EPA-approved commercially available Certified Reference Material (CRM)." Further states that "direct use of a CRM as a working standard is acceptable, but direct use of an NIST SRM as a working standard is discouraged because of the limited supply and expense of SRMs". This requirement stated under pollutant standards as part of the Quality Assurance Requirements for Prevention of Significant Deterioration (PSD) Air Monitoring for Ambient Air Quality Surveillance.		EPA	40 CFR 58; Appendix B 2.3.1
SRM	States that "working and transfer standards and equipment used for auditing must be different from the standards and equipment used for calibration and spanning. The auditing standards and calibration standards may be referenced to the same NIST, SRM, CRM, or primary UV photometer" as part of the procedure to determine accuracy of automated methods under the data quality assessment requirements for Prevention of Significant Deterioration (PSD) Air Monitoring for Ambient Air Quality Surveillance.		EPA	40 CFR 58; Appendix B 3.2
Traceability	Requires that the spectrophotometer used for attenuator calibration must have an "accuracy of <0.5% transmittance, NIST traceable calibration" as a minimum design specification (MANDATORY). This is stated as part of the performance specifications for Standards of Performance for New Stationary Sources.		EPA	40 CFR 60 Appendix B 1.6.3
Calibration	States that an attenuator used to check the daily calibration drift and calibration error of a COMS can be designated as a primary if calibrated by NIST. This is stated as part of the performance specifications for Standards of Performance for New Stationary Sources.		EPA	40 CFR 60 Appendix B 1.7.1(1)

SRM 930D	States that an attenuator used to check the daily calibration drift and calibration error of a COMS can be designated as a primary if calibrated on a 6-month frequency through the assignment of a luminous transmittance value where the spectrophotometer calibration has been verified through use of a NIST 930D Standard Reference Material (SRM). This is stated as part of the performance specifications for Standards of Performance for New Stationary Sources.		EPA	40 CFR 60 Appendix B 1.7.1(2)(i)
SRM	Requires "the use of cylinder gases that have been certified by comparison to National Institute of Standards and Technology (NIST) gaseous standard reference material (SRM) or NIST/EPA approved gas manufacturer's certified reference material (CRM) following EPA Traceability Protocol Number 1", as part of the specification for evaluating the acceptability of SO2 and NOX continuous emission monitoring systems (CEMS) at the time of installation or soon after and whenever specified in the regulations. This is stated as part of the Specifications and Test Procedures for SO2 and NOX Continuous Emission Monitoring Systems in Stationary Sources.		EPA	40 CFR 60 Appendix B 2.16.2.4
Traceability	This performance specification is applicable for measuring all hazardous air pollutants (HAPs) which absorb in the infrared region and can be quantified using Fourier Transform Infrared Spectroscopy (FTIR), as long as the performance criteria of this performance specification are met. This specification is to be used for evaluating FTIR continuous emission monitoring systems for measuring HAPs regulated under Title III of the 1990 Clean Air Act Amendments. This specification also applies to the use of FTIR CEMs for measuring other volatile organic or inorganic species. As part of the performance requirements this regulation states that the "audit sample can be a mixture or a single component. It must contain target analyte(s) at approximately the expected flue gas concentration(s). If possible, each mixture component concentration should be NIST traceable (± 2 percent accuracy)". This is part of the Performance Specification for Extractive FTIR Continuous Emissions Monitor Systems in Stationary Sources that form the Standards of Performance for New Stationary Sources.		EPA	40 CFR 60 Appendix B 15.9.1.1
Traceability	Requires that "The owner or operator shall install, calibrate, operate, and maintain a temperature monitor accurate to within ±5.6 °C (±10 °F) to measure the oxidation temperature. The owner or operator shall verify the accuracy of the temperature monitor twice each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose)" for sterilization facilities. This is part of the monitoring requirements of the Ethylene Oxide Emissions Standards for Sterilization Facilities that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.364(c)(4)

Traceability	Requires that "The owner or operator shall install, calibrate, operate, and maintain a temperature monitor accurate to within ±5.6 °C (±10 °F) to measure the oxidation temperature". As an alternative to verifying the accuracy of the temperature monitor with a reference temperature monitor, the operator or owner can verify the accuracy of the temperature monitor "in a calibrated oven (traceable to NIST standards)". This is part of the monitoring requirements of the Ethylene Oxide Emissions Standards for Sterilization Facilities that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.364(c)(4)
Traceability	Requires the installation, calibration, operation, and maintenance of a temperature monitor accurate to within ±5.6 °C (±10 °F) or within 1 percent of the baseline temperature, whichever is less stringent, to measure the temperature of a combustion device. It is further stated that "the owner or operator shall verify the accuracy of the temperature monitor once each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose)"**(MANDATORY)**. This is part of the monitoring requirements of National Emission Standards for Marine Tank Vessel Loading Operations that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.564 (e)(4)
Traceability	When using a carbon adsorber with steam regeneration, requires that "the owner or operator will install, calibrate, maintain, and operate an integrating stream flow monitoring device that is accurate within ±10 percent and that is capable of recording the total stream mass flow for each regeneration cycle. The owner or operator will install, calibrate, maintain, and operate a temperature monitor accurate to within ±5.6 °C (10 °F) or within 1 percent of the baseline carbon bed temperature, whichever is less stringent, to measure the carbon bed temperature". Further requires that "the owner or operator shall verify the accuracy of the temperature monitor once each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose)"**(MANDATORY)**. This is part of the monitoring requirements of National Emission Standards for Marine Tank Vessel Loading Operations that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.564(g)(3)

Traceability	Requires the installation, calibration, operation, and maintenance of a temperature monitor accurate to within ±5.6 °C (±10 °F) or within 1 percent of the baseline temperature, whichever is less stringent, to measure the temperature of a condensor/refrigeration unit. It is further stated that "the owner or operator shall verify the accuracy of the temperature monitor once each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose)"**(MANDATORY)**. This is part of the monitoring requirements of National Emission Standards for Marine Tank Vessel Loading Operations that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.564(h)(1)
Traceability	Absolute Calibration Audit (ACA) is defined as "Equivalent to calibration error (CE) test defined in the appropriate performance specification using NIST traceable calibration standards to challenge the CEMS (continuous emissions monitoring system) and assess accuracy". This definition is spelled under the Quality Assurance Procedures for Continuous Emissions Monitors Used for Hazardous Waste Combustors provided as an appendix to the sub-part on National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors under the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63 Subpart EEE; Appendix
Handbook 44	Refers to Handbook 44 to define the requirements of the scale used to measure the weight of Hazardous Air Pollutants Auxiliary Blowing Agent (HAP ABA) as part of the monitoring requirements for national emission standards for hazardous air pollutants for flexible polyurethane foam production.	1998	EPA	40 CFR 63.1303(e)(3)
Traceability	This part of the regulation requires that for each continuous parameter monitoring system (CPMS), except for redundant sensors, any device that is used to conduct an initial validation or accuracy audit of a CPMS must have an accuracy that is traceable to National Institute of Standards and Technology (NIST) standards, in addition to other requirements **(MANDATORY).** This requirement is part of the testing and initial compliance requirements under the National Emission Standards for Hazardous Air Pollutants for Cellulose Products Manufacturing (subpart) that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.5545(f)(9)(i)
Traceability	Regulation requires that any device used to conduct an initial validation or accuracy audit of CPMS (continuous parametric monitoring system) must "have an accuracy that is traceable to National Institute of Standards and Technology (NIST) standards", amongst other requirements **(MANDATORY)**. This requirement is part of the testing and initial compliance requirements under the National Emission Standards for Hazardous Air Pollutants for Refractory Products Manufacturing (subpart) that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.9804(a)(15)(i)

NIST certified pH buffer solution	This part of the regulation requires that an initial validation of the pH CPMS be conducted by performing "a single-point calibration using an NIST-certified buffer solution that is accurate to within ±0.02 pH units at 25 °C (77 °F). If the expected pH of the liquid that is monitored lies in the acidic range (less than 7 pH), use a buffer solution with a pH value of 4.00. If the expected pH of the liquid that is monitored is neutral or lies in the basic range (equal to or greater than 7 pH), use a buffer solution with a pH value of 10.00. Place the electrode of your pH CPMS in the container of buffer solution. Record the pH measured by your CPMS. Using the certified buffer solution as the reference, the pH measured by your CPMS must be within the accuracy specified in paragraph (e)(1) of this section"**(MANDATORY)**. This requirement is part of the testing and initial compliance requirements under the National Emission Standards for Hazardous Air Pollutants for Refractory Products Manufacturing (subpart) that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.9804(e)(3)(i)
NIST certified pH buffer solution	This part of the regulation requires that an accuracy audit of the pH CPMS be conducted at least weekly "If your pH CPMS does not include a redundant pH sensor, perform a single point calibration using an NIST-certified buffer solution that is accurate to within ±0.02 pH units at 25 °C (77 °F). If the expected pH of the liquid that is monitored lies in the acidic range (less than 7 pH), use a buffer solution with a pH value of 4.00. If the expected pH of the liquid that is monitored is neutral or lies in the basic range (equal to or greater than 7 pH), use a buffer solution with a pH value of 10.00. Place the electrode of the pH CPMS in the container of buffer solution. Record the pH measured by your CPMS. Using the certified buffer solution as the reference, the pH measured by your CPMS must be within the accuracy specified in paragraph (e)(1) of this section" **(MANDATORY).** This requirement is part of the testing and initial compliance requirements under the National Emission Standards for Hazardous Air Pollutants for Refractory Products Manufacturing (subpart) that form the National Emission Standards for Hazardous Air Pollutants for Source Categories.		EPA	40 CFR 63.9804(e)(4)(ii)

calibration gas, reference material	Defines that "Calibration gas" means:(1) A standard reference material;(2) A standard reference material-equivalent compressed gas primary reference material;(3) A NIST traceable reference material;(4) NIST/EPA-approved certified reference materials;(5) A gas manufacturer's intermediate standard;(6) An EPA protocol gas;(7) Zero air material; or(8) A research gas mixture.		EPA	40 CFR 72.2
reference material, traceability	States that "Gas manufacturer's intermediate standard (GMIS) means a compressed gas calibration standard that has been assayed and certified by direct comparison to a standard reference material (SRM), an SRM-equivalent PRM, a NIST/EPA-approved certified reference material (CRM), or a NIST traceable reference material (NTRM), in accordance with section 2.1.2.1 of the "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards," September 1997, EPA–600/R–97/121."		EPA	40 CFR 72.2
reference material	Defines NIST/EPA-approved certified reference material or NIST/EPA-approved CRM as "a calibration gas mixture that has been approved by EPA and the National Institutes of Standards and Technologies (NIST) as having specific known chemical or physical property values certified by a technically valid procedure as evidenced by a certificate or other documentation issued by a certifying standard-setting body."		EPA	40 CFR 72.2
reference material	Defines NIST traceable reference material (NTRM) as "a calibration gas mixture tested by and certified by the National Institutes of Standards and Technologies (NIST) to have a certain specified concentration of gases. NTRMs may have different concentrations from those of standard reference materials."		EPA	40 CFR 72.2

Traceability	*Defines Research gas material* (RGM) as "a calibration gas mixture developed by agreement of a requestor and the National Institutes for Standards and Technologies (NIST) that NIST analyzes and certifies as “NIST traceable.” RGMs may have concentrations different from those of standard reference materials."		EPA	40 CFR 72.2
Traceability	Defines Research gas mixture (RGM) as "a calibration gas mixture developed by agreement of a requestor and NIST that NIST analyzes and certifies as “NIST traceable.” RGMs may have concentrations different from those of standard reference materials."		EPA	40 CFR 72.2
SRM	Defines Standard reference material or SRM as "a calibration gas mixture issued and certified by NIST as having specific known chemical or physical property values."		EPA	40 CFR 72.2
SRM	Defines Standard reference material-equivalent compressed gas primary reference material (SRM-equivalent PRM) as "those gas mixtures listed in a declaration of equivalence in accordance with section 2.1.2 of the “EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards,” September 1997, EPA–600/R–97/121."			
NIST Traceable equipment	This regulation states that the operator shall record applicable information "..expected transmitter output during accuracy test (reference value from NIST-traceable equipment), including units of measure;.." as part of the record keeping requirements for continuous emissions monitoring.		EPA	40 CFR 75.59(b)(2)(iii)
NIST Traceability certificates	This regulation states that "the designated representative for an affected unit may apply to the Administrator for an alternative to any standard incorporated by reference and prescribed in this part. The designated representative shall include the following information in an application..." "Information demonstrating that the proposed alternative produces data acceptable for use in the Acid Rain Program, including accuracy and precision statements, NIST traceability certificates or protocols, or other supporting data, as applicable to the proposed alternative" in addition to other information, as part of the reporting requirements for continuous emissions monitoring.		EPA	40 CFR 75.66(c)(3)
SRM	Reference is made to NIST SRMs as a source of calibration gases as part of the specifications and test procedures for continuous emissions monitoring		EPA	40 CFR 75, Appendix A 5.1.2
Reference Material	Reference is made to a NIST OU as a source of list of vendors and cylinder gases for SRM-Equivalent Compressed Gas Primary Reference Material (PRM) as part of the specifications and test procedures for continuous emissions monitoring		EPA	40 CFR75, Appendix A 5.1.1
Traceability/Reference Materials	Reference is made to a NIST OU as a source of list of vendors and cylinder gases for NIST traceable reference materials as part of the specifications and test procedures for continuous emissions monitoring		EPA	40 CFR 75, Appendix A 5.1.3

Reference Materials	Refers to a NIST OU for information about the "Research Gas Mixture (RGM) program" as part of the specifications and test procedures for continuous emissions monitoring		EPA	40 CFR75, Appendix A 5.1.5
Reference Materials	This regulation refers to NIST/EPA-Approved Certified Reference Materials stating that existing certified reference materials (CRMs) that are still within their certification period may be used as calibration gas as part of the specifications and test procedures for continuous emissions monitoring		EPA	40 CFR75, Appendix A 5.1.7
Traceability to NIST standards	This regulation refers to procedures in various standards to verify flowmeter accuracy. It further states that the EPA "Administrator may also approve other procedures that use equipment traceable to National Institute of Standards and Technology standards ". This requirement is part of the initial certification requirements for all fuel flowmeters when following optional SO2 emissions data protocol for gas-fired and oil-fired units for continuous emissions monitoring.		EPA	40 CFR75, Appendix D 2.1.5.1
Traceability to NIST standards	Regulation states that while conducting transmitter or transducer accuracy tests for orifice-, nozzle- and venturi- type flowmeters "Calibrate the differential pressure transmitter or transducer, static pressure transmitter or transducer, and temperature transmitter or transducer, as applicable, using equipment that has a current certificate of traceability to NIST standards" **(MANDATORY).** This requirement is part of the initial certification requirements for all fuel flowmeters when following optional SO2 emissions data protocol for gas-fired and oil-fired units for continuous emissions monitoring.		EPA	40 CFR75, Appendix D 2.1.6.1(a)
NIST Traceable reference value	Regulation states that while conducting transmitter or transducer accuracy tests for orifice-, nozzle- and venturi- type flowmeters he calibration of each transmitter or transducer should be checked "by comparing its readings to that of the NIST traceable equipment at least once at each of the following levels: the zero-level and at least two other upscale levels (e.g., “mid” and “high”), such that the full range of transmitter or transducer readings corresponding to normal unit operation is represented .."**(MANDATORY).** This requirement is part of the initial certification requirements for all fuel flowmeters when following optional SO2 emissions data protocol for gas-fired and oil-fired units for continuous emissions monitoring.		EPA	40 CFR 75, Appendix D 2.1.6.1(a)
NIST Traceable equipment	This sub-section refers to the NIST traceable reference value for determination of the accuracy of the transmitter or transducer as a percentage of the full scale, in the equation used to determine the accuracy **(MANDATORY)**. This requirement is part of the initial certification requirements for all fuel flowmeters when following optional SO2 emissions data protocol for gas-fired and oil-fired units for continuous emissions monitoring.		EPA	40 CFR75, Appendix D 2.1.6.1(b)

NBS Accredited Laboratories	This regulation pertains to analysis of asbestos containing materials in schools and states that "Local education agencies shall have bulk samples, collected under §763.86 and submitted for analysis, analyzed for asbestos using laboratories accredited by the National Bureau of Standards (NBS). Local education agencies shall use laboratories which have received interim accreditation for polarized light microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Analysis Quality Assurance Program until the NBS PLM laboratory accreditation program for PLM is operational."		EPA	40 CFR 763.87(a)
NBS Accredited Laboratories	This regulation pertains to response actions to asbestos containing materials in schools and states that "Local education agencies shall have air samples collected under this section analyzed for asbestos using laboratories accredited by the National Bureau of Standards to conduct such analysis using transmission electron microscopy (TEM) or, under circumstances permitted in this section, laboratories enrolled in the American Industrial Hygiene Association Proficiency Analytical Testing Program for phase contrast microscopy (PCM)."		EPA	40 CFR 763.90(h)(2)(ii)
Accreditation	This regulation refers to the NIST NVLAP and states that "EPA recommends that transmission electron microscopy (TEM) be used for analysis of final air clearance samples, and that sample analyses be performed by laboratories accredited by the National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP)" as part of the air monitoring requirements in the procedures to determine airborne concentrations of asbestos fibers, as part of the Asbestos Model Accreditation Plan for States.		EPA	40 CFR 763 Appendix C I.B.2(h)
SRM/RM	Reference is made to analysis of NBS SRM 1876 and RM 8410 as a measure of accuracy and comparability. This analysis has to be conducted at least once per analyst per year as a quality control/quality assurance procedure to be performed along with the sample analysis as indicators that the materials used are adequate and the operations are within acceptable limits. This is part of the requirements listed under "Interim Transmission Electron Microscopy Analytical Methods—Mandatory and Nonmandatory—and Mandatory Section to Determine Completion of Response Actions" as a mandatory Transmission Electron Microscopy method for asbestos related analyses.**(MANDATORY)**		EPA	40 CFR 763 (II.)(I) Table III.
SRM/RM	Reference is made to analysis of NBS SRM 1876 and RM 8410 as a measure of accuracy and comparability. This analysis has to be conducted at least once per analyst per year as a quality control/quality assurance procedure to be performed along with the sample analysis as indicators that the materials used are adequate and the operations are within acceptable limits. This is part of the requirements listed under "Interim Transmission Electron Microscopy Analytical Methods—Mandatory and Nonmandatory—and Mandatory Section to Determine Completion of Response Actions" as a non-mandatory Transmission Electron Microscopy method for asbestos related analyses.		EPA	40 CFR 763 (III.)(K) Table III.

JCPSD-ICDD	Reference is made to the standard reference powder diffraction patterns contained in "JCPDS-International Center for Diffraction Data Powder Diffraction File, U.S. Department of Commerce, National Bureau of Standards, and Joint Committee on Powder Diffraction Studies, Swarthmore, PA", against which all samples that exhibit diffraction peaks in the diagnostic regions for asbestiform minerals are submitted to a full (5°–60° 2Θ; 1° 2Θ/min) qualitative XRD scan, and their diffraction patterns are compared to verify initial peak assignments and to identify possible matrix interferences when subsequent quantitative analysis will be performed. This is required when X-ray powder diffraction is used as an interim method for determination of asbestos in bulk insulation samples for testing of asbestos containing materials in schools.		EPA	40 CFR 763 Appendix E 2.10 Ref. 3
NBS Publication 506	Reference is made to "J. B. Krause and W. H. Ashton, Misidentification of asbestos in talc, pp. 339–353, in: Proceedings of Workshop on Asbestos: Definitions and Measurement Methods (NBS Special Publication 506), C. C. Gravatt, P. D. LaFleur, and K. F. Heinrich (eds.), Washington, DC: National Measurement Laboratory, National Bureau of Standards, 1977 (issued 1978)" to elucidate possible reasons for interferences in XRD analyses of asbestiform materials, and related specimen preparation. This is in the context of X-ray powder diffraction being used as an interim method for determination of asbestos in bulk insulation samples for testing of asbestos containing materials in schools.		EPA	40 CFR 763 Appendix E 2.10 Ref. 11
NBS Publication 506	Reference is made to "H. D. Stanley, The detection and identification of asbestos and asbesti-form minerals in talc, pp. 325–337, in Proceedings of Workshop on Asbestos: Definitions and Measurement Methods (NBS Special Publication 506), C. C. Gravatt, P. D. LaFleur, and K. F. Heinrich (eds.), Washington, DC, National Measurement Laboratory, National Bureau of Standards, 1977 (issued 1978)" in explaining the difficulties associated with definitive identification of the asbestos minerals by comparison with standard reference diffraction patterns due to alterations in the crystal lattice associated with differences in isomorphous substitution and degree of crystallinity, particularly for the amphiboles. This is in the context of X-ray powder diffraction being used as an interim method for determination of asbestos in bulk insulation samples for testing of asbestos containing materials in schools.		EPA	40 CFR 763 Appendix E 2.10 Ref. 12

NBS Publication 506	Reference is made to "J. C. Haartz, B. A. Lange, R. G. Draftz, and R. F. Scholl, Selection and characterization of fibrous and nonfibrous amphiboles for analytical methods development, pp. 295–312, in: Proceedings of Workshop on Asbestos: Definitions and Measurement Methods (NBS Special Publication 506), C. C. Gravatt, P. D. LaFleur, and K. F. Heinrich (eds.), Washington, DC: National Measurement Laboratory, National Bureau of Standards, 1977 (issued 1978)" to underscore the problem of obtaining and characterizing suitable reference materials for asbestos analysis. Though such analytical reference materials maybe available, it is believed that they are not available in large quantities for routine analyses. This is in the context of X-ray powder diffraction being used as an interim method for determination of asbestos in bulk insulation samples for testing of asbestos containing materials in schools.		EPA	40 CFR 763 Appendix E 2.10 Ref. 17
NBS publication	States that the TSCA (Toxic Substances Control Act) partition coefficient (n-octanol/water), generator column test method is based on the DCCLC technique for determining the aqueous solubility of organic compounds referred to in the NBS publication "DeVoe, H. et al. “Generator Columns and High Pressure Liquid Chromatography for Determining Aqueous Solubilities and Octanol-Water Partition Coefficients of Hydrophobic Substances,” Journal of Research of the National Bureau of Standards, 86:361–366 (1981)" . This regulation states that product property test guidelines for identification of specific chemical substance and mixture testing requirements.	1981	EPA	40 CFR 799.6756(b)(3)
NBS publication	Refers to NBS publication "DeVoe, H. et al. “Generator Columns and High Pressure Liquid Chromatography for Determining Aqueous Solubilities and Octanol-Water Partition Coefficients of Hydrophobic Substances,” Journal of Research of the National Bureau of Standards, 86:361–366 (1981)" to state how an accurate measurement of the sample loop may be accomplished by using a spectrophotometric method as part of the product property test guidelines for identification of specific chemical substance and mixture testing requirements in response to the TSCA.	1981	EPA	40 CFR 799.6756(c)(3)(iii)(C)(1)
NBS publication	States that the TSCA (Toxic Substances Control Act) partition coefficient (n-octanol/water), generator column test method is based on the DCCLC technique for determining the aqueous solubility of organic compounds referred to in the NBS publication "Wasik, S.P. et al. Octanol/water partition coefficient and aqueous solubilities of organic compounds, Report NBSIR 81–2406 (1981) National Bureau of Standards, U.S. Department of Commerce, Washington, DC" . This regulation states that product property test guidelines for identification of specific chemical substance and mixture testing requirements in response to the TSCA.	1981	EPA	40 CFR 799.6756(b)(3)

NBS publication	Refers to the NBS publication "Wasik, S.P. et al. Octanol/water partition coefficient and aqueous solubilities of organic compounds, Report NBSIR 81–2406 (1981) National Bureau of Standards, U.S. Department of Commerce, Washington, DC" as the source of information on n-Octanol/Water Partition Coefficient at 25 °C for some reference compounds so that the generator column method can be calibrated, and to allow the chemical laboratory the opportunity to compare its results with these values. This regulation states that product property test guidelines for identification of specific chemical substance and mixture testing requirements.	1981	EPA	40 CFR 799.6756(b)(4)(ii)
NBS Publication	Refers to NBS publication "DeVoe, H. et al., Generator columns and high pressure liquid chromatography for determining aqueous solubilities and octanol-water partition coefficients of hydrophobic substances. Journal of Research, National Bureau of Standards, 86:361–366 (1981)" to state how accurate measurements of a sample loop can be accomplished when using spectrophotometric methods. The same publication is also referred to define the principle of the test method based on the dynamic coupled column liquid chromatographic (DCCLC) technique for determining the aqueous solubility of organic compounds". These references are in support of tests intended to meet the testing requirements of the Toxic Substances Control Act (TSCA), as part of the testing requirements for identification of specific chemical substances and mixtures.		EPA	40 CFR 799.6786(e)(1)
NBS Publication	Reference is made to the NBS publication, "Wasik, S.P. et al., Octanol/Water Partition Coefficient and Aqueous Solubilities of Organic Compounds. NBS Report NBSIR 81–2406. Washington, DC: National Bureau of Standards, U.S. Department of Commerce (1981)". This publication is referred to define the "principle of the test method based on the dynamic coupled column liquid chromatographic (DCCLC) technique for determining the aqueous solubility of organic compounds". Also, this reference has been used to obtain data for water solubilities at 25 °C for a number of reference chemicals and stated as part of this regulation. These references are in support of tests intended to meet the testing requirements of the Toxic Substances Control Act (TSCA), as part of the testing requirements for identification of specific chemical substances and mixtures.		EPA	40 CFR 799.6786(e)(11)

Reference to NIST standard for statement of accuracy	Reference is made to a NBS lead in reference fuel to make a statement on the accuracy of the measurement, as "The analysis of National Bureau of Standards (NBS) lead in reference fuel of known concentrations in a single laboratory has resulted in found values deviating from the true value for 11 determinations of 0.0322 g Pb/gal by an average of 0.56% with a standard deviation of 6.8%, for 15 determinations of 0.0519 g Pb/gal by an average of -1.1% with a standard deviation of 5.8%, and for 7 determinations of 0.0725 g Pb/gal by an average of 3.5% with a standard deviation of 4.8%". This statement applies to automated method test for determination of lead in gasoline by Atomic Absorption Spectrometry, as part of the regulations for fuels and fuel additives.		EPA	40 CFR 80 - Appendix B (Subpart J); Method 2, 10.2.1
NBS Lead-in-reference fuel standard	This regulation stipulates that the suitability of a calibration curve used in the test procedure for testing of lead in gasoline by X-ray spectrometry should be checked each day "by analyzing several National Bureau of Standards (NBS) lead-in-reference-fuel standards or other suitable standards".		EPA	40 CFR 80 - Appendix B (Subpart J); Method 3, 7.1
NBS Lead-in-reference fuel standard	It is required that "quality control standards, such as NBS standard reference materials, should be analyzed at least once every testing session" when testing of lead in gasoline by X-ray spectrometry **(MANDATORY)**.		EPA	40 CFR 80 - Appendix B (Subpart J); Method 3, 7.4
Traceability to NBS Standard	This regulation states that span gases used in weekly checks of analyzers used as part of emission control system performance warranty short tests, "shall be traceable to NBS standards ±2% and have" in addition to other requirements for concentration **(MANDATORY).** This regulation is a subpart of testing for control of air pollution from mobile sources. This regulation further stipulates that "requirements of §85.2233 apply concurrently until December 31, 1993, after which the requirements of §85.2233 are solely in effect" .		EPA	40 CFR 85.2232(e)(4)
Traceability to NBS Standard	This regulation specifies the requirements for span gases for gas calibration conducted as part of the steady state test equipment calibrations, adjustment and quality control conducted in emission control systems performance warranty short tests for control of air pollution from mobile sources. This regulation states that in addition to other requirements, span gases "must be traceable to National Institute of Standards and Technology (NIST) standards within two percent" **(MANDATORY).**	1994	EPA	40 CFR 85.2233(e)(3)
Traceability to NIST standard	Calibration gases- States that calibration gases used in test procedures for Emission Regulations for 1977 and Later Model Year (in this case from 1979 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles "shall be traceable to within 1 percent of NBS gas standards, or other gas standards which have been approved by the Administrator."		EPA	40 CFR 86.114-79 (b)

NBS Gas standards	Span gases- States that Span gases used in test procedures for Emission Regulations for 1977 and Later Model Year (in this case from 1979 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles " shall be accurate to within 2 percent of true concentration, where true concentration refers to NBS gas standards, or other gas standards which have been approved by the Administrator".		EPA	41 CFR 86.114-79 (c)
Traceability NIST standards	Methanol in air gases- states that methanol in air gases used for response factor determination in test procedures for Emission Regulations for 1977 and Later Model Year (in this case from 1994 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles "shall be traceable to within ±2 percent of NIST (formerly NBS) gas standards, or other standards which have been approved by the Administrator" (**MANDATORY)**.		EPA	40 CFR 86.114-94(d)(1)
Traceability to NIST standard	Calibration gases- States that calibration gases (except for methanol)used in test procedures for Emission Regulations for 1977 and Later Model Year (in this case from 1994 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles "shall be traceable to within 1 percent of NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator."		EPA	40 CFR 86.114-94(b)
NIST Gas Standards	Span gases -States that Span gases (not including methanol) used in test procedures for Emission Regulations for 1977 and Later Model Year (in this case from 1994 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles " shall be accurate to within two percent of true concentration, where true concentration refers to NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator."		EPA	40 CFR 86.114-94(c)
Traceability to NBS flow calibration device	Flow calibration device-States that test procedures for gas meter or flow instrumentation calibration for particulate, methanol and formaldehyde measurement as part of testing for Emission Regulations for 1977 and Later Model Year (in this case 1994 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles require that "a calibration device be installed in series with the instrument. A critical flow orifice, a bellmouth nozzle, a laminar flow element or an NBS traceable flow calibration device is required as the standard device".		EPA	40 CFR 86.120-94(a)(1)(i)

Traceability	known methane in air concentrations - States that "to determine the total hydrocarbon FID response to methane, known methane in air concentrations traceable to the National Institute of Standards and Technology (NIST) shall be analyzed by the FID"-flame ionization detector, as part of the procedure for hydrocarbon analyzer calibration defined as test procedures for Emission Regulations for 1977 and Later Model Year (in this case 1990 onwards, till superseded) New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles **(MANDATORY)**		EPA	40 CFR 86.121-90(d)
SRM	Gas specifications: States that calibration gases used in Gaseous Exhaust Test Procedures for Emission Regulations for New (model years 1979 and later) Gasoline-Fueled and Diesel-Fueled Heavy-Duty Engines are to have "calibration gas values derived from NBS "Standard Reference Materials" (SRMs) or other gas standards approved by the Administrator. The uncertainty of the assigned calibration gas values shall not exceed 2.0 percent of the assigned value. The uncertainty is defined as the sum of the precision errors (at the 90 percent confidence level) and the bias errors. Precision and bias errors apply to both the equipment and the derivation procedures."		EPA	40 CFR 86.308-79 (b)
SRM	Gas specifications: States that span gases used in Gaseous Exhaust Test Procedures for Emission Regulations for New (model years 1979 and later) Gasoline-Fueled and Diesel-Fueled Heavy-Duty Engines are to have "Span gas values derived from NBS "Standard Reference Materials" (SRMs) or other gas standards approved by the Administrator. The uncertainty of the assigned calibration gas values shall not exceed 3.0 percent of the assigned value. The uncertainty is defined as the sum of the precision errors (at the 90 percent confidence level) and the bias errors. Precision and bias errors apply to both the equipment and the derivation procedures".		EPA	40 CFR 86.308-79(c)
Traceability / NBS Standards	NBS weights -states that for calibrating dynamometers as part of the Dynamometer and Engine Equipment Specification for Emission Regulations for New (model year 1979 and later) Gasoline-Fueled and Diesel-Fueled Heavy-Duty Engines; Gaseous Exhaust Test Procedures "a minimum of 6 calibration weights for each range used are required. The weights must be equally spaced and traceable to within 0.5 percent of NBS weights. Laboratories located in foreign countries may certify calibration weights to local government bureau standards" **(MANDATORY)**		EPA	40 CFR 86.312-79(a)(2)

Traceability to NBS standards	NBS weights -provides the option that a master load-cell or transfer standard may be used to verify the in-use torque measurement system as part of the dynamometer calibration procedure for Gaseous Exhaust Test Procedures prescribed for Emission Regulations for New (in this case 1979 and later) Gasoline-Fueled and Diesel-Fueled Heavy-Duty Engines. However, it is further stated "that the master load-cell and read out system must be calibrated with weights at each test weight specified in §86.312–79 and that the calibration weights must be traceable to within 0.1 percent of NBS weights"		EPA	40 CFR 86.333.79 (c)(1)
NBS publication	Humidity Calculations - defines the saturation vapor pressure (PWB) of water at the wet-bulb temperature using equation in an NBS publication. (ed. Note: No information on what publication, except to state editors of publication as Wexler, (A.), and Greenspan, (L.)) as part of Gaseous Exhaust Test Procedures use in Emission Regulations for New (in this case 1979 and later) Gasoline-Fueled and Diesel-Fueled Heavy-Duty Engines.		EPA	40 CFR 86.344-79(d)(1)
Traceability to NIST standard	Analytical Gases - states that "Methanol in air gases used for response factor determination shall be traceable to within ±2 percent of NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator" for test procedures used in Emission Regulations for 1978 and Later New Motorcycles, as part of testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.514-78(c)(1)
Traceability	known methane in air concentrations -"FID response factor to methane"- States that "when the FID analyzer is to be used for the analysis of natural gas-fueled motorcycle hydrocarbon samples, the methane response factor of the analyzer shall be established. To determine the total hydrocarbon FID response to methane, known methane in air concentrations traceable to National Institute of Standards and Technology (NIST) shall be analyzed by the FID. Several methane concentrations shall be analyzed by the FID in the range of concentrations in the exhaust sample." This is required for calibration of hydrocarbon analyzers used in test procedures for Emission Regulations for 1978 (in this case 1990 onwards) and Later New Motorcycles as part of control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.521-90 (e)
NBS Reference standards (optical filters)/Calibration	reference filters- requires that filters used for checking linearity of smokemeters used in Smoke Exhaust Test Procedures in testing for Emission Regulations for New Diesel Heavy-Duty Engines be checked for opacity annually using NBS or equivalent reference filters. This requirement is part of testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.884-11(3)

Traceability to NIST standard	Calibration Gases- States that calibration gases (not including methanol) used in an hydrocarbon analyzer in Evaporative Emission Test Procedures for New (in this case 1985 and newer, until superseded) Gasoline-Fueled, Natural Gas-Fueled, Liquefied Petroleum Gas-Fueled and Methanol-Fueled Heavy-Duty Vehicles "shall be traceable to within one percent of NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator". This requirement is defined for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1214-85(b)
NIST Gas Standards	Span Gases - States that Span gases (not including methanol) used in an hydrocarbon analyzer in Evaporative Emission Test Procedures for New (in this case 1985 and newer, until superseded)Gasoline-Fueled, Natural Gas- Fueled, Liquefied Petroleum Gas-Fueled and Methanol-Fueled Heavy-Duty Vehicles "shall be accurate to within two percent of true concentration, where true concentration refers to NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator." This requirement is defined for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1214-85 (c)
Traceability to NIST gas standard	Methanol in air gases- States that Methanol in air gases used for response factor determination in hydrocarbon analyzers in Evaporative Emission Test Procedures for New (in this case 1985 and newer, until superseded) Gasoline-Fueled, Natural Gas- Fueled, Liquefied Petroleum Gas-Fueled and Methanol-Fueled Heavy-Duty Vehicles “shall be traceable to within ±2 percent of NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator." This requirement is defined for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1214-85 (d)(2)
Traceability	FID Response Factor Methane -States that "When the FID analyzer to be used for the analysis of natural gas-fueled vehicle hydrocarbon samples has been calibrated using propane, the methane response factor of the analyzer shall be established. To determine the total hydrocarbon FID response to methane, known methane in air concentrations traceable to National Institute of Standards and Technology (NIST) shall be analyzed by the FID. " This is required for calibration of hydrocarbon analyzers used in Evaporative Emission Test Procedures for New (in this case , 1990 and newer until superseded) Gasoline-Fueled, Natural Gas- Fueled, Liquefied Petroleum Gas-Fueled and Methanol-Fueled Heavy-Duty Vehicles as part of control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1221-90 (e)

NIST Traceable standards for calibration	Calibration- This regulation states that an application for approval of an alternate test system that would consistently and reliably produce emission test results that are at least equivalent to those described in 40CFR 86.1306-07 (Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Particulate Exhaust Test Procedures) should include a section that "shall describe all of the installation, calibration, operation, and maintenance procedures in a step-by-step format. Note that empirical calibration with respect to another prescribed or approved measurement system is not acceptable. Calibration should be performed with NIST traceable standards, or equivalent national standards".		EPA	40 CFR 86.1306-07(d)(5)(iii)
NIST Traceable standards for calibration	Calibration- This regulation states that for an application for approval of an alternate test system that would consistently and reliably produce emission test results that are at least equivalent to those described in 40CFR 86.1306-07 (Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Particulate Exhaust Test Procedures) comparison of results from the alternate system and from the prescribed system (or other system approved by the Administrator) need to be included. "The two systems must be calibrated independently to NIST traceable standards or equivalent national standards for this comparison.".....		EPA	40 CFR 86.1306-07(d)(5)(iv)
Traceability / calibration - NBS "true" value	Reference is part of the dynamometer and engine equipment specification for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines. Requires that "Engine flywheel torque readout shall be accurate to within ±3 percent of the NBS “true” value torque", or certain other defined accuracies.		EPA	40 CFR 86.1308-84 (a)(2)
Traceability / calibration - NBS "true" value	Reference is part of the dynamometer and engine equipment specification for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines. States that "Engine flywheel torque values used for cycle evaluation shall be accurate to within ±3.6 percent of NBS “true” values...." to provide a more convenient option for the test procedures.			40 CFR 86.1308-84 (c)(2)
Traceability	Weights traceable to NIST - Refers to NBS traceable weights to define to define the NBS "true" value torque referred to in 41 CFR 86.1308-84 para (a)(2) and para (c)(2).		EPA	40 CFR 86.1308-84 (e)

Traceability to NBS weight standards	Requires that calibration weights used for each range of torque measuring device be "traceable to NBS weights" in dynamometer and engine equipment specification for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40CFR 86.1308-84 (e)(1)(i)
Traceability to NIST	Requires that "dewpoint shall be measured with an instrument that exhibits an accuracy of at least ±0.25 °C NIST traceable as stated by the instrument manufacturer" for establishing ambient conditions for filter stabilization and weighing; as a requirement for Filter stabilization and microbalance workstation environmental conditions, microbalance specifications, and particulate matter filter handling and weighing procedures as part of the gaseous and particulate exhaust test procedures for emission regulations for new Otto-Cycle and Diesel heavy-duty engines.		EPA	40 CFR 86.1312-2007(a)(1)(i)
Traceability to NIST	Requires that "dewpoint shall be measured with an instrument that exhibits an accuracy of at least ±0.25 °C NIST traceable as stated by the instrument manufacturer" for verifying the immediate microbalance work environment; as a requirement for Filter stabilization and microbalance workstation environmental conditions, microbalance specifications, and particulate matter filter handling and weighing procedures as part of the gaseous and particulate exhaust test procedures for emission regulations for new Otto-Cycle and Diesel heavy-duty engines.		EPA	40 CFR 86.1312-2007(a)(1)(ii)
Traceability/calibration	certification and calibration procedures - Specifications for microbalances used for determination of the weight of filters requires that "all certification and calibration procedures shall be NIST traceable, or traceable to an equivalent national standard"; as a requirement for Filter stabilization and microbalance workstation environmental conditions, microbalance specifications, and particulate matter filter handling and weighing procedures as part of the gaseous and particulate exhaust test procedures for emission regulations for new Otto-Cycle and Diesel heavy-duty engines.		EPA	40 CFR 86.1312-2007(b)
Traceability to NBS gas standards	Calibration gases - Requires that calibration gases used in gas analyzers for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines "shall be accurate to within ±1 percent of NBS gas standards, or other gas standards which have been approved by the Administrator"		EPA	40 CFR 86.1314-84 (f))(2)

Traceability to NBS gas standards	Span Gases - Requires that span gases used in gas analyzers for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines "shall be accurate to within ±2 percent of NBS gas standards, or other gas standards which have been approved by the Administrator"		EPA	40 CFR 86.1314-84(f)(3)
Traceability to NBS gas standards	States that "the use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ±1.5 percent of NBS gas standards, or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used for blending must be “named” to an accuracy of at least ±1 percent, traceable to NBS or other approved gas standards." This is for use in gas analyzers for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines		EPA	40 CFR 86.1314-84 (g)
Traceability to NIST gas standard	Calibration gases -Requires that calibration gases used in gas analyzers for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1994 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines (not including methanol) shall be traceable to within one percent of NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator.		EPA	40 CFR 86.1314-94(g)(2)
Traceability to NIST gas standard	Span gases - Requires that span gases (not including methanol) used in gas analyzers for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1994 and newer, until superseded) Otto cycle and diesel heavy-duty engines as part of testing for control of emissions from new and in-use highway vehicles and engines "shall be accurate to within two percent of true concentration, where true concentration refers to NIST (formerly NBS) gas standards, or other gas standards which have been approved by the Administrator."		EPA	40 CFR 86.1314-94(g)(3)
Traceability	Methanol in air gases - Requires that Methanol in air gases used for response factor determination shall be traceable to within ±2 percent of NIST (formerly NBS) gas standards, or other standards which have been approved by the Administrator" as part of the gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1994 and newer, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1314-94(g)(4)(i)

Traceability to NIST/NBS gas standards	known methane in air concentrations - States that "the use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ±1.5 percent of NBS gas standards, or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used for blending must be "named" to an accuracy of at least ±1 percent, traceable to NBS or other approved gas standards". This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1994 and newer, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1314-94
Traceability to NBS/calibration	CVS calibration - requires that "the CVS is calibrated using an accurate flowmeter and restrictor valve. The flowmeter calibration shall be traceable to the NBS, and will serve as the reference value (NBS "true" value) for the CVS calibration. (Note: In no case should an upstream screen or other restriction which can affect the flow be used ahead of the flowmeter unless calibrated throughout the flow range with such a device.) The CVS calibration procedures are designed for use of a "metering venturi" type flowmeter. Large radius or ASME flow nozzles are considered equivalent if traceable to NBS measurements. Other measurement systems may be used if shown to be equivalent under the test conditions in this action and traceable to NBS measurements." This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and later, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1319-84(a)
Traceability	Requires that air flow sensor read out tolerances for calibration data measurements must be ±0.5% of NBS "true" value. **(MANDATORY if this technique is used)**. This measurement is part of the PDP calibration is one of the required measurements that establishes flow rate of the CVS pump. This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1984 and later, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.			40 CFR 86.1319-84(c)(4)

Traceability / calibration	CVS calibration - requires that "the CVS is calibrated using an accurate flowmeter and restrictor valve. The flowmeter calibration shall be traceable to the NBS, and will serve as the reference value (NBS “true” value) for the CVS calibration. The CVS calibration procedures are designed for use of a “metering venturi” type flowmeter. Large radius or ASME flow nozzles are considered equivalent if traceable to NBS measurements. Other measurement systems may be used if shown to be equivalent under the test conditions in this section and traceable to NBS measurements. Measurements of the various flowmeter parameters are recorded and related to flow through the CVS. Procedures used by EPA for both PDP–CVS and CFV–CVS are outlined below. Other procedures yielding equivalent results may be used if approved in advance by the Administrator". This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1990 and later, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1319-90(a)
Traceability / calibration	Requires that air flow sensor read out tolerances for calibration data measurements must be ±0.5% of NBS "true" value. (**MANDATORY if this technique is used).** This measurement is part of the PDP calibration is one of the required measurements that establishes flow rate of the CVS pump. This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1990 and later, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1319-90(c)(4)
Traceability	Requires that air flow sensor read out tolerances for flow calibration measurements must be ±0.5% of NBS "true" value. **(MANDATORY)**. This measurement is part of the CFV calibration is one of the required measurements that establishes the value of the calibration coefficient at measured values of pressure, temperature and air flow. This is a part of the requirements for gaseous and particulate exhaust test procedures used in emission regulations for new (in this case 1990 and later, until superseded) Otto cycle and diesel heavy-duty engines in testing for control of emissions from new and in-use highway vehicles and engines.			40 CFR 86.1319-90(d)(3)

Traceability / calibration	NBS traceable flow calibration- Requires the use of gas meters or flow instrumentation to determine flow through the particulate filters, methanol impingers and formaldehyde impingers while sampling for particulate, methanol and formaldehyde emissions as part of Gaseous and Particulate Exhaust Test Procedures for Emission Regulations for New (in this case 1990 and later, until superseded) Otto-Cycle and Diesel Heavy-Duty Engines. The regulation states that the instruments shall be calibrated initially and periodically by installing a "calibration device in series with the instrument. A critical flow orifice, a bellmouth nozzle, or a laminar flow element or an NBS traceable flow calibration device is required as the standard device". This regulation covers testing for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1320-90 (a)(1)(i)
Traceability	known methane in air concentrations - States that "when the FID analyzer is to be used for the analysis of natural gas-fueled vehicle hydrocarbon samples, the methane response factor of the analyzer shall be established. To determine the total hydrocarbon FID response to methane, known methane in air concentrations traceable to National Institute of Standards and Technology (NIST) shall be analyzed by the FID" **(MANDATORY)**. This is required for calibration of the hydrocarbon analyzer for gaseous and particulate exhaust test procedures used for emission regulations for new Otto-Cycle and diesel heavy-duty engines used for control of emissions from new and in-use highway vehicles and engines.		EPA	40 CFR 86.1321-94(d)
Traceability	Dynamometer specifications and calibration weights as stated under Emission Test Equipment Provisions for control of emissions from new and in-use nonroad compression-ignition engines require that "a minimum of six calibration weights for each range used are required. The weights must be spaced to reflect good engineering judgment such that they cover the range of weights required and must be traceable to within 0.5 percent of NIST weights. Laboratories located in foreign countries may certify calibration weights to local government bureau standards."		EPA	40 CFR 89.306(b)
Traceability/calibration	Requires that "calibration gas values are to be derived from NIST Standard Reference Materials (SRMs) or other standardized gas samples...". This requirement for analytical gases is stated under the emissions test equipment provisions for control of emissions from new and in-use nonroad compression-ignition engines.		EPA	40 CFR 89.312(c)(1)

Traceability/calibration	Requires that "The true concentration of a span gas must be within ±2 percent of the NIST gas standard. The true concentration of a calibration gas must be within ±1 percent of the NIST gas standard. The use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ±1.5 percent of NIST gas standards, or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used (or blending) must be "named" to an accuracy of at least ±1 percent, traceable to NIST or other approved gas standards. All concentrations of calibration gas shall be given on a volume basis (volume percent or volume ppm)." This requirement for analytical gases is stated under the emissions test equipment provisions for control of emissions from new and in-use nonroad compression-ignition engines.		EPA	40 CFR 89.312(c)(1)
Traceability/calibration	States that "the CVS is calibrated using an accurate flowmeter and restrictor valve where the flowmeter calibration must be traceable to NIST measurements, and will serve as the reference value (NIST "true" value) for the CVS calibration". This requirement is for CVS calibrations for dilute sampling procedures stated for test procedures for exhaust emissions in testing for control of emissions from new and in-use nonroad compression-ignition engines.		EPA	40 CFR89.422(a)(1)
Traceability	States that "The CVS calibration procedures are designed for use of a "metering venturi" type flowmeter. Large radius or ASME flow nozzles are considered equivalent if traceable to NIST measurements. Other measurement systems may be used if shown to be equivalent under the test conditions in this section and traceable to NIST measurements." This requirement is for CVS calibrations for dilute sampling procedures stated for test procedures for exhaust emissions in testing for control of emissions from new and in-use nonroad compression-ignition engines.		EPA	40 CFR89.422(a)(2)
Traceability	Requires that air flow sensor read out tolerances for calibration data measurements must be ±0.5% of NBS "true" value. (**MANDATORY** if this technique is used). This measurement is part of the PDP calibration is one of the required measurements that establishes flow rate of the CVS pump. This requirement is for CVS calibrations for dilute sampling procedures used for test procedures for exhaust emissions in testing for control of emissions from new and in-use nonroad compression-ignition engines.		EPA	40 CFR89.422(c)(4)
Traceability/calibration	The regulation states that to ensure dynamometer calibration accuracy a minimum of three calibration weights for each range used is required. The weights must be equally spaced and traceable to within 0.5 percent of National Institute for Standards and Testing (NIST) weights. Laboratories located in foreign countries may certify calibration weights to local government bureau standards". This regulation is included in the emission test equipment provisions for control of emissions from nonroad spark-ignition engines at or below 19kW.		EPA	40 CFR90.305(b)(2)

SRMs	Requires that "calibration gas values are to be derived from NIST “Standard Reference Materials” (SRMs) and are to be single blends as specified.." This requirement for analytical gases is included in the emission test equipment provisions for control of emissions from nonroad spark-ignition engines at or below 19kW.		EPA	40 CFR 90.312(c)(1)
SRMs	This regulation states that "the true concentration of a span gas must be within ± two percent of the NIST gas standard. The true concentration of a calibration gas must be within ± one percent of the NIST gas standard". This requirement for analytical gases is included in the emission test equipment provisions for control of emissions from nonraod spark-ignition engines at or below 19kW.		EPA	40 CFR 90.312(c)(3)
Traceability/calibration/SRMs	Specifies accuracy requirements for divider gases, if used, as part of emission test equipment provisions for control of emissions from nonroad spark-ignition engines at or below 19kW. The regulations states that "the use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ± 1.5 percent of NIST gas standards or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used for blending must be “named” to an accuracy of at least ± one percent, traceable to NIST or other approved gas standards".		EPA	40 CFR90.314(c)(Note)
Traceability/SRMs	Specifies requirements for span gases, if used, as part of emission test equipment provisions for control of emissions from nonroad spark-ignition engines at or below 19kW. States that "The span gases must be accurate to within ± two percent of NIST gas standards or other gas standards which have been approved by the Administrator.".		EPA	40 CFR90.314(c)(i)
SRMs	Specifies requirements for calibration gases, as part of emission test equipment provisions for control of emissions from nonroad spark-ignition engines at or below 19 kW. Requires the selection of "a calibration gas (a span gas may be used for calibrating the CO2 analyzer) with a concentration between the two lowest non-zero gas divider increments. This gas must be “named” to an accuracy of ± one percent of NIST gas standards or other standards approved by the Administrator".		EPA	40 CFR90.314(c)
Traceability/calibration	States that for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from nonroad spark-ignition engines at or below 19 kW, the CVS has to be calibrated using an accurate flowmeter and restrictor valve. The "flowmeter calibration must be traceable to the National Institute for Standards and Testing (NIST) and serves as the reference value (NIST “true” value) for the CVS calibration" **(MANDATORY)**.		EPA	40 CFR90.424(a)(1)

Traceability/calibration	States that for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from nonroad spark-ignition engines at or below 19 kW, the CVS has to be calibrated using an accurate flowmeter and restrictor valve. The regulation states that "large radius or American Society of Mechanical Engineers (ASME) flow nozzles are considered equivalent if traceable to NIST measurements. Other measurement systems may be used if shown to be equivalent under the test conditions in the section and traceable to NIST measurements".		EPA	40 CFR 90.424(a)(2)
Traceability/calibration	Regulation requires that sensor-readout tolerances for airflow during calibration data measurements must be ±0.5 percent of NIST value **(MANDATORY)**. This measurement is part of the test configuration required to establish the flow rate of the CVS pump for PDP-CVS calibration for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from nonroad spark-ignition engines at or below 19 kW.		EPA	40 CFR 90.424(c)(4)
Traceability/calibration	Regulation requires that sensor-readout tolerances for airflow during calibration data measurements must be ±0.5 percent of NIST value **(MANDATORY)**. This measurement is part of the test configuration required for flow calibration as part of the CFV-CVS calibration for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from nonroad spark-ignition engines at or below 19 kW.		EPA	40 CFR 90.424(c)(4)
Traceability	The dynamometers specifications and calibration accuracy requirements stated as part of the emissions test provisions for control of emissions from marine spark- ignition engines require that "a minimum of three calibration weights for each range used is required. The weights must be equally spaced and traceable to within 0.5 percent of National Institute of Standards and Testing (NIST) weights. Laboratories located in foreign countries may certify calibration weights to local government bureau standards".		EPA	40 CFR 91.305(b)(2)
SRM	This regulation states that for calibration gases used in emission test equipment for control of emissions from marine spark-ignition engines, the "calibration gas values are to be derived from NIST "Standard Reference Materials" (SRMs) or other local gas standards and are to be single blends as specified...".		EPA	40 CFR 91.312(c)(1)
SRM	This regulation states that for calibration gases used in emission test equipment for control of emissions from marine spark-ignition engines, that "the true concentration of a span gas must be within ± 2 percent of the NIST gas standard. The true concentration of a calibration gas must be within ± 1 percent of the NIST gas standard" **(MANDATORY)**.		EPA	40 CFR 91.312(c)(3)

Traceability to SRM	This reference pertains to calibration of emission measurement equipment using bag sampling techniques, when emissions are below 15% of the full scale reading. The regulation states emissions test equipment provisions for control of emissions from marine spark-ignition engines. The reference states that "the use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ± 1.5 percent of NIST gas standards or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used for blending must be "named" to an accuracy of at least ± 1 percent, traceable to NIST or other approved gas standards".		EPA	40 CFR 91.314(c)(2)
Traceability to SRM	This regulation states that when span gases are used in analyzers for emissions testing for control of emissions from marine spark-ignition engines the procedure used should "span the full analyzer range using a top range calibration gas. The span gases must be accurate to within ± 2 percent of NIST gas standards or other gas standards which have been approved by the Administrator".		EPA	40 CFR 91.314(c)(2)(i)
Traceability to SRM	As per this regulation, when calibrating an analyzer for emissions testing for control of emissions from marine spark-ignition engines, "select a calibration gas (a span gas may be used for calibrating the CO2 analyzer) with a concentration between the two lowest non-zero gas divider increments. This gas must be "named" to an accuracy of ± 2 percent of NIST gas standards, or other standards approved by the Administrator".		EPA	40 CFR 91.314(c)(2)(iii)
Traceability	States that for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from marine spark-ignition engines, the CVS has to be calibrated using an accurate flowmeter and restrictor valve. The "flowmeter calibration shall be traceable to the National Institute for Standards and Testing (NIST) and will serve as the reference value (NIST "true" value) for the CVS calibration" **(MANDATORY)**.		EPA	40 CFR 91.424(a)(1)
Traceability	States that for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from marine spark-ignition engines, the CVS has to be calibrated using an accurate flowmeter and restrictor valve. The regulation states that "large radius or American Society of Mechanical Engineers (ASME) flow nozzles are considered equivalent if traceable to NIST measurements. Other measurement systems may be used if shown to be equivalent under the test conditions in the section and traceable to NIST measurements".		EPA	40 CFR 91.424(a)(2)

Traceability	Regulation requires that sensor-readout tolerances for airflow during calibration data measurements must be ±0.5 percent of NIST value **(MANDATORY).** This measurement is part of the test configuration required to establish the flow rate of the CVS pump for PDP-CVS calibration for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from marine spark-ignition engines.		EPA	40 CFR 91.424(c)(4)
Traceability	Regulation requires that sensor-readout tolerances for airflow during calibration data measurements must be ±0.5 percent of NIST value **(MANDATORY)**. This measurement is part of the test configuration required for flow calibration as part of the CFV-CVS calibration for diluting sampling procedures used in gaseous exhaust test procedures for control of emissions from marine spark-ignition engines.		EPA	40 CFR 91.424(d)(3)
Traceability	Defines accuracy as "the difference between the measured value and the true value, where the true value is determined from NIST traceable measurements where possible, or otherwise determined by good engineering practice"		EPA	40 CFR 92.102
Traceability	This regulation requires that in addition to certain general requirements, for purposes of engine testing, the engine or dynamometer readout signals for speed and torque shall also meet the following accuracy specifications, amongst others:" Engine flywheel torque readout shall be accurate to either within ±3 percent of the NIST “true” value torque, or the following accuracies, whichever provides the most accurate readout:(A) ±20 ft.-lbs. of the NIST “true” value if the full scale value is 9000 ft.-lbs. or less. (B) ±30 ft.-lbs., of the NIST “true” value if the full scale value is greater than 9000 ft.-lbs". This specification for engine testing is defined as a test procedure for control of air pollution from locomotives and locomotive engines.		EPA	40 CFR 92.106(b)(1)(ii)
Traceability/SRM	As per this regulation, calibration gases used as analytical gases in test procedures for control of air pollution from locomotives and locomotive engines, "shall be accurate to within ±1 percent of NIST gas standards, or other gas standards which have been approved by the Administrator".		EPA	40 CFR 92.112(h)(2)
Traceability/SRM	As per this regulation, span gases used as analytical gases in test procedures for control of air pollution from locomotives and locomotive engines, "shall be accurate to within ±2 percent of NIST gas standards, or other gas standards which have been approved by the Administrator.".		EPA	40 CFR 92.112(h)(3)
Traceability/SRM	As per this regulation, for analytical gases in test procedures for control of air pollution from locomotives and locomotive engines, "the use of precision blending devices (gas dividers) to obtain the required calibration gas concentrations is acceptable, provided that the blended gases are accurate to within ±1.5 percent of NIST gas standards, or other gas standards which have been approved by the Administrator. This accuracy implies that primary gases used for blending must be “named” to an accuracy of at least ±1 percent, traceable to NIST or other approved gas standards.".		EPA	40 CFR 92.112(j)

Traceability	This reference defines NIST "true" value torque for dynamometer equipment calibration as part of the calibration of engine output measurement system for test procedures used in control of air pollution from locomotives and locomotive engines. The NIST "true" value torque is defined as "the torque calculated by taking the product of an NIST traceable weight or force and a sufficiently accurate horizontal lever arm distance, corrected for the hanging torque of the lever arm".		EPA	40 CFR 92.116(b)(1)
Traceability	Regulation specifies the requirement of calibration weights as "a minimum of six calibration weights for each range of torque measuring device used are required. The weights must be approximately equally spaced and each must be traceable to NIST weights within 0.1 percent. Laboratories located in foreign countries may certify calibration weights to local government bureau standards. Certification of weight by state government Bureau of Weights and Measures is acceptable. Effects of changes in gravitational constant at the test site may be accounted for if desired." This is used for dynamometer equipment calibration as part of the calibration of engine output measurement system for test procedures used in control of air pollution from locomotives and locomotive engines.		EPA	40 CFR 92.116(b)(1)(i)(A)
Traceability	States calibration requirements for a master load cell shall be precalibrated or calibrated with known weights traceable to NIST within 0.1 percent … This requirement is for equipment calibration as part of the calibration of engine output measurement system for test procedures used in control of air pollution from locomotives and locomotive engines.		EPA	40 CFR 92.116(b)(1)(ii)(A)
Traceability	This regulation requires that the calibration weights used to calibrate the master load cell and read out system for dynamometer equipment calibration as part of the calibration of engine output measurement system for test procedures used in control of air pollution from locomotives and locomotive engines must be traceable to within 0.1 percent of NIST weights. **(MANDATORY)**		EPA	40 CFR 92.116(c)(3)(i)
Traceability/calibration	This regulation requires that for calibration of gas meters or flow instruments used for particle measurement in test procedures used to control air pollution from locomotive and locomotive engines, the calibration device should be installed in series with the instrument. "A critical flow orifice, a bellmouth nozzle, or a laminar flow element or an NIST traceable flow calibration device is required as the standard device." **(MANDATORY)**		EPA	40 CFR 92.117(a)(1)(i)

SRM	This regulation defines procedures for smoke meter testing and calibration used in test procedures for control of air pollution from locomotives and locomotive engines. The regulation specifies that "Calibrated neutral density filters having approximately 10, 20, and 40 percent opacity shall be employed to check the linearity of the instrument. The filter(s) shall be inserted in the light path perpendicular to the axis of the beam and adjacent to the opening from which the beam of light from the light source emanates, and the recorder response shall be noted. Filters with exposed filtering media should be checked for opacity every six months; all other filters shall be checked every year, using NIST or equivalent reference filters".		EPA	40 CFR 92.122(b)
Traceability to SRM	This regulation states that for calibrating exhaust emissions sample analyzers that will be used for readings below 15% full scale deflection, in order to ensure accuracy of the calibration curves the calibration procedure should involve amongst other steps selection of a" calibration gas (a span gas may be used for calibrating the CO2 analyzer) with a concentration between the two lowest non-zero gas divider increments. This gas must be “named” to an accuracy of ±1.0 percent (±2.0 percent for CO2 span gas) of NIST gas standards, or other standards approved by the Administrator." This is part of the procedure to ensure emissions measurement accuracy in test procedures used to control air pollution from locomotives and locomotive engines.		EPA	40 CFR 92.127(b)(1)(iii)
Traceability to SRM	This regulation defines the test procedures for category 3 marine engines as part of the test procedures for control of emissions from marine compression-ignition engines. The regulation states that "standards used for calibration shall be traceable to NIST standards. (Other national standards may be used if they have been shown to be equivalent to NIST standards.)".**(MANDATORY)**		EPA	40 CFR 94.109(a)(5)
Traceability	This regulation defines a stock solution as "a solution containing an analyte that is prepared using a reference material traceable to EPA, the National Institute of Science and Technology (NIST), or a source that will attest to the purity and authenticity of the reference material" in the glossary of definitions and purposes under the guidelines establishing test procedures for analysis of pollutants, with particular reference to "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater".		EPA	40 CFR 136 App. A (25)
Security standards	security and privacy requirements established by the NIST for electronic data interchange-This regulation cites security and privacy requirements established by the National Institute of Standards and Technology (NIST) for electronic data interchange, and permits the use of electronic signatures on travel documents under the Agency Travel Accountability Requirements, if the stated regulations are met.		Public Contracts and Property Management	41 CFR 301-71.3

NBS publication	This regulation refers to a NBS publication on computer security guidelines and states that "When maintained in computerized form, records subject to the Privacy Act shall be maintained, at a minimum, subject to safeguards based on those recommended in the National Bureau of Standard's booklet "Computer Security Guidelines for Implementing the Privacy Act of 1974" (May 30, 1975), and any supplements thereto, which are adequate and appropriate to assuring the integrity of records in the system."	1975	Interior	43 CFR 2.51(c)
NBS FIPS publication	Reference is made to the NBS FIPS publication as the source of information regarding a state's identifying code when collecting and monitoring support payments from non-custodial parents.		HHS	45 CFR 303.7(c)(7)(iv)
NBS FIPS publication	Reference is made to the NBS FIPS publication as the source of state's identifying code for purposes of notification to the OCSE of liability for past-due support.		HHS	45 CFR 303.72(b)(2)(iv)
NBS SP 440	This subpart **incorporates by reference** "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440 for specifications pertaining to Buoyant Apparatus for Merchant Vessels to be used as life saving equipment	1976	DHS/USCG	46 CFR 160.010-1
NBS SP 440	This subpart **incorporates by reference** "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440 for specifications pertaining to Hand Red Flare Distress Signals to be used as life saving equipment.	1976	DHS/USCG	46 CFR 160.021-1
NBS SP440	Reference is made to NBS publication "Color Names Dictionary" to define the colors in tests for chromaticity of Hand Red Flare Distress Signals to be used as life saving equipment.	1976	DHS/USCG	46CFR 160.021-4(d)(7)
Publication SP 440	This subpart **incorporates by reference** "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, December 1976, for specifications pertaining to Floating Orange Smoke Distress Signals (5 Minutes) to be used as lifesaving equipment	1976	DHS/USCG	46 CFR 160.022-1
NBS Report 4792	This subpart **incorporates by reference** "Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals," National Bureau of Standards Report 4792, July 1956, for specifications pertaining to Floating Orange Smoke Distress Signals (5 Minutes) to be used as lifesaving equipment.	1956	DHS/USCG	46 CFR 160.022-1
NBS SP 440	Reference is made to NBS publication "Color Names Dictionary" (colors 34–39 and 48–54) to define the specifications for orange color of smoke for Floating Orange Smoke Distress Signals (5 Minutes) to be used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.022-4 (d)(7)

NBS Report 4792	Reference is made to National Bureau of Standards Report No. 4792 to define the apparatus to be used for determining the volume and density of smoke in testing of Floating Orange Smoke Distress Signals (5 Minutes) to be used as lifesaving equipment.	1956	DHS/USCG	46 CFR 160.022-4 (d)(8)
Publication 440	This subpart **incorporates by reference** "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, Dictionary 1976, for specifications pertaining to Pistol-Projected Parachute Red Flare Distress Signals to be used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.024-1
NBS SP440	Reference is made to NBS publication "Color Names Dictionary" to define the colors in tests for chromaticity of Pistol–Projected Parachute Red Flare Distress Signals to be used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.024-4(d)(4)
Publication 440	This subpart **incorporates by reference** "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, December 1976, for specifications pertaining to Hand-Held Rocket-Propelled Parachute Red Flare Distress Signals to be used as life saving equipment.	1976	DHS/USCG	NBS SP 440
Publication 440	This subpart **incorporates by reference** "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, December 1976, for specifications pertaining to Hand Orange Smoke Distress Signals to be used as life saving equipment.	1976	DHS/USCG	46 CFR 160.037-1
Report 4792	This subpart **incorporates by reference** "Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals," National Bureau of Standards Report 4792, July 1956 for specifications pertaining to Hand Orange Smoke Distress Signals to be used as life saving equipment.	1956	DHS/USCG	46 CFR 160.037-1
Report 4792	This subpart refers to equipment described in "Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals," National Bureau of Standards Report 4792, July 1956 for specifications pertaining to the volume and density of smoke for use in the technical test specifications for testing of Hand Orange Smoke Distress Signals to be used as life saving equipment.	1956	DHS/USCG	46 CFR 160.037-4
NBS Simplified Practice Recommendation R178-41	Reference is made to the publication National Bureau of Standards Simplified Practice Recommendation: No. R178–41, Packaging of First-aid Unit Dressings and Treatments, as a source of applicable specifications/publications for first-aid kits for merchant vessels.		DHS/USCG	46 CFR 160.041-1

NBS Simplified Practice Recommendation R178-41	Reference is made to the NBS Simplified Practice Recommendations (R178-41) for Packaging of First-aid Unit Dressings and Treatments, to define size of a first-aid kits for merchant vessels to be used as life-saving equipment.		DHS/USCG	46 CFR 160.041-2
NBS Simplified Practice Recommendation R178-42	Reference is made to the NBS Simplified Practice Recommendations (R178-41) for Packaging of First-aid Unit Dressings and Treatments, to define the type of carton (standard commercial unit type) for first-aid kits for merchant vessels to be used as life-saving equipment.		DHS/USCG	46 CFR 160.041-4
NBS SP 440	This subpart **incorporates by reference** "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, December 1976 for specifications pertaining to Floating Orange Smoke Distress Signal (15 minutes) in use as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.057-1(a)(1)
NBS Report 4792	This subpart **incorporates by reference** "Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals," National Bureau of Standards Report 4792, July 1956, for specifications pertaining to Floating Orange Smoke Distress Signals (15 minutes) in use as lifesaving equipment.	1956	DHS/USCG	46 CFR 160.057-1
NBS SP 440	Reference is made to NBS publication "Color Names Dictionary" (colors 34–39 and 48–54) to define the specifications for orange color of smoke for Floating Orange Smoke Distress Signals (15 Minutes) to be used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.057-4(d)(8)
NBS Report 4792	Reference is made to National Bureau of Standards Report No. 4792 to define the apparatus to be used for determining the volume and density of smoke in testing of Floating Orange Smoke Distress Signals (15 Minutes) to be used as lifesaving equipment.	1956	DHS/USCG	46 CFR 160.057-4(d)(9)
NBS SP 440	This subpart **incorporates by reference**, "The Universal Color Language" and "The Color Names Dictionary" in Color: Universal Language and Dictionary of Names, National Bureau of Standards Special Publication 440, for specifications pertaining to Hybrid Inflatable Personal Flotation Devices in use as life saving equipment.	1976	DHS/USCG	46 CFR 160.077-5
NBS SP 440	This subpart **incorporates by reference** NBS Special Publication 440 Color: Universal Language and Dictionary of Names, 1976, for specifications pertaining to Inflatable Liferafts (SOLAS) in use as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.151-5
NBS SP440	This regulation refers to NBS SP 440, to define the color of the canopy required for inflatable liferafts (SOLAS) in use as lifesaving equipment. The particular color referred to her is color 34 in SP 440	1976	DHS/USCG	46 CFR 160.151-15(e)

NBS SP 440	NBS SP 440 is referred to by the statement that "The primary color of the appendages must be vivid reddish orange (color number 34 of NBS Special Publication 440), or a fluorescent color of a similar hue" to define the requirements that appendages on inflatable liferafts (SOLAS) should meet to resist capsizing from winds and waves.	1976	DHS/USCG	46 CFR 160.151-17(a)(2)(vii)
NBS SP 440	This subpart **incorporates by reference** National Bureau of Standards Special Publication 440—Color, Universal Language and Dictionary of Names; December 1976, as part of the definition of specification for immersion suits in use as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.171-3
NBS SP 440	This subchapter refers to NBS SP 440 to specify the requirements for the primary color of the exterior surface of each thermal protective aid (vivid reddish orange, color number 34 of National Bureau of Standards Publication 440). This forms part of the requirements for immersion suits used as lifesaving equipment.	1976	DHS/USCG	46 CFR 160.171-9(h)
NBS SP 440	This subpart **incorporates by reference** National Bureau of Standards Special Publication 440—Color, Universal Language and Dictionary of Names, for specifications pertaining to thermal protective aids used as lifesaving equipment.		DHS/USCG	46 CFR 160.174-3(f)
NBS SP 440	This subchapter refers to NBS SP 440 to specify the requirements for the primary color of the exterior surface of each thermal protective aid (vivid reddish orange, color number 34 of National Bureau of Standards Publication 440). This forms part of the requirements for thermal protective aids used as lifesaving equipment.		DHS/USCG	46 CFR 160.174-9(h)
NBS SP 440	This subpart **incorporates by reference** Special Pub. 440, Color: Universal Language and Dictionary of Names; “The Universal Color Language” and “The Color Names Dictionary”, 1976—160.176–9, for specifications pertaining to inflatable lifejackets in use as lifesaving equipment.		DHS/USCG	46 CFR 160.176-4
NBS SP440	Reference is made to NBS SP 440 to define the amongst the general features of inflatable lifejackets, the color on the external surfaces as being "primarily vivid reddish orange as defined by sections 13 and 14 of the “Color Names Dictionary.."	1976	DHS/USCG	46 CFR 160.176-9(a)(10)
NBS Building Materials and Structures Report 150	Reference is made to the NBS Building Materials and Structures Report 150 as a source of fire tests that may be used in addition to the usual fire tests to determine adequacy of a portable fire extinguisher to be listed and labeled as a "marine type" extinguisher as part of the requirements for engineering equipment.		DHS/USCG	46 CFR 162.028-3(m)
NBS Handbook 91	This subpart **incorporates by reference** “Experimental Statistics”, National Bureau of Standards Handbook No. 91 (October 1966) for specifications pertaining to pollution prevention equipment.	1966	DHS/USCG	46 CFR 162.050-4

NBS Handbook 91	Reference is made to NBS Handbook 91 to define the procedure to be used in measurements of oil content of samples (containing oil in samples) supplied by the USCG, for testing pertaining to pollution prevention equipment.		DHS/USCG	46 CFR 162.050-15(f)(3)
NBS testing labs	This section of the subchapter requires that all tests pertaining to deck coverings have to be conducted at the NBS or other laboratories designated by the Coast Guard for purposes of inspection and testing of deck coverings for merchant vessels.		DHS/USCG	46 CFR 164.006-4(a)
NBS testing labs	Reference is made to the NBS labs as the site of testing materials to be approved for use as deck covering in merchant vessels.		DHS/USCG	46 CFR 164.006-5(d)
NBS testing labs	This reference states that all tests and retests pertaining to structural insulations have to be conducted at the NBS or other laboratories designated by the Coast Guard.		DHS/USCG	46 CFR 164.007-4(a)
NBS testing labs	Reference is made to the Fire Research Section of NBS as the site of testing materials to be approved for use as structural insulations.		DHS/USCG	46 CFR 164.007-9(c)
NBS testing labs	Reference is made to the NBS or other labs designated by the Coast Guard as the site for all tests and retests for bulkhead panels.		DHS/USCG	46 CFR 164.008-3(a)
NBS testing labs	Procedures for testing of materials as bulkhead panels at the Fire Research Section of NBS, and related administrative procedures are defined.		DHS/USCG	46 CFR 164.008-7(c)and(d)
NBS SP 440	This part **incorporates by reference** NBS Special Pub. 440 "Color: Universal Language and Dictionary of Names", 1976	1976	DHS/USCG	46 CFR 169.115(c)(2)
Handbook 96	Refers to handbook 96 "Inspection of Processed Photographic Record Films for Aging Blemishes" to define the procedures to be used for regular inspection of aging of photographic film and processed photographic film as part of a records retention schedule.		DOT/MA	46 CFR 380.21
Accreditation (NVCASE)	NIST/NVCASE is referred to as the accreditation body of TCBs designated by the FCC. TCBs can be accredited under the "NVCASE program or other recognized programs based on ISO/IEC Guide 65, to comply with the Commission's qualification criteria for TCBs". Further per this paragraph "NIST may, in accordance with its procedures, allow other appropriately qualified accrediting bodies to accredit TCBs and testing laboratories".		FCC	47 CFR2.960(b)
Accreditation	The FCC requires TCBs to "participate in any consultative activities, identified by the Commission or NIST, to facilitate a common understanding and interpretation of applicable regulations", as part of the requirements for TCBs.		FCC	47 CFR 2.962(c)(5)
Accreditation Of TCBs	The NIST role in the FCC designation of an organization as a TCB, or withdrawal of the designation, is recognized.		FCC	47 CFR 2.962(e)

NBS Technical Note 101	In defining the procedure for the Procedure for Calculating PCS Signal Levels at Microwave Receivers, the PCS to microwave path loss is calculated using a model derived from the NBS Tech. Note 101. This is applicable to cellular communication station design.	1967 (updated 1982 and 1985).	FCC	47 CFR 24 Appendix I to Subpart E
NBS Technical Note 101	The propagation model used in the procedure for calculating PCS signal levels at Microwave receivers is calculated using the Longley-Rice Propagation Model Version 1.2.2, which in turn is derived from the NBS Technical Note 101.	1967	FCC	47 CFR 24.253 Appendix I 4.
Accreditation	Commission will designate as a TCB any organization that meets the qualification criteria and is accredited by NIST or its recognized accreditor		FCC	47 CFR68.160
Accreditation (NVCASE)	TCBs shall be accredited by the NIST under its NVCASE program, or other recognized programs based on ISO/IEC Guide 65, to comply with the Commission's qualification criteria for TCBs. NIST may, in accordance with its procedures, allow other appropriately qualified accrediting bodies to accredit TCBs and testing laboratories.		FCC	47 CFR68.160
Accreditation	The FCC requires TCBs to "participate in any consultative activities, identified by the Commission or NIST, to facilitate a common understanding and interpretation of applicable regulations" as part of the requirements for TCBs.		FCC	47 CFR 68.162 (c)(5)
Accreditation Of TCBs	The NIST role in the FCC designation of an organization as a TCB, or withdrawal of the designation, is recognized.		FCC	47 CFR 68.162 (e)
NBS time signals	Conditions to be met for rebroadcasting of time signals from the NBS (or the Naval Observatory and NOAA weather broadcasts) without prior authorization are stipulated. These rules are applicable to all broadcast stations.		FCC	47 CFR 73.1207(d)(2)
NBS time standards	The FCC stipulates that "The primary standard of frequency for radio frequency measurements is the standard frequency maintained by the National Bureau of Standards or the standard signals of Stations WWV, WWVB, and WWVH of the National Bureau of Standards".		FCC	47 CFR 73.1540
NBS publication (Tech. Note 101)	This reference requires the prediction of Power Flux Density (PFD) based on a point-to-point propagation model by P.L. Rice, A.G. Longley, K.A. Norton, and A.P. Barsis, "Transmission loss predictions for troposphere communication circuits", National Bureau of Standards Technical Note 101, Volumes I and II. This relates to frequency assignment for the purpose of communication in the 821MHz to 824 MHz and 866 MHz to 869 MHz frequency bands along the US-Canada border.		FCC	47 CFR 90.619(c)(3)(i)
Calibration	The NBS is stated as the source of calibration services for DoE acquisition officers or its authorized contractors.		DOE	48 CFR 908.7113

Handbook H-28	NBS Handbook H-28 "Handbook of Screw-Thread Standards for Federal Services(1957), 1957, December 1966 Edition is **incorporated by reference** for this subpart, with references in Title 49 sections 179.2; 178.45; 178.46. "National Institute of Standards and Technology, Department of Commerce, 5285 Port Royal Road, Springfield, VA 22151, USDC"	1957	DOT/RSPA	49 CFR 171.7
Handbook H-28	Specification for 3T Seamless Steel cylinders requires all opening to be threaded. The threads (taper and straight) have to be in compliance with the requirements if NBS Handbook H-28 **(mandatory) incorporated by reference**	1957	DOT/RSPA	49 CFR 178.45(f)(5)ii-iv
Handbook H-28	Specifications for 3AL seamless aluminum cylinders require that all openings must be threaded and the threads (tapered or straight) must conform to the requirements of NBS Handbook H-28 **(mandatory) incorporated by reference**	1957	DOT/RSPA	49 CFR 178.46(e)(5)ii-iv
Handbook H-28	NBS Handbook H-28 is referred to for defining the abbreviation "NPT" to "mean an American Standard Taper Pipe Thread conforming to the requirements of NBS Handbook H–28" for specifications for tank cars **(incorporated by reference)**	1957	DOT/RSPA	49 CFR 179.2(a)(8)
Presumably Handbook 96	Reference states that "Film used for photographing copies shall be of permanent record-type meeting in all respects the minimum specifications of the National Bureau of Standards, and all processes recommended by the manufacturer shall be observed to protect it from deterioration or accidental destruction", as part of the general requirements for copies and records - presumably a reference to NBS Handbook 96, "Inspection of Processed Photographic Record Films for Aging Blemishes".		DOT/FMCSA	49 CFR 390.31(b)(4)
NBS FIPS Pub. 1-1	Reference is made to the NBS FIPS Publication 1-1which specifies the information interchange requirements of the ASCII. These information interchange requirements have to be met by support systems used in conjunction with automatic on-board recorders used to record a driver's hours of service, to be capable of providing federal, state or local officials summaries of an individual driver's hours of service records.		DOT/FMCSA	49 CFR 395.15(b)(3)
NBS 378	Requires that oil furnace black (NBS 378) used in the formulation of rubber compound standard styrene butadiene rubber (SBR) brake cups, should have properties identical with those supplied by the NBS *DOES NOT STATE WHAT KIND OF NBS PRODUCT (e.g., SRM, RM, etc?)*		DOT/NHTSA	49 CFR 571.116 S7.6
NBS 370	Requires that zinc oxide (NBS 370)used in the formulation of rubber compound standard styrene butadiene rubber (SBR) brake cups, should have properties identical with those supplied by the NBS *DOES NOT STATE WHAT KIND OF NBS PRODUCT (e.g., SRM, RM, etc?)*		DOT/NHTSA	49 CFR 571.116 S7.6
NBS 371	Requires that sulfur (NBS 371)used in the formulation of rubber compound standard styrene butadiene rubber (SBR) brake cups, should have properties identical with those supplied by the NBS *DOES NOT STATE WHAT KIND OF NBS PRODUCT (e.g., SRM, RM, etc?)*		DOT/NHTSA	49 CFR 571.116 S7.6

NBS 372	Requires that stearic acid (NBS 372) used in the formulation of rubber compound standard styrene butadiene rubber (SBR) brake cups, should have properties identical with those supplied by the NBS *DOES NOT STATE WHAT KIND OF NBS PRODUCT (e.g., SRM, RM, etc?)*		DOT/NHTSA	49 CFR 571.116 S7.6
NBS 384	Requires that n-tertiary butyl-2-benzothiazole sulfenamide (NBS 384)used in the formulation of rubber compound standard styrene butadiene rubber (SBR) brake cups, should have properties identical with those supplied by the NBS *DOES NOT STATE WHAT KIND OF NBS PRODUCT (e.g., SRM, RM, etc?)*		DOT/NHTSA	49 CFR 571.116 S7.6

Appendix 22

Appendix 23
Availability of NIST (NBS) Publications

Product	Availability	Notes:
NBS Handbook 28	Yes	QC1.U51 (1942, 1944, Supplement in 1949, Supplement in 1950, three parts in 1957, and supplement in 1963)
NBS Handbook 69	Yes	QC1 .U51 no.69 Title Maximum permissible body burdens and maximum permissible concentrations of radionuclides in air and in water for occupational exposure (1959).
NBS Handbook 81	Yes	QC1 .U51 no.81 Title Safety rules for the installation and maintenance of electric supply and communication lines. Portion of title National electrical safety code
NBS Handbook 91	Yes	QC100 .U565 1966, Mary Gibbons Natrella. Edition Repr. Oct 1966 with corrections, revised and updated as "NIST/SEMATECH e-Handbook of Statistical Methods", http://www.itl.nist.gov/div898/handbook
NBS Handbook 96	Yes	QC1 .U51 no.96 (McCamy, Calvin S.) Title Inspection of processed photographic record films for aging blemishes (1964)
NBS Handbook 136	Yes	American National Standard N432 : radiological safety for the design and construction of apparatus for gamma radiography / American National Standards Institute, Subcommittee N43-3.5, under the sponsorship of the National Bureau of Standards (1981)
NIST Handbook 150	Yes	NVLAP procedures and general requirements (James Cigler and Vanda White), 1994 and 2001
Weights and Measures Handbooks (44, 105-1 and 133)	Yes	Handbooks 44 and 133 available at (http://ts.nist.gov/ts/htdocs/230/235/pubs.htm) and Handbook 105-1 at(http://ts.nist.gov/ts/htdocs/230/235/labmetrologypage.htm)
NIST Special Publication 250	Yes	QC100 .U57 no.250 Title NIST calibration services users guide. The National Institute of Standards and Technology (NIST) Calibration Services Users Guide provides detailed descriptions of currently available NIST calibration services, measurement assurance programs, and special test services. The following measurement areas are covered: (1) dimensional; (2) mechanical, including flow, acoustic, and ultrasonic; (3) thermodynamic; (4) optical radiation; (5) ionizing radiation; and (6) electromagnetic, including dc, ac, rf, and microwave. A separate Fee Schedule is issued annually, providing current prices for the services offered, updates on points of contact, and information on measurement seminars.
NIST Special Publication 260	Yes	Available on-line at http://ts.nist.gov/ts/htdocs/230/232/SP_PUBLICATIONS/PUBLICATIONS.HTM
NBS Special Publication 440	Yes	QC100 .U57 no.440, (1976) Color : universal language and dictionary of names / Kenneth L. Kelly and Deane B. Judd, (Supersedes and combines The ISCC-NBS method of designating colors and a dictionary of color names by K. L. Kelly and D. B. Judd and A universal color language by K. L. Kelly.)
NBS Special Publication 442	Yes	TD353 .M351 (1983) " Supplement to Manual on water (fourth edition)" / sponsored by ASTM Committee D-19 on Water ; C.E. Hamilton, editor
NIST Special Publication 500-172	Yes	QC100 .U57 no.500-172 (1989) "Computer security training guidelines" Mary Anne Todd, Constance Guitian.

NBS Circular 484	Yes	QC100 .U555 no.484 (1949) Gibson, K. S. "Spectrophotometry (200 to 1,000 millimicrons)"
Assorted Publications		
NBS/NIST IR 85-3273	Yes	NBS/NIST IR 85-3273 are annual supplements to NBS/NIST handbook 135 and NBS/NISTspecial publication 709
NIST report on API Publication 1509	No	Unable to find NIST report to the FTC on test procedure based on API Publication 1509 "Engine Oil Licensing and Certification System".
NBSIR 84-7833	Yes	QC100 .U56 no. 84-2833 (1984) "Data requirements for the seismic review of LNG facilities" William D. Kovacs
DOC FF1-70	No	Originally available as ASTM D2859-76. Current version is "ASTM D2859-04 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials"
NBS Report BSS-121	Yes	TA435 .U58 no.121, (1980) "Title Soil classification for construction practice in shallow trenching" / Felix Y. Yokel and Richard L. Tucker, Lymon C. Reese ; prepared for Occupational Safety and Health Administration, Department of Labor and National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare.
NBS Report BSS-127	Yes	TA435 .U58 no. 127(1980) "Recommended technical provisions for construction practice in shoring and sloping of trenches and excavations" / Felix Y. Yokel ; prepared for the Occupational Safety and Health Administration, Department of Labor, and National Institute for Occupational Safety and Health, Department of Health, Education and Welfare.
JCPDS-ICDD	Yes	1976 version available in the NIST library. Recent versions are available through ICDD at www.icdd.com (Commercial sales)
NBS Special Publication 506	Yes	QC100 .U57 no.506 (1978) "Asbestos: Definitions and Measurement Methods (1977 : National Bureau of Standards) Title Proceedings of Workshop on Asbestos : definitions and measurement methods / edited by C.C. Gravatt, Philip D. LaFleur, and Kurt F. J. Heinrich ; sponsored by National Bureau of Standards of the Dept. of Commerce and Occupational Safety and Health Administration of the U.S. Dept. of Labor.
NBS Journal of Research Vol. 86 (1981)	Yes	Specific citation is "DeVoe, H. et. al. "Generator Columns and High Pressure Liquid Chromatography for Determining Aqueous Solubilities and Octanol-Water Partition Coefficients of Hydrophobic Substances", Journal of Research of the National Bureau of Standards, 86:361-366 (1981)
NBSIR81-2406	Yes	QC100 .U56 no.81-2406 (1981) "Octanol/water partition coefficients and aqueous solubilities of organic compounds", Stanley P. Wasik ... [et al.].
NBS Report 4792	No	No reference found in NIST archives to 1956 NBS Report 4792 "Development of a Laboratory Test for Evaluation of the Effectiveness of Smoke Signals"
NBS Simplified Practice Recommendation R178-41	Yes	Simplied Practice Recommendations were the predecessors to the Product Standards which in turn were transformed into Voluntary Product Standards.
NBS Building Materials and Structures Report 150	Maybe	Check to see if Building Materials and Structures Report series is the same as the Building Science Series
NBS Technical Note 101	Yes	

NBSIR 83-2694	Yes	QC100 .U56 no.83-2694 (1983) "Some criteria for colors and signs in workplaces", Robert A. Glass ... [et al.] for OSHA
NBSTN 1180	Yes	QC100 .U5753 no.1180 (1983) "Size of letters required for visibility as a function of viewing distance and observer visual acuity", Gerald L. Howett; sponsored by OSHA
NBSIR 80-2088	No	T55.3.S5 L4 1980 Local LC call number QC100 .56 no.80-2088 (1980) "The assessment of safety symbol understandability by different testing methods" Neil D. Lerner, Belinda L. Collins. - library copy that should not be checked out is in circulation and hence stated as not available.
NBSIR 80-2003	Yes	QC100 .U56 no.80-2003 (1980) "Workplace safety symbols : current status and research needs", Neil D. Lerner, Belinda L. Collins.
NBSIR 82-2485	Yes	QC100 .U56 no.82-2485 (1982) "Symbols for industrial safety", Belinda L. Collins, Neil D. Lerner, Brian C. Pierman.
NBSTN 964	Yes	QC100 .U5753 no.964 (1978) "Fire alarm and communication systems", Richard W. Bukowski, Richard L. P. Custer, Richard G. Bright.
NBS VPS 36-70	No	"Body Measurements for Sizing Boys Apparel (formerly CS 155-50) - No longer available as NBS/NIST/DoC standards.
NBS VPS 54-72	No	"Body Measurements for Sizing Girls Apparel (sizes 7-14) (formerly CS 153-48)- No longer available as NBS/NIST/DoC standards.
NIST (V)PS 1-83	Yes	"Product Standard for Construction and Industrial Plywood with Typical APA Trademarks". Revised and currently available as PS 1-95 "Construction and Industrial Plywood" at: http://ts.nist.gov/ts/htdocs/210/sccg/ps1-95.pdf
NIST PS 2-92	Yes	"Performance Standard for Wood-Based Structural Use Panels", available online at: http://ts.nist.gov/ts/htdocs/210/sccg/ps2-92.pdf
NIST VPS 20-94	Yes	American Softwood Lumber Standard, now revised and available as PS20-99. Available online at: http://ts.nist.gov/ts/htdocs/210/sccg/ps20-99.pdf
NIST CS 138-55	No	"Insect Wire Screening"- No longer available as NBS/NIST/DoC standards.
NBS CS 242-62	No	"1-3/4" Steel Doors and Frames"- No longer available as NBS/NIST/DoC standards.
NBS CS 202-56	No	"Industrial Lifts and Hinged Loading Ramps"- No longer available as NBS/NIST/DoC standards.
NBS FIPS Pub. 1-1	No	No reference to NBS FIPS Publication 1-1. Closest match appears to be FIPS 1-2 "Code for Information Interchange, Its Representations, Subsets, and Extensions (ANSI X3.4- 1986/R1992, X3.32- 1990, X3.41- 1990)", which was withdrawn in 1997.
FIPS publication with state's identifying code	Yes	CFR citations do not identify particular FIPS publication with this information, which is FIPS Pub 55-DC3. Available online at http://www.itl.nist.gov/fipspubs/fip55-3.htm
Computer security guidelines for implementing the Privacy Act of 1974	Yes, but withdrawn	CFR citations do not identify particular FIPS publication with this information, which is FIPS Pub 41, available at http://www.itl.nist.gov/fipspubs/fips41.pdf. However, this FIPS publication was withdrawn in 1998
Computer security guidelines for safeguards for data	Yes	CFR citations do not identify particular FIPS publication with this information, which is FIPS Pub 31, available at http://csrc.nist.gov/publications/fips/fips31/fips31.pdf