NFPA 1851

Standard on Selection, Care and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting

2014 Edition
NFPA STANDARDS PROCESS

ORGANIZATIONAL STRUCTURE

• CC
  • TC
  • Balanced membership

- User
- Insurer
- Research
- Manufacturer

- Labor
- Special Expert
- Enforcer
- Installation/Maintenance
- Consumer
NFPA STANDARDS PROCESS

• INPUT STAGE
  – www. NFPA.ORG

• FIRST DRAFT REPORT
  – Public Comment

• SECOND DRAFT REPORT
  – Public Review

• NITMAM
Chapter 1 - ADMINISTRATION

• Scope
• Purpose

• Establish a program to reduce the safety risks and potential health risks associated with poorly maintained, contaminated, or damaged protective ensembles and ensemble elements.
• Establish basic criteria for selection, inspection, cleaning, decontamination, repair, storage, and retirement of protective ensembles and ensemble elements.
• Application

• Standard applies to structural fire fighting and proximity fire fighting ensembles and ensemble elements certified to NFPA 1971, present and past editions.

• Standard shall also apply to ensembles and ensemble elements certified to NFPA 1972 – Helmets; NFPA 1973 – Gloves; NFPA 1974 – Footwear; and ensembles and ensemble elements certified as having CBRN protection.

• Standard does NOT cover other organizational programs which are under the jurisdiction of other NFPA organizations.
Chapter 2 - REFERENCED PUBLICATIONS

Chapter 3 - DEFINITIONS

Standard. A document, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and which is in a form generally suitable for mandatory reference by another standard of code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the *Manual of Style for NFPA Technical Committee Documents*. 
Ensemble elements. The compliant products that provide the protection to the upper and lower torso, arms, legs, head, hands, and feet. The various elements that make up your ensemble include hood, helmet, coat, gloves, pants, boots and interface elements.
Organization. The entity that provides the direct management and supervision for the emergency services personnel.

- **Manufacturer-Trained Organization.** A non-verified organization trained by an element manufacturer of the same element type to conduct any one or a combination of advanced cleaning, advanced inspection, and basic repair on the organization’s elements.
• **Verified Organization.** An organization verified by a third-party certification organization to conduct any one or a combination of advanced cleaning, advanced inspection, basic repair, and advanced repair on any organization’s elements.

• **Verified Independent Service Provider (ISP).** An independent service provider verified by a third-party certification organization to conduct any one or a combination of advanced inspection, advanced cleaning, basic repair, or advanced repair service.
Annex

The Annex is found at the end of the standard. Items in the Annex are not requirements. The Annex is intended to provide detailed explanatory material.

An asterisk (*) beside a paragraph number denotes additional information in the Annex.

Also if you are reviewing NFPA 1851, the presence of a vertical line beside a paragraph indicates new or revised language as compared to previous edition.
Chapter 4 - PROGRAM

4.1 General Information

4.2 Program

• Organization must have written SOPs.
• Accessories cannot be added to any element without written approval from manufacturer.
• The Organization shall use one of the following to perform advanced inspection, advanced cleaning, and repair:
  • Mfg. trained organization for its own elements
  • Verified organization
  • Verified ISP
• Where the organization is a verified organization or uses a verified ISP approval from the manufacturer is not required.
Chapter 4 - PROGRAM (cont.)

• All garment advanced repairs shall be conducted by the garment manufacturer, a verified organization, or a verified ISP.

• Manufacturer trained organizations performing advanced cleaning and advanced inspection shall be trained by an element manufacturer of the same element type or by a verified ISP. The element manufacturer or verified ISP shall provide documentation that the organization has received the necessary training.
## Responsibilities for Garment Inspection, Cleaning & Repair

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<tr>
<th></th>
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<th>V ORG</th>
<th>MT ORG</th>
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MFG = manufacturer  
V ISP = verified ISP  
V ORG = verified organization  
MT ORG = manufacturer trained organization  
USER = the end user
4.3 Records

- Person element is issued to
- Date and condition when issued
- Manufacturer & model name or design
- Manufacturer ID, lot, or serial number
- Month & year of manufacture
- Dates & findings of advanced inspections
- Dates & findings of advanced cleaning or decontamination
- Reason for advanced cleaning or decon, and who performed
- Dates of repairs, who performed repairs, and description of repairs
- Date of retirement
- Date & method of disposal
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Asset Management

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  www.globeturnoutgear.com
Chapter 4 - PROGRAM

4.4 Manufacturer’s Instructions

- If instructions from the manufacturer conflict with information in the standard, the manufacturer's instructions take precedence. Manufacturers shall NOT be permitted to override 3rd party verification.

4.5 Protecting the Public

- The public shall not be exposed to soiled or potentially contaminated elements, except during emergency operations.

4.6 Reporting PPE Health & Safety Concerns

- The organization shall report all health and safety concerns if caused by a known or suspected element failure to the manufacturer and certification organization in writing, and request written acknowledgement within 30 days.
Chapter 5 – SELECTION & PURCHASE

Risk Assessment
- Type of duties performed
- Frequency of use
- Organizations experiences
- Incident operations
- Geographic location & climate
- Specific physical areas of operation
- Likelihood of CBRN response
Chapter 5 – SELECTION & PURCHASE (cont.)

- Interface with other items
- Wear Test criteria
- Develop purchase specifications
  - Where applicable, purchase specifications shall define process for determining proper fit
- Inspection upon receipt of purchased elements, prior to issuance
Chapter 6 – INSPECTION

- General
  - Routine Inspection
  - Advanced Inspection
  - Complete Liner Inspection
Universal precautions observed as appropriate.

Ensemble elements that are found to be soiled or contaminated must be cleaned before any additional inspection occurs.

The organization is responsible for establishing guidelines for when an element is found to be in need of cleaning, decontamination, or repair, and determining the appropriate action to be taken.
Routine Inspection is performed by each individual member *upon issue* and after each use

- Soiling
- Contamination
- Physical damage
- Thermal damage
- Reflective trim
- Seam integrity
- Assembly & size compatibility of shell, liner & DRD
In addition to all of the requirements for structural gear, the standard provides additional requirements for proximity garment elements:

- Loss of reflectivity
- Loss of reflective coatings
- Delamination of outer shell
SIGNS OF SCORCHING
SIGNS OF WEAR
UV DEGRADATION
Perform by each individual member, upon issuance and after each use:

- Soiling
- Contamination
- Physical damage
- Thermal damage
- Exposed or deformed toe, midsole, or shank
- Loss of water resistance
- Closure system damage
- Loss of seam integrity
Performed by element manufacturer, a manufacturer trained organization, a verified ISP or by a verified organization.

Must be performed at a minimum 12 months, or when routine inspections indicate a problem could exist.

Findings of advanced inspections must be documented.
The ensemble or ensemble element manufacturer or a verified ISP and the organization shall determine the level of training to perform advanced inspections and shall provide written verification of training.

- Verified organizations making this determination do not need written verification

The complete liner inspection shall be permitted to be conducted as part of the advanced inspection in lieu of the light and leakage evaluation for liners.
Advanced Inspection – Garment Elements

In addition to all of the items in a routine inspection, the following are inspected:

- System fit/overlap
- Material integrity, including wristlets
- Loss of moisture barrier integrity
- Label integrity
- Hook & loop functionality
- Liner attachment systems
- Closure system functionality
- Accessories for compliance
Chapter 6 – INSPECTION (cont.)
Advanced Inspection – Garment Elements

LIGHT EVALUATION OF LINERS

LEAKAGE EVALUATION

COMPLETE LINER INSPECTION
LIGHT TEST
NFPA 1851 – 2014 EDITION
LEAKAGE EVALUATION
A Complete Liner Inspection shall be performed by the garment manufacturer, a manufacturer trained organization, a verified organization, or a verified ISP.

The member of the organization who has received training shall be responsible for performing, managing, or coordinating the Complete Liner Inspection process.

The manufacturer or a verified ISP and the organization will determine the level of training necessary to perform Complete Liner Inspections.
A verified organization shall be permitted to determine the level of training necessary to perform Complete Liner Inspections, without further written verification.

The Complete Liner Inspection is required to be performed beginning at year 3, and every year thereafter.

If a moisture barrier has been replaced, the Complete Liner Inspection must be within 2 years of the new barrier installation.

The findings of the Complete Liner Inspection shall be documented.
The Complete Liner Inspection includes a Water Penetration Barrier Evaluation Test for the moisture barrier, which requires a hydrostatic test apparatus.

The moisture barrier and thermal barrier shall be inspected for the following:
- Physical damage
- Loss of seam strength
- Material physical integrity
- Delamination
HYDROSTATIC TESTING

Gore Hydrostatic Tester

- Clamp
- Liquid tank
- Hose
- Pressure gauge
- Test plate
HYDROSTATIC TESTING
Gore Hydrostatic Tester

When testing the sealed barrier seam, make sure the substrate side is down such that the film side is visible, and that seams are in the center of sample.
COMPLETE LINER INSPECTION

Opening Your Coat Liner
COMPLETE LINER INSPECTION

Opening Your Pant Liner
WEAR TO THE THERMAL QUILT
HYDROSTATIC TESTING

Jacket high abrasion areas
HYDROSTATIC TESTING

Pant high abrasion areas
HYDROSTATIC TESTING
In addition to all of the items in a routine inspection, Advanced Inspection requires inspection of the following:

- Excessive tread wear
- Condition of lining
- Heel counter failure
- Accessories for compliance
- Label integrity and legibility
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Chapter 7 –
CLEANING & DECONTAMINATION

- General
  - Routine Cleaning
    - Advanced Cleaning & Decontamination
    - Drying Procedures
Organizations shall provide a means for having ensemble elements cleaned and decontaminated

Evaluated by wearer to determine appropriate cleaning level

Elements contaminated by CBRN terrorism agents immediately retired

Elements suspected to have been contaminated by hazardous materials shall be evaluated at the scene

Contaminated elements shall be isolated and removed from service until contaminant identified and elements receive specialized cleaning

Trained member shall be responsible for specialized cleaning
Organizations must have written procedures detailing decontamination and cleaning processes for elements contaminated with body fluids.

Universal precautions shall be observed by members handling elements known or suspected of contamination by body fluids.

Soiled or contaminated elements shall not be brought home or washed in public laundries.

Commercial dry cleaning shall not be used.

Verified ISP shall demonstrate to organization that procedures do not compromise performance.
Chapter 7 – CLEANING & DECONTAMINATION

Routine Cleaning – Structural Garment Elements

- Routine cleaning is the responsibility of the end user
  - Performed at the emergency scene if possible
  - Elements isolated to avoid cross contamination
  - Brush off dry debris
  - Other debris should be gently rinsed off
  - Where necessary, a soft bristle brush shall be used and garments thoroughly rinsed
  - Where necessary, a utility sink shall be used
  - Spot clean if necessary

- Routine cleaning does not need to be documented
Chapter 7 – CLEANING & DECONTAMINATION

Routine Cleaning – Structural Garment Elements

Procedure

- Pre-treat heavily soiled or spotted areas
- Water temperature shall not exceed 105°F
- Use mild detergent, with a pH factor between 6.0 and 10.5
- Wear protective gloves and eye/splash protection
- Gently scrub with soft bristle brush
- Thoroughly rinse
- Inspect after cleaning and where necessary rewash or submit for Advanced Cleaning procedures
- Elements shall be dried in accordance with the standard
Routine cleaning is the responsibility of the end user

- Performed at the emergency scene if possible
- Aluminized outer shells shall not be cleaned with a brush or any other abrasive cleaning devices
- Routine cleaning does not need to be documented
- Procedure
  - Brush off dry debris
  - Spot clean as necessary with soft cloth
Routine cleaning is the responsibility of the end user

- Performed at the emergency scene if possible
- Elements isolated to avoid cross contamination
- Brush off dry debris
- Other debris should be gently rinsed off
- Where necessary, a soft bristle brush shall be used and footwear thoroughly rinsed
- Spot clean if necessary
- Footwear elements should never be machine dried
Chapter 7 – CLEANING & DECONTAMINATION

ADVANCED CLEANING

Advanced cleaning of ensembles and ensemble elements shall be conducted by machine unless specifically prohibited.
Chapter 7 – ADVANCED CLEANING & DECONTAMINATION

General

- Performed by a verified ISP, the garment manufacturer, a manufacturer trained organization, or a verified organization.

- Members of organization who have received training shall be responsible for performing, managing, or coordinating advanced cleaning or cleaning process.

- Element manufacturer or verified ISP and the organization shall determine level of training necessary and shall provide written verification of training.

- Verified organizations are permitted to determine level of training necessary to perform advanced cleaning without any further written verification.
Chapter 7 – ADVANCED CLEANING & DECONTAMINATION

General

- Elements that are issued and used shall receive advanced cleaning at the time of advanced inspection if not subjected to advanced cleaning in the previous 12 months.

- Elements that are soiled shall receive advanced cleaning prior to reuse.

- Training shall be by the element manufacturer or verified ISP who will provide written verification of training.

- Organization shall refer to the manufacturer’s label information and User Guides.
Chapter 7 - CLEANING & DECONTAMINATION
Advanced Cleaning – Structural Garments

Procedure

• Front loading washing machines are preferable
• Machine shall not be overloaded
• Pre-treat heavily soiled or spotted areas
• Separate outer shells from liners and wash independently, turning liners inside out
• Remove DRD from coats and wash separately
• All closures shall be fastened
Chapter 7 - CLEANING AND DECONTAMINATION
Advanced Cleaning – Structural Garment Elements

Procedure

- Water temperature shall not exceed 105°F
- Use mild detergent, with pH factor of 6.0 up to 10.5 as indicated on MSDS or original product container
- Machine adjusted so that g-force doesn’t exceed 100g
- Follow machine manufacturer’s instructions for proper setting or program selection
- Inspect after cleaning and where necessary rewash
- Elements shall be dried in accordance with the standard
Procedure

- Outer shell shall not be cleaned with a brush or other abrasive cleaning devices
- Clean by gently rubbing surface with soft cloth or sponge containing mild soap
- Rinse thoroughly
- Outer shell shall not be machine washed or dried
- Dry garment by hanging in well ventilated, shaded area
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Chapter 7 – CLEANING & DECONTAMINATION

Advanced Cleaning – Footwear Elements

➢ Procedure

• Footwear shall not be machine cleaned or dried using any mechanical action by tumbling or agitation.
• If necessary, wash using utility sink to clean inner surfaces.
• Water temperature shall not exceed 105°F.
• Use mild liquid detergent, with a pH factor between 6.0 and 10.5 as dictated by MSDS or original product container.
• Inspect after cleaning and where necessary rewash.
Follow manufacturer’s instructions

Air Drying
- Dry in area with good ventilation
- Do NOT dry in direct sunlight

Machine Drying
- Do not overload capacity of machine
- Fasten all closures
- Use “no heat” or “air dry only” option
- If heat must be used, basket temperature not to exceed 105°F
Chapter 7 – CLEANING & DECONTAMINATION

Drying Procedures – Footwear Elements

- Follow manufacturer’s instructions

- Air Drying
  - Dry in area with good ventilation
  - Do NOT dry in direct sunlight
  - Do NOT tumble dry
Chapter 8 – REPAIRS

- Garment Repairs
  - Basic Garment Repairs
  - Advanced Garment Repairs

- Helmet Repair
- Glove Repair
- Footwear Repair
- Hood, Helmet Cover & Proximity Shroud Repair
Chapter 8 – REPAIRS

GENERAL

- All repairs performed by original manufacturer, or by a verified ISP or a member of the organization who has received training
- Training provided by an element manufacturer or by a verified ISP in the repair of ensembles
- Member(s) of the organization who have received training in repair shall be responsible for performing or managing repairs
GENERAL (cont.)

- Elements shall be subjected to advanced cleaning as necessary before any repair work
- All repairs done in like manner using like materials as original manufacturer, using NFPA compliant materials
- Element manufacturer shall be contacted if unsure of whether repair can be accomplished without adversely affecting integrity of element
- Replacement interface components installed in manner consistent with original manufacturer’s methods of construction
Chapter 8 – REPAIRS
Basic and Advanced Repairs – Garments

- All repairs made using same manner as original manufacturer, with like materials and NFPA 1971 compliant components.

- Repairs must be made to all components and layers that have been damaged, or affected by repair.

- Repairs of minor tears, char marks, ember burns, and abraded areas limited to area covered by 160 cm² (25 in²) patch.
  - Finished edges of patch must extend 1” past damaged area.
  - Patch cannot have any raw edges.
Where moisture barrier tears, holes, or abrasions are being repaired, a single width of seam tape shall be used and is required to extend at least 12.5 mm (1/2 in.) in all directions beyond the edge of the repaired damage.

Where the moisture barrier has a hole or abrasion measuring more than 12.5 mm (1/2 in.) in diameter in any direction or a tear greater than 75 mm (3 in.) in length, a patch consisting of the same moisture barrier fabric shall be used for repair.
Chapter 8 – REPAIRS
Basic and Advanced Repairs – Garments (cont.)

- Replacement hardware installed consistent with manufacturer’s method of construction

- When hardware is replaced, the reinforcement backing material shall be reinstalled, or replaced if no longer serviceable

- If the complexity of a repair is uncertain, the garment element manufacturer shall be consulted
Reflective trim being replaced must be removed and not just covered by additional visibility markings

- Repair cannot result in reduction of visibility marking
- Repair visibility markings cannot exceed 3” in length
- Repair visibility markings shall extend 1” beyond damaged area
- A maximum of 2 patches per stripe is permitted
All basic repairs shall be performed by element manufacturer, organization, manufacturer trained organization, verified organization, or verified ISPs.

Basic repairs are limited to the following:

- Patching of minor tears, char marks, and ember burns to outer shell
- Repairing of broken stitches to shell
- Reclosing liner after inspection
- Replacement of missing hardware
  - Excluding positive closures of separable shell
Chapter 8 – REPAIRS
Advanced Repairs - Garments

- Advanced Repairs can only be made by original manufacturer, verified ISP, or verified organization

- Repairs to outer shell and moisture barrier must be performed consistent with manufacturer’s methods

- Repairs to thermal liners permitted provided there is no stitching through the moisture barrier

- Replacement of entire component layer can only be made by manufacturer or manufacturer’s designated verified ISP
Chapter 8 – REPAIRS
Advanced Repairs – Garments (cont.)

- Restitching more than 25 mm (1 “) continuous of a Major A outer shell seam requires consulting the manufacturer

- Restitching more than 25 mm (1 “) continuous of a Major B thermal liner seam requires consulting the manufacturer

- Repairs to moisture barrier seams requires consulting the garment element manufacturer and must be done in a manner consistent with barrier manufacturer’s methods

- Restitching of seams shall be conducted in a manner consistent with the garment element manufacturer’s methods
Chapter 8 – REPAIRS
Advanced Repairs – Garments (cont.)

- All repaired stress areas shall be reinforced in a manner consistent with manufacturer’s methods.

- If replacing trim necessitates sewing into a Major A shell seam, trim replacement shall be conducted in a manner consistent with the manufacturer’s methods.

- Replacement zippers shall be installed in a manner consistent with the manufacturer’s method of construction.
Replacement reinforcement materials shall be installed in a manner consistent with the manufacturer’s method of construction.

Replacement hook and loop fastener tape shall be installed in a manner consistent with the manufacturer’s method of construction.

If the complexity of a repair is uncertain, the garment element manufacturer shall be consulted.
Chapter 8 – REPAIRS

Footwear Element Repairs

- All repairs to footwear components shall be performed in accordance with manufacturer’s instructions.

- The standard allows for replacement of bootlaces and zippers, but all replacement bootlaces and zippers must be provided by the footwear manufacturer.

- Any other repairs must be performed by the manufacturer or by its designated ISP.
Chapter 8 – REPAIRS

- Chapter 8.5 - Helmet Repair
- Chapter 8.6 - Glove Repair
- Chapter 8.8 - Hood and Proximity Shroud Repair
- Chapter 8.9 - CBRN Repairs

Follow Manufacturer’s Instructions
Chapter 9 – STORAGE

- Do not store in direct sunlight
  - Avoid long term exposure to UV producing lights

- Stored elements are to be clean and dry

- Storage area shall be clean, dry, and well ventilated

- Do not store in temperatures below -25°F or above 180°F
Do not store in compartments or trunks (vehicles) unless protected

Do not store in airtight containers unless new and unissued

Do not store in contact with oils, solvents, acids, alkalis, or other contaminants

Soiled or contaminated elements shall not be stored in:
- Personal lockers
- Living quarters
- Transported in passenger compartments of vehicles
Chapter 10 – RETIREMENT

- The Organization shall develop specific criteria for the removal of elements from service.
- Elements that are worn, damaged, or contaminated to the extent that the Organization deems not possible or cost effective to repair should be retired.
- If any element is exposed to CBRN agents, it must be retired immediately.
Structural fire fighting ensembles and ensemble elements shall be retired in accordance with 10.2.1 or 10.2.2 [of this standard] no more than 10 years from the date the ensembles or ensemble elements were manufactured.
Chapter 10 – RETIREMENT (cont.)

- Proximity fire fighting ensembles and ensemble elements shall be retired in accordance with 10.2.1 or 10.2.2 [of this standard] no more than 10 years from the date the ensembles or ensemble elements were manufactured.

- In all cases, the radiant reflective outer shell shall be replaced at a maximum of 5 years.
Chapter 10 – RETIREMENT (cont.)

Disposition of Retired Elements

10.2.1 Retired structural fire fighting ensembles and ensemble elements and proximity fire fighting ensembles and ensemble elements shall be destroyed or disposed of in a manner ensuring that they will not be used in any fire fighting or emergency activities involving live fire fighting.
10.2.2 Retired structural fire fighting ensembles and ensemble elements and proximity fire fighting ensembles and ensemble elements as determined in 10.1.8 shall be permitted to be used as follows:

1. For training that does not involve live fire, provided the ensembles and ensemble elements are appropriately marked as being for non-live fire training only.

2. As determined by the organization.
# Sample Calculator For Turnout Gear Repair Limits

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<th>Year of Service</th>
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<th>Amount Allowed per Set</th>
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Chapter 11 – VERIFICATION

- Verification of the organization or ISP shall include advanced inspection, advanced cleaning, and advanced repairs of garment elements only.

- Verification of the organization or ISP shall not apply to helmet elements, glove elements, footwear elements, hood elements, or optional CBRN ensembles.
Chapter 11 – VERIFICATION (cont).

- An organization or ISP shall be permitted to be verified for advanced cleaning and advanced inspection only.

- Where an organization or ISP is verified for conducting repairs, the organization or ISP MUST also be verified for advanced cleaning and advanced inspection.
The verified organization or ISP shall be listed, and the listing must include the advanced cleaning, advanced inspection, and/or the repair categories the organization or ISP is verified to conduct.

If the certification listing includes the moisture barrier repair category, the listing must also include the moisture barrier manufacturer and trade name designation.
All verification must be performed by a certification organization that meets specific requirements in the standard.

Certification agencies must be accredited for personal protective equipment (PPE) in accordance with ISO Guide 65, General requirements for bodies operating product certification systems.

The accreditation shall be issued by an accreditation body operating in accordance with ISO 17011, Conformity assessment – General requirements for accreditation bodies accrediting conformity assessment bodies.
For verification of the organization’s or ISP’s services, the certification organization shall conduct both inspection and testing as specified in this standard.

For verification of advanced cleaning services, the certification organization must evaluate the organization’s or ISP’s procedures in accordance with this standard.

For verification of advanced inspection services, the certification organization must evaluate the organization’s or ISP’s procedures in accordance with this standard.
Testing for garment repair includes sample seams from the outer shell, the thermal liner, and the moisture barrier, as applicable to the level of verification the organization or ISP is seeking.

Verification of advanced cleaning and advanced inspection includes evaluation and verification of the process documentation.

The verified organization or ISP must document its policy and objectives for quality, and must ensure that this policy is understood, implemented, and maintained.
Chapter 11 – VERIFICATION (cont.)

- The organization or ISP must designate a person who has defined authority and responsibility for quality assurance.
- The quality system shall be maintained under the responsibility of the same person.
- The certification organization must be notified if the verified organization or ISP changes the designated person.
Chapter 11 – VERIFICATION (cont.)

There shall be a Quality Manual, which shall contain at least the following information:

- General information
- Management statement on the policy on, objectives for, and commitment to quality
- Management statement naming a person responsible for quality
- Description of the organization’s areas of activity and competence
- Organization chart(s)
Chapter 11 – VERIFICATION (cont.)

Additional Quality Manual requirements:

- Relevant job descriptions
- Policy statement on qualification and training of personnel
- Procedures for control of documents
- Procedures for internal audits
- Procedures for feedback and corrective action
- Procedures for management review of the quality system
- Distribution list for the Quality Manual
- Work instructions or process manuals
- Procedure for handling returns and complaints
Chapter 12 – TEST PROCEDURES

- Light Evaluation Of Liners
  - Special light used

- Leakage Evaluation
  - “Bucket Test”

- Water Penetration Barrier Evaluation
  - Hydrostatic tester
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THE END

QUESTIONS?

COMMENTS?

THANK YOU FOR LISTENING!