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Exam : **AMPP-Nuclear**

Title : Nuclear Coatings Inspection Specialty (NCIS)

Version : DEMO

1.In a 2024 NRC inspection scenario at a pressurized water reactor (PWR) undergoing steam generator replacement, the coatings inspector identifies nonconformances in the application of epoxy-based containment liner coatings under 10 CFR 50 Appendix B Criterion XV. The licensee proposes a corrective action plan involving re-inspection protocols and material segregation.
Which of the following elements must be incorporated into the plan to ensure compliance with Criterion XVI (Corrective Action), assuming a multi-vendor supply chain with potential 10 CFR 21 reportability thresholds exceeded due to coating delamination risks affecting structural integrity?
A. Calculation of delamination propagation rate using finite element analysis with parameters σ_yield = 250 MPa and E_modulus = 3.5 GPa for the epoxy matrix
B. Verification steps including ultrasonic thickness measurement at 5 mm grid spacing and adhesion pull-off testing per ASTM D4541 with minimum 1000 psi acceptance criterion
C. Root cause analysis applying Ishikawa diagram methodology integrated with probabilistic risk assessment (PRA) models updated per NRC Regulatory Guide 1.200 Revision 2
D. Segregation protocols mandating RFID tagging of nonconforming batches and quarantine storage per ANSI N45.2.2-1972, with audit trails traceable to procurement documents under Criterion VII
Answer: A, B, C
Explanation:
Under 10 CFR 50 Appendix B Criterion XVI, corrective actions for nonconforming coatings must address immediate disposition, root cause investigation, and preventive measures to mitigate recurrence, particularly in safety-related applications like containment liners where delamination could compromise leak -tightness. The delamination propagation rate calculation using finite element analysis with specified yield stress and modulus parameters quantifies the safety margin degradation under seismic loads, aligning with design control under Criterion III. Verification steps such as ultrasonic gridding and adhesion testing per ASTM D4541 ensure objective evidence of quality restoration, directly supporting inspection requirements under Criterion X. Root cause analysis via Ishikawa diagrams combined with PRA per RG 1.200 Rev. 2 evaluates broader implications, including potential core damage frequency increases, fulfilling the criterion's emphasis on systemic improvements. Segregation protocols, while essential for material control under Criterion VII, do not directly constitute corrective action elements unless tied to recurrence prevention, which is secondary here.

2.What is the correct formula relating initial contamination Ci, contamination after decontamination Cf, and Decontamination Factor (DF)?
A. DF=Cf/Ci
B. DF=Ci/Cf
C. DF=Ci×Cf
D. DF=Ci−Cf
Answer: B
Explanation:
The Decontamination Factor is the ratio of initial contamination to final residual contamination, measuring efficiency of removal.

3.CSL I dry liner weld area, post-quake check under RWP 100 mrem.
Which?
A. VT-1 borescope 12x, weld indication per IWE-3510.3: height <1/64 inch accept.

B. DFT ultrasonic E797, 18-mil, echo mode for liner.
C. Holiday low V 67 V/mil D5162, brush electrode.
D. Report isometric 1:20 scale, QA NDE form.
Answer: A, B, D
Explanation:
Dry CSL I VT-1 IWE-3510.3 for weld height <1/64 inch. DFT E797 echo for steel liner.
Checklists isometrics 1:20, NDE QA. Holiday possible but visual priority.

4.During a routine coating inspection within an RCA, an inspector’s dosimeter alarm sounds indicating an accumulated dose approaching the RWP limit.
What is the appropriate action according to NCIS?
A. Notify Radiological Control and prepare to exit the RCA once the current task is complete.
B. Adjust the dosimeter alarm thresholds to temporarily avoid interruption.
C. Continue work as scheduled without notification since dose is below limit.
D. Take a short break in a low-dose area inside the RCA to reset the dosimeter.
Answer: A
Explanation:
Hearing a dosimeter alarm signifies nearing dose limits, requiring notification to radiological control and preparation for exit to avoid dose overrun. Adjusting alarm thresholds or continuing without notification breaches safety controls. Breaking in the RCA does not reset cumulative dose and is unsafe.

5.An inspector certified under ASTM D4537 is reviewing documentation for a new coating project.
Which of the following is LEAST likely a requirement of the certification process?
A. Knowledge of nuclear coating standards and inspection techniques
B. Ability to perform coating thickness measurements with calibration checks
C. Practical inspection experience including defect recognition on coated surfaces
D. Basic understanding of general construction codes unrelated to coatings
Answer: D
Explanation:
ASTM D4537 focuses competency on nuclear coatings inspection standards and procedures, including measurement and defect identification. General construction codes unrelated to coatings are not a core requirement for certification.