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TECHNICAL SPECIFICATION

SERVICE LEVEL II COATINGS

INSIDE NEK TECHNOLOGICAL AREA

KRŠKO NUCLEAR POWER PLANT

SP-A3000

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Revision 0

Augmented Quality

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1.0 SCOPE

1.1. Scope of work

This specification defines surface protection of steel constructions, components (SCCs) and buildings in NEK areas subject to radiation exposure (Service Level II coatings) which are classified as Augmented Quality (AQ).

The selection of adequate coating and related coating work process must comply to requirements regarding Selection and Qualification of coating system, Preparation of substrates, Application of coating system(s), Testing and Inspection Requirements, Personnel Qualification Requirements and Receipt and Storage of protective coating system.

1.2. Work included

The work defines required activities for selection and qualification of adequate coating materials, technical evaluation of coating materials performance, application procedures and applicator's verification, requirements for material application, testing and inspection.

Supplier/Subcontractor shall be responsible for ordering, purchasing, receiving, storage and control of coating materials. Some coating materials may be purchased and stored by NEK (if agreed between NEK and Supplier/Subcontractor).

No change in material selection will be permitted after submittal of the Proposal without written approval of NEK.

1.3. Work not included

Coatings for the following Service Levels and specific locations are not included in this specification:

- Service Level I coatings.
- Service Level III coatings.
- BOP coatings.
- Coatings for control, instrumentation and measuring panels, and electrical boxes (covered by specification TSP 01/2015).
- Coatings outside the technological part of plant.

1.4. Coating damages and coating repairs

After application of surface protection coating system(s) no surface damages are allowed. All damaged areas shall be repaired. Repair of surface protection is responsibility of individual department that contracted service and Subcontractor performing coating application work.

2.0 DEFINITIONS

- 2.1. **Coating Service Level II (SL II)** is a term used to describe areas where coating failure could impair but not prevent normal operating performance. The functions of Service Level II coatings are to provide corrosion protection and decontaminability in those areas outside the reactor containment that are subject to radiation exposure and radionuclide contamination. Service Level II coatings are classified as Augmented Quality (AQ) at NEK site.

SL II coatings at NEK site shall be applied on SCCs and buildings outside Containment Vessel – inside Reactor Building (Annulus Area), on surfaces inside Auxiliary Building (AB), Fuel Handling Building (FHB), Radwaste Storage Area (RWS), Waste Manipulation Building (WMB), Decontamination Building (DB), Control Building on elevation 100.3 (Health Physics) and Component Cooling Building (CCB) on elevation 94.21, room 03A.

- 2.2. **Steel Constructions and Components (SCCs)** is a term used for carbon and low alloy steel constructions, pipelines, valves, pumps and any other equipment or equipment parts.
- 2.3. **Augmented Quality Coatings (AQ Coatings)** is a term used to describe a group of protective coatings applied on SCCs and buildings:
- outside Reactor Containment Vessel that are subject to radiation exposure (Service Level II coatings),
 - surfaces inside FME (Foreign Material Exclusion) zones,
 - protective coatings in heavy or demanding corrosion exposures:
 - C5-I – very heavy industrial atmospheric,
 - Im 1 – immersion in fresh/sweet water and
 - Im 3 – immersion in soil/buried SCCs,
 - Some SCCs surface protection with coatings on equipment listed on Q list (where applicable – as assessed by Nuclear Coating Specialist) and
 - Protective coatings on hard to reach areas and/or areas where condition surveillance/inspection is not often (on 5 years or even less often).
- 2.4. **Balance of Plant Coatings (BOP Coatings)** is a term used to describe a group of non safety related coatings applied on external and internal surfaces of secondary plant, buildings and equipment, including Intermediate Building (IB) and remaining parts of Component Cooling (CCB) Building and Control Building (CB).
- 2.5. **Coating and/or lining** is a protective, decorative and/or anyway different functional on surface adhered, one or multi layer film of polymer, inorganic, metal and/or composite material in solid or semisolid (viscoelastic) aggregate state.

- 2.6. **Coating material** is liquid, melt or dust, which is applied on surface to form coating due to means of solvent evaporation, chemical reaction, cooling or melting. Coating material is raw material or semi finished product which applied to the surface with proper technology.
- 2.7. **Surface protection with coatings** is a term which combines all needed activities (design, qualification, material purchasing and storage, surface preparation, material application/curing, inspection, performance monitoring and maintenance) for adequate coatings performance.
- 2.8. **Coating work** is an all-inclusive term to define all operations required to accomplish a complete coating job. The term shall be construed to include materials, equipment, labor, preparation of surfaces, control of ambient conditions, application and repair of coating systems, and inspection (Ref. 3.10).
- 2.9. **Coating work inspection** is a phase of quality control that by way of examination, observation, or measurement determines the conformance of materials, supplies, components, parts, appurtenances, systems, processes, or structures to predetermined quality requirements (Ref. 3.12).
- 2.10. **Coating Technical Specification** is a document which defines quality and qualification requirements for coating materials, coatings/linings, personnel, equipment and coating contractor on basis of NPP Krško specifications and legislation.
- 2.11. **Coating Technology** is a document which defines commercial qualities of coating materials, work activities/phases for surface preparation, coating application/curing and inspection for performance of surface protection with coatings/linings.
- 2.12. Other coating related definitions and terminology are defined in ASTM D16 and ASTM D4538.

3.0 CODES, STANDARDS, REGULATORY

- 3.1. ASTM C868-02: Test Method for Chemical Resistance of Protective Linings.
- 3.2. ASTM D16-16: Standard Terminology for Paint, Related Coatings, Materials, and Applications.
- 3.3. ASTM D714-02 (2009): Test Method for Evaluating Degree of Blistering of Paints.
- 3.4. ASTM D3276-15e1: Standard Guide for Painting Inspectors (Metal Substrates).

- 3.5. ASTM D3843-00 (Reapproved 2008): Standard Practice for Quality Assurance for Protective Coatings Applied to Nuclear Facilities.
- 3.6. ASTM D3912-10: Standard Test Method for Chemical Resistance of Coatings and Linings for Use in Nuclear Power Plants.
- 3.7. ASTM D4060-14: Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
- 3.8. ASTM D4227-05 (Reapproved 2012): Standard Practice for Qualification of Coating Applicators for Application of Coatings to Concrete Surfaces.
- 3.9. ASTM D4228-05 (Reapproved 2012): Standard Practice for Qualification of Coating Applicators for Application of Coatings to Steel Surfaces.
- 3.10. ASTM D4286-08 (Reapproved 2015): Standard Practice for Determining Coating Contractor Qualifications for Nuclear Powered Electric Generation Facilities.
- 3.11. ASTM D4417-14: Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel.
- 3.12. ASTM D4537-12: Standard Guide for Establishing Procedures to Qualify and Certify Personnel Performing Coating Work Inspection in Nuclear Facilities.
- 3.13. ASTM D4538-15: Standard Terminology Relating to Protective Coating and Lining Work for Power Generation Facilities.
- 3.14. ASTM D4541-09: Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
- 3.15. ASTM D5064-16a: Standard Practice for Conducting a Patch Test to Assess Coating Compatibility.
- 3.16. ASTM D5139-12: Standard Specification for Sample Preparation for Qualification Testing of Coatings to be used in Nuclear Power Plants.
- 3.17. ASTM D5144-08: Standard Guide for Use of Protective Coating Standards in Nuclear Power Plants.
- 3.18. ASTM D5161-04: Standard Guide for Specifying Inspection Requirements for Coating and Lining Work (Metal Substrates).
- 3.19. ASTM D5498-12a: Standard Guide for Developing a Training Program for Personnel Performing Coating Work Inspection for Nuclear Facilities.

- 3.20. ASTM D6577-15: Standard Guide for Testing Industrial Protective Coatings.
- 3.21. ASTM D6677-07 (Reapproved 2012): Test Method for Evaluating Adhesion by Knife.
- 3.22. ASTM D6943-15: Standard Practice for Immersion Testing of Industrial Protective Coatings.
- 3.23. ASTM D7108-12: Standard Guide for Establishing Qualifications for a Nuclear Coatings Specialist.
- 3.24. ASTM D7234-12: Coating Adhesion Testing – Concrete.
- 3.25. Manual of Coating Work for Light-Water Nuclear Power Plant Primary Containment and other Safety-related Facilities (ASTM Subcommittee D01.43; 1979).
- 3.26. Electric Power Research Institute, “Guideline on Nuclear Safety-Related Coatings, Revision 2,” EPRI Formerly TR-109937 and 1003102, December 2009.
- 3.27. Safety Series No. 48, Manual of Decontamination Surfaces, IAEA, 1979.
- 3.28. ANSI N45.2-1972, Quality Assurance Program Requirements for Nuclear Power Plants.
- 3.29. ANSI N45.2.2-1972, Packing, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants.
- 3.30. ANSI N101.4-1972, Quality Assurance for Protective Coatings Applied to Nuclear Facilities.
- 3.31. RG 1.54, Revision 2, Service Level I, II and III Protective Coatings Applied to Nuclear Power Plants, U.S. Nuclear Regulatory Commission, Washington, DC, July 2010.
- 3.32. 10CFR50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants.
- 3.33. 10CFR21, Reporting of Defects and Non-compliance.
- 3.34. ISO 4628-2:2016: Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 2: Assessment of degree of blistering.

- 3.35. ISO 4628-3:2016: Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 3: Assessment of degree of rusting.
- 3.36. ISO 4628-4:2016: Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 4: Assessment of degree of cracking.
- 3.37. ISO 4628-5:2016: Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 5: Assessment of degree of flaking.
- 3.38. ISO 2409:2013: Paints and varnishes - Cross-cut test.
- 3.39. ISO 1514:2016: Paints and varnishes - Standard panels for testing.
- 3.40. ISO 4624:2016: Paints and varnishes - Pull-off test for adhesion.
- 3.41. ISO 12944 (parts 1-8) (1-4:1998, 5:2007; 6-8:1998): Paints and varnishes – Corrosion protection of steel structures by protective paint systems.
- 3.42. ISO 8501-1:2007: Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.
- 3.43. ISO 8501-2:1994: Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 2: Preparation grades of previously coated steel substrates after localized removal of previous coatings.
- 3.44. ISO 8501-3:2006: Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 3: Preparation grades of welds, edges and other areas with surface imperfections.
- 3.45. ISO 8503-3:2012: Preparation of steel substrates before application of paints and related products, Surface roughness characteristics of blast-cleaned steel substrates.
- 3.46. NACE TM0174 Laboratory Methods for the Evaluation of Coating Materials and Lining Material on Metallic Substrates in Immersion Service.
- 3.47. NACE TM0404 Offshore Platform Atmospheric and Splash Zone New Construction Coating System Evaluation.

- 3.48. Joseph V. Koleske, Paint and Coating Testing Manual, 15th Ed., ASTM Stock Number, MNL17-2ND.
- 3.49. QS-610, rev 1: Generic Quality Assurance Program Requirements.
- 3.50. DIN 55634:2010-04: Beschichtungsstoffe und Überzüge - Korrosionsschutz von tragenden dünnwandigen Bauteilen aus Stahl.
- 3.51. ETAG 018 (Parts 1 & 3: 2013, Part 2: 2011, Part 4: 2012), Guideline for European technical approval of fire protective products.

4.0 DOCUMENT SUBMITTAL

- 4.1. Information and documentation to be supplied with the Proposal shall include but not be limited to the following (NEK Nuclear Coating Specialist shall review and evaluate submitted documentation stated bellow):

- 4.1.1 Quality Assurance

- The coating and/or lining Supplier/Manufacturer shall submit declaration about QA program, which should conform to applicable contents of QS-610, rev 1: 1.6, 1.7, 3.1, 4.2, 4.4.6, 4.4.7, 4.5.1, 4.6, 4.8.1, 4.9, 4.11.7, 4.14, 4.15, 4.16 and 4.17.

- 4.1.2 Products Information and Characteristics

- The coating and/or lining Supplier/Manufacturer shall provide products information and characteristics (NACE TM0404). Following information and documents shall be provided:

- Product data sheets (PDS) – Manufacturer's guidelines for Surface Preparation, Application, Curing and Storage of Coating Material.
 - Material safety data sheets (MSDS) – latest revision of MSDS (in Slovenian language – if applicable) shall be prepared in compliance with Commission Directive 1272/2008/EC and REACH 1907/2006 and shall be submitted together with the Proposal.
 - Manufacturer (contact information, contact persons).

- 4.1.3 Coating Technology

- The coating and/or lining Supplier/Manufacturer or coating contractor shall submit proposal of Coating Technology for surface protection. Coating Technology shall at least provide:

- Limitations considering ambient and material condition.
 - Required surface preparation (NACE/SSPC-SP, ISO 8501), surface profile (ASTM D4417, ISO 8503).

- Protective coatings/linings and/or any other repair composite materials (extent, range of thicknesses, commercial names).
- Application instructions with all needed data for: surface preparation, coating application, material preparation, coating curing and limitations considering coating application (Coating Supplier/Manufacturer).

4.1.4 Qualification Test Reports

A copy of the Qualification Test Reports shall be supplied with the Proposal and shall include required tests determined by NEK Nuclear Coating Specialist. Qualification Test Reports shall provide with reasonable assurance that properly applied surface protective system will provide proper performance within Coating Technology.

NOTE: Submittal of the qualification test reports is not necessary for the qualified coating systems already used and approved by NEK. Traceability to technical reports shall be notified.

- 4.2. Training program, qualification and certification of application personnel of coating work shall be in compliance with ASTM D4227 and ASTM D4228.
- 4.3. Training program, qualification and certification of inspectors of coating work shall be in compliance with ASTM D5498 and ASTM D4537 or ASTM D7108.
- 4.4. Statement of Guarantee.
- 4.5. Information and Documentation to be supplied with the Shipment
 - 4.7.1 Certificate of Conformance.
 - 4.7.2 Qualification Report(s) which certifies that Coating Material is suitable for plant-specific application.
 - 4.7.3 Design Change Documentation for alternate replacement coating – if applicable.
 - 4.7.4 Batch Attest Data (minimum requirements):
 - Name of product,
 - Batch number,
 - Date of manufacture,
 - Specific weight or density (optional),
 - Percentage of solids by volume (optional),
 - Viscosity (optional)...

5.0 GENERAL REQUIREMENTS

- 5.1. Prior to the start of coating work there shall be field meeting between NEK (representative of responsible discipline and Nuclear Coating Specialist) and Supplier/Subcontractor.
- 5.2. All phases of coating work shall be reviewed to assure complete understanding of all specific requirements and coating specifications.

6.0 DESIGN REQUIREMENTS

- 6.1. When selecting appropriate coating system(s) several factors should be considered such as:
 - Service conditions (temperature, humidity, immersion, fluid type...),
 - Type of substrates to be coated,
 - Exposure to radiation,
 - Flow conditions,
 - Thermal conductivity,
 - Surface burning characteristics,
 - Surface preparation requirements,
 - Chemical resistance,
 - Resistance to wear,
 - Coating adhesion properties,
 - Conditions/performance of existing surface protection,
 - Durability and
 - Accessibility.

7.0 PERFORMANCE REQUIREMENTS

- 7.1. Testing requirements shall provide reasonable assurance that properly applied surface protection will be suitable for the intended service for extended period of time.
- 7.2. Materials used as **SL II coatings** shall pass specific testing requirements (where applicable) as stated in Appendix A of this Specification.

8.0 STORAGE, MIXING AND PREPARATION OF PAINT

- 8.1. Coating materials shall be treated in compliance with recommendations in ANSI N45.2.2. for LEVEL B goods (Level B goods are those that are sensitive to environmental conditions and require measures for protection from the effects of temperature extremes, humidity and vapors, acceleration forces, physical damage, and airborne contamination – ref. 3.29).
- 8.2. No paint shall be used or stored after expiration of Shelf Life.
- 8.3. Mixing
 - 8.1.1 Use mixing equipment recommended by the paint Manufacturer.
 - 8.1.2 Use only originally sealed, intact, identified and undamaged paint containers.
 - 8.1.3 Materials that are mixed and not used prior to expiration of Pot Life of the coating shall be discarded.
- 8.4. Thinners and Solvents
 - 8.2.1 Catalysts, thinners and other components shall be added only in the exact quantities specified by the paint Manufacturer.
 - 8.2.2 Use only thinners specified by paint Manufacturer if required.
 - 8.2.3 Use of thinners shall not affect the final quality of protective coatings.

9.0 SURFACE PREPARATION AND COATING APPLICATION

- 9.1. Coating contractor shall meet requirements as stated in Appendix B of this Specification.
- 9.2. Surface preparation
 - 9.1.1 Surface preparation cleanliness, surface profile and other applicable prerequisites shall be consistent with Coating Technology.
 - 9.1.2 Surface preparation depends on several factors such as: type and condition of substrate, condition of existing coating and service environment.
 - 9.1.3 Design and metal finishing requirements considering accessibility, treatment of narrow gaps/blind crevices, preparation grades of welds, edges and/or other areas with surface imperfections.
 - 9.1.4 Surface preparation requirements as needed and/or applicable: surface preparation grades, surface roughness, chemical contamination removal (limits), degreasing, dust removal...
 - 9.1.5 Application of coatings by Supplier/Subcontractor signifies acceptance of the surfaces and responsibility for the performance of coatings applied.

- 9.1.6 Previously shop primed ferrous metals shall be cleaned in accordance with SSPC-SP1 (in case when shop primer is compatible with selected coating system).
- 9.1.7 Immediately report any defects which could adversely affect the quality of coating application.

9.3. Coating application

- 9.2.1 Surface temperature shall be at least 3 degrees above the dew point before painting can proceed.
- 9.2.2 Relative humidity shall not exceed 80%.
- 9.2.3 During application and curing process temperature and humidity shall be within specified limits as recommended by paint Manufacturer. This might require usage of additional climatic control equipment (heaters, dehumidifiers) to provide conformity with scheduled work plan.
- 9.2.4 In conjunction with environmental control temporary enclosure(s) may be required during the preparation, painting and curing operations.
- 9.2.5 Stainless steel, galvanized and aluminum surfaces shall not be blasted or painted unless otherwise specified. Such surfaces shall be fully protected when they are in proximity to blasting and painting operations.
- 9.2.6 Filters and openings shall be covered to avoid defilement and clogging during cleaning, blasting and painting operations.
- 9.2.7 Dry film thickness and number of coat layers shall be in accordance with Coating Technology.
- 9.2.8 Coating materials shall be compatible; finished coats shall be compatible with existing primed surfaces; coatings for repairs shall be compatible with existing coatings... Use only coating materials specified in Appendix C or defined and approved materials from NEK Nuclear Coating Specialist.
- 9.2.9 Where practical use a different color shade to identify each coat prior to the final coat.

10.0 QUALIFICATION OF APPLICATION PROCEDURES AND APPLICATOR'S VERIFICATION

- 10.1. Coating contractor shall provide application procedure in compliance with coating Manufacturer application instructions/procedures, coating material documentation and requirements of Coating Technology.
- 10.2. All additional requirements concerning execution of surface protection are defined in Appendix B of this Specification.

11.0 TESTING AND INSPECTION

- 11.1. Inspection personnel shall be qualified according to ASTM D5498 and ASTM D4537 or meet the criteria for Nuclear Coating Specialist, defined in ASTM D7108 or other equivalent standards.
- 11.2. Inspection equipment shall be regularly calibrated, verified and certified as applicable for each type of equipment.
- 11.3. All additional requirements regarding testing and inspection are defined in Appendix B of this Specification.

APPENDIX A

QUALIFICATION REQUIREMENTS FOR SURFACE PROTECTION WITH PROTECTIVE COATINGS AND LININGS IN COATING SERVICE LEVEL II AREA AT KRŠKO NUCLEAR POWER PLANT

Augmented Quality

Testing requirements shall provide reasonable assurance that properly applied surface protection will be suitable for the intended service for extended period of time. Qualification requirements are specified in Coating System Specification. Usually specified requirements are listed below:

I. General requirements:

- Identification of coating materials (commercial names, components – if applicable, manufacturer's contact information),
- Reference to NEK Coating Technical Specification or Coating Technical Specification proposal,
- Appropriate for established exposure (ISO 12944-5 or for thin walled structures DIN 55634),
- For maintenance purpose proposed protective coating systems shall be compatible with existing coatings (compatibility testing shall be performed by NEK, on site, in compliance with ASTM D5064),
- Protective coatings shall have proper characteristics for decontamination (historically decontamination factor defined by ANSI N5.12, ASTM D4256: DF 5-20; proper generic coating type – epoxy; and proper chemical and physical properties as stated below),
- Chemical resistance (ANSI N5.12, ASTM D3912 or similar) and
- Adhesion resistance: min. 200 psi (ASTM D4541 or similar).

II. Additional requirements:

NEK Nuclear Coating Specialist shall define additional specific requirements based on protective coating system or location, for example:

- Coatings for fire protection of steel elements – R30 (ETAG 018),
- Floor coatings – flame-spreading rate max. 50 (ASTM E84) or total dry film thickness of protective coating system shall not exceed 3 mm,
- Abrasion: min. 175 (ASTM D4060 or similar),
- Impact resistance (ASTM G14 or similar),
- Verification of maintenance protective coating system for FME areas,
- Dry temperature resistance testing and
- Sustainability to moisture max. 20-70 µm/200 frictions (EN 13300).

APPENDIX B

REQUIREMENTS FOR EXECUTION OF SURFACE PROTECTION WITH PROTECTIVE COATINGS AND LININGS IN COATING SERVICE LEVEL II AREA AT KRŠKO NUCLEAR POWER PLANT

Augmented quality

These requirements shall provide reasonable assurance that coating Supplier/Subcontractor has proper competence and ability to perform surface protection in compliance with this specification.

- Evaluation of coating Supplier/Subcontractor competence (ASTM D4286 or similar),
- Coating Manufacturer and coating Supplier/Subcontractor shall have QA program in accordance with NEK QS-610, ISO 9001 or similar,
- All coating materials shall be properly verified (batch certificates, additional laboratory testing – if required),
- Full traceability of coating materials from purchase till application shall be provided,
- Qualification of personnel for protective coating application (ASTM D4227, ASTM D4228 or similar),
- Qualification of inspection personnel as required by ASTM D5498, ASTM D4537 and/or ASTM D7108,
- Approved Coating Technology by coating Supplier/Subcontractor,
- Approved inspection plan in compliance with Coating System Specification (ASTM D5498 – severe for metal, ASTM D6237 or similar for concrete).

APPENDIX C

SURFACE PROTECTION SYSTEMS WITH PROTECTIVE COATINGS AND LININGS IN COATING SERVICE LEVEL II AREA AT KRŠKO NUCLEAR POWER PLANT

Augmented quality

I. FLOORING

Requirements for coating system qualification:

- Identification of coating materials (commercial names, components – if applicable, manufacturer's contact information),
- Reference to NEK Coating Technical Specification or Coating Technical Specification proposal,
- For maintenance purpose proposed protective coating systems shall be compatible with existing coatings (compatibility testing shall be performed by NEK, on site, in compliance with ASTM D5064),
- Protective coatings shall have proper characteristics for decontamination (historically decontamination factor defined by ANSI N5.12, ASTM D4256: DF 5-20; proper generic coating type – epoxy; and proper chemical and physical properties as stated below),
- Chemical resistance (ANSI N5.12, ASTM D3912 or similar),
- Adhesion resistance: min. 200 psi (ASTM D4541 or similar),
- Abrasion: min. 175 (ASTM D4060 or similar),
- Impact resistance (ASTM G14 or similar),
- Floor coatings – flame-spreading rate max. 50 (ASTM E84) or total dry film thickness of protective coating system shall not exceed 3 mm and
- Verification of maintenance protective coating system for FME areas on elevation 107.62 and above in Fuel Handling Building (FHB).

i. Floors for heavier mechanical loads

First protection:

- proper surface preparation (sand-blasting or chemical treatment),
- 1× impregnation Amerlock Sealer,
- 1× surfacer Nu-Klad 110AAN, 3mm,
- 1-2× top-coat Amercoat 90N, total DFT 125µm.

Repair and Maintenance:

- proper surface preparation (sanding, grinding),
- 1× local impregnation Amerlock Sealer,
- 1× local surfacer Nu-Klad 110AAN, 3mm,
- 1-2× top-coat Amercoat 90N, 1-2× 60-70µm.

ii. Floors for lighter mechanical loads

First protection:

- proper surface preparation (sand-blasting or chemical treatment),
- 1× impregnation Amerlock Sealer,
- 1-2× top-coat Amercoat 90N, total DFT 125µm.

Repair and Maintenance:

- proper surface preparation (sanding, grinding),
- 1× local impregnation Amerlock Sealer,
- 1-2× top-coat Amercoat 90N, 1-2× 60-70µm.

II. WALLS AND CEILINGS

i. Walls up to 2m height (from floor)

Requirements for coating system qualification:

- Identification of coating materials (commercial names, components – if applicable, manufacturer's contact information),
- Reference to NEK Coating Technical Specification or Coating Technical Specification proposal,
- For maintenance purpose proposed protective coating systems shall be compatible with existing coatings (compatibility testing shall be performed by NEK, on site, in compliance with ASTM D5064),
- Protective coatings shall have proper characteristics for decontamination (historically decontamination factor defined by ANSI N5.12, ASTM D4256: DF 5-20; proper generic coating type – epoxy; and proper chemical and physical properties as stated below),
- Chemical resistance (ANSI N5.12, ASTM D3912 or similar) and
- Adhesion resistance: min. 200 psi (ASTM D4541 or similar).

First protection:

- proper surface preparation (sand-blasting or chemical treatment),
- 1× impregnation Amerlock Sealer,
- 1× surfacer Nu-Klad 110AAN, 1mm,
- 1-2× top-coat Amercoat 90N, total DFT 125µm.

Repair and Maintenance:

- proper surface preparation (sanding, grinding),
- 1× local impregnation Amerlock Sealer,
- 1× local surfacer Nu-Klad 110AAN, 1mm,
- 1-2× top-coat Amercoat 90N, 1-2× 60-70µm.

ii. Walls above 2m from floor, ceilings

Requirements for coating system qualification:

- Identification of coating materials (commercial names, components – if applicable, manufacturer's contact information),
- Reference to NEK Coating Technical Specification or Coating Technical Specification proposal,
- For maintenance purpose proposed protective coating systems shall be compatible with existing coatings (compatibility testing shall be performed by NEK, on site, in compliance with ASTM D5064),
- Adhesion resistance: min. 200 psi (ASTM D4541 or similar) and
- Sustainability to moisture max. 20-70 µm/200 frictions (EN 13300).

First protection:

- proper surface preparation (sanding, grinding...),
- 1× impregnation Akril emulzija,
- 1-2× latex leveling putty Jubolin kit F, 1-2mm,
- 2× latex top-coat Acrylcolor.

Repair and Maintenance:

- proper surface preparation (sanding, grinding),
- 1× impregnation Akril emulzija,
- 1-2× local latex leveling putty Jubolin kit F, 1-2mm,
- 2× latex top-coat Acrylcolor.

III. STEEL CONSTRUCTIONS

i. Steel constructions, pipelines, components and equipment on atmospheric exposures

Requirements for coating system qualification:

- Identification of coating materials (commercial names, components – if applicable, manufacturer's contact information),
- Appropriate for exposure C3-medium, high durability (ISO 12944-1/2) in RB ("Annulus"), AB, FHB, applicable parts of CCB, CB and HP,
- Appropriate for exposure C4-medium, high durability (ISO 12944-1/2) in FHB – el. 107 and above, RWS, DB and WMB,
- Reference to NEK Coating Technical Specification or Coating Technical Specification proposal,
- For maintenance purpose proposed protective coating systems shall be compatible with existing coatings (compatibility testing shall be performed by NEK, on site, in compliance with ASTM D5064),
- Protective coatings shall have proper characteristics for decontamination (historically decontamination factor defined by ANSI N5.12, ASTM D4256: DF 5-20; proper generic coating type – epoxy; and proper chemical and physical properties as stated below),
- Adhesion resistance: min. 200 psi (ASTM D4541 or similar).

First protection:

- proper surface preparation (Sa 2.5 – ISO 8501-1),
- 2× red-lead primer TT-P-86 minij, 2× 35µm,
- 2× long-oil alkyd top-coat Extra Oplatin emajl, 2× 35µm.

Repair and Maintenance:

- proper surface preparation (P St3 – ISO 8501-2),
- 2× red-lead primer TT-P-86 minij, 2× 35µm
- 2× long-oil alkyd top-coat Extra Oplatin emajl, 2× 35µm.

ii. External surfaces of containment vessel (RB)

Requirements for coating system qualification:

- Identification of coating materials (commercial names, components – if applicable, manufacturer's contact information),
- Appropriate for exposure C3-medium, high durability (ISO 12944-1/2),
- Reference to NEK Coating Technical Specification or Coating Technical Specification proposal,
- For maintenance purpose proposed protective coating systems shall be compatible with existing coatings (compatibility testing shall be performed by NEK, on site, in compliance with ASTM D5064),
- Protective coatings shall have proper characteristics for decontamination (historically decontamination factor defined by ANSI N5.12, ASTM D4256: DF 5-20; proper generic coating type – epoxy; and proper chemical and physical properties as stated below) and
- Adhesion resistance: min. 200 psi (ASTM D4541 or similar).

First protection:

- Grit-blasting (Sa 2.5 – ISO 8501-1),
- 1× inorganic Zinc silicate primer Dimetecote 6N, 75 µm.

Repair and Maintenance:

- proper surface preparation (P St3 – ISO 8501-2),
- 1-2× epoxy top-coat Amercoat 90N or Carboguard 890N, 1-2× 60-70µm.

iii. Internal surfaces of FHB facade sheets

Requirements for coating system qualification:

- Identification of coating materials (commercial names, components – if applicable, manufacturer's contact information),
- Appropriate for exposure C4-medium, high durability (DIN 55643, Zinc galvanized surfaces),
- Reference to NEK Coating Technical Specification or Coating Technical Specification proposal,
- For maintenance purpose proposed protective coating systems shall be compatible with existing coatings (compatibility testing shall be performed by NEK, on site, in compliance with ASTM D5064),
- Protective coatings shall have proper characteristics for decontamination (historically decontamination factor defined by ANSI N5.12, ASTM D4256: DF 5-20; proper generic coating type – epoxy; and proper chemical and physical properties as stated below) and
- Adhesion resistance: min. 200 psi (ASTM D4541 or similar).

First protection:

- Degreasing,
- 1× epoxy primer Rezistol temelj E, 25µm,
- 1-2× epoxy top-coat Amercoat 66, 125µm.

iv. Roof construction in FHB – Fire Protection

Requirements for coating system qualification:

- Identification of coating materials (commercial names, components – if applicable, manufacturer's contact information),
- Appropriate for exposure C4-medium, high durability (DIN 55643, Zinc galvanized surfaces),
- Coatings for fire protection of steel elements – R30 (ETAG 018),
- Reference to NEK Coating Technical Specification or Coating Technical Specification proposal,
- For maintenance purpose proposed protective coating systems shall be compatible with existing coatings (compatibility testing shall be performed by NEK, on site, in compliance with ASTM D5064) and
- Protective coatings shall have proper characteristics for decontamination (historically decontamination factor defined by ANSI N5.12, ASTM D4256: DF 5-20; proper generic coating type – epoxy; and proper chemical and physical properties as stated below).

First protection:

- Gritblasting (Sa 2.5, ISO 8501-1),
- 2× red-lead primer TT-P-86 minij, 2× 30-40µm,
- 4× intumescent coating Pirostop M, 4×250µm,
- 1-2× acrylic top-coat Vinilux, 2× 30µm.