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Chapter 10A

Corrosion Control In Space Launch Vehicles

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Introduction: chronological background of corrosion control at the Kennedy Space Center (KSC) and general introduction to the chapter.

Space Launch Vehicles Environment: corrosivity of the natural marine environment at KSC. The projected operating environment used for design is contrasted with current conditions in flight and conditions during ground processing.

Materials Selection: Overview of evaluation, selection and development of coatings for corrosion control in the launch environment.

The NASA Coatings Standard.

Corrosion performance of alloys in the Space Shuttle launch environment.

Space Shuttle Orbiter Corrosion History: summary of corrosion issues experienced by the NASA Space Shuttle Orbiter fleet. Design considerations for corrosion prevention and inspection methods are reviewed. Significant corrosion issues involving structures and subsystems are analyzed, including corrective actions taken. Notable successes and failures of corrosion mitigation systems and procedures are discussed.

Corrosion Control and Treatment Program: a description of the guidelines for the control of corrosion of materials in facilities, systems and equipment at KSC.

Summary: A summary of the main corrosion control issues in space launch vehicles and commentary on likely future trends for corrosion control of the vehicles that will replace the Space Shuttle Orbiter.