

NASA RANGE SAFETY PROGRAM 2005 ANNUAL REPORT

Plans for Launching and Landing the Space Shuttle

Early in 2005, NASA Range Safety initiated a comprehensive review of KSC specific risk management criteria for the launch and landing of the Space Shuttle. The result of these efforts culminated in the development of two new KSC Plans: KSC-PLN-2804, *KSC Range Safety Implementation Plan for the Landing of the Space Shuttle*, and KSC-PLN-2805, *Range Safety Risk Management Plan for the Launch and Landing of the Space Shuttle*.

Range Safety Risk Management Plan for the Launch and Landing of the Space Shuttle

The *KSC Range Safety Risk Management Plan for Launch and Landing of the Space Shuttle* outlines the KSC risk management process consisting of risk assessment, hazard containment, and risk mitigation strategies for launch and landing of the Space Shuttle. At the same time, the plan addresses NASA policy regarding range safety in NPR 8715.5 *Range Safety Program*. It is anticipated that KSC pre-launch planning will result in meeting all the NPR launch criteria for falling debris, toxics, and far-field overpressure hazards.

The KSC Range Safety Manager will update the risk management plan at least every two years to reflect current operations and risk levels. The risk management process for launching and landing the Space Shuttle includes established Air Force and NASA processes using containment and risk analysis as well as a KSC risk assessment process to address situations where residual risk violates policy criteria contained in NPR 8715.5. This risk management process involves pre-launch and landing preparation and real-time communications between the Air Force and KSC and results in a strong risk management methodology.

KSC Range Safety Implementation Plan for Landing of the Space Shuttle

The *KSC Range Safety Implementation Plan for Landing of the Space Shuttle* outlines hazard containment and risk mitigation strategies used to implement the *KSC Range Safety Risk Management Plan for Launch and Landing of the Space Shuttle* in accordance with the requirements of NPR 8715.5. The goal is to meet all the NPR individual and collective risk criteria for falling debris during nominal end-of-mission, return-to-launch-site operations. This plan will also be updated by the KSC Range Safety Manager at least every two years to reflect current operations and risk levels.

The implementation plan for landing the Space Shuttle is a combined effort, with Johnson Space Center providing detailed risk analysis and KSC providing input data and assessing the results. KSC provides Johnson with a population

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database for KSC visitors and workforce that includes the expected numbers of people as well as their planned locations during entry. In turn, the Johnson Space Center, Mission Operations Directorate, Flight Design and Dynamics Division enters this data in the entry risk model and provides KSC with a detailed listing of expectation of casualty results for the public and workforce on KSC property. The data also highlight locations of high individual and collective casualty expectation and help establish keep-out zones.