

LA-UR-24-29585

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Title: ICBM Transition Tool

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Intended for: Report

Issued: 2024-09-09 (rev.1)



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ICBM Transition Tool



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Summary

The ICBM Transition Tool is an interactive, spreadsheet-based tool for exploring scenarios involving the planned transition of the Intercontinental Ballistic Missile (ICBM) force from the Minute Man III (MMIII) to the Sentinel missile, including the refurbishment of missile silos. The transition includes the fielding of the W87-1 warhead, retirement of the W78 warhead, and impacts to the availability of components for reuse.

Background

The Sentinel Program is a driver for multiple schedules within the nuclear enterprise. With the program's Nunn-McCurdy breach in 2024, and the subsequent reversion in acquisition phase, there are now multiple open questions regarding the Sentinel Program and the resultant ICBM transition.

The intent of this tool is to explore different scenarios with sufficient flexibility to model different Sentinel deployment schedules, transition plans, and stockpile plans.

ICBM Deployment

The tool allows the user to enter multiple parameters impacting the MMIII to Sentinel transition, including: transition start date, silo conversions per year, missiles produced per year, planned stockpile inventory, initial component quantities, year-by-year demand for both new and reuse components, target ratio of new to reuse components, and new component production capacity. Using these inputs, the tool calculates projections of both ICBM and warhead availabilities. Two versions of this calculation are made: an unmitigated calculation, in which the results of the user's parameters are generated unaltered and a mitigated calculation, which includes mitigations that a missile wing commander (or higher) could reasonably take to maintain current deployment levels. These mitigations include adjusting missile assignments to silos at the wing level and extending the lifespan of the MMIII and its warheads beyond their user-defined retirement dates at the strategic level. These deviations are highlighted in the output for user review.

Weapon Component Supply

The distribution of warheads across readiness states as a function of time is calculated from the ICBM inventory projections and additional user inputs on the handling of the related warhead population. These warhead inventory projections, in turn, are used to calculate the quantity of weapon components removed from the stockpile and available for reuse as a function of time across the scenario period.

Similarly, user inputs for weapon component production are used to calculate the available supply of new components. These quantities are compared against the component demands for each year, derived from the planned production of systems that rely on these components. This comparison identifies shortfalls, excesses, and timelines for first- and last- production units for both new and reuse components.

Tool Output

The primary outputs of the tool are plots of ICBM and warhead inventory projections, and supply of weapon components over time. Additional outputs include active and hedge stockpile inventory numbers for each year, ICBM transition schedule graphics, and projected availability and retirement dates of the relevant systems.