*BY ORDER OF THE COMMANDER*
*AIR FORCE GLOBAL STRIKE COMMAND*

*AIR FORCE GLOBAL STRIKE*
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***Nuclear, Missile, Command and Control***

# *INTERCONTINENTAL BALLISTIC MISSILE (ICBM) SOFTWARE PROCEDURES*

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This instruction implements Air Force Policy Directive (AFPD) 13-5, *Air Force Nuclear Mission*; Air Force Instruction (AFI) 13-520*, Aircraft and ICBM Nuclear Operations*; Department of the Air Force Manual (DAFMAN) 91-119, *Safety Design and Criteria for Nuclear Weapon Systems;* and DAFI 63-125, *Nuclear Certification Program*, and establishes policy and procedures for ICBM targeting software. Reference the Rapid Execution and Combat Targeting (REACT) Higher Authority Communications/Rapid Message Processing Element (HAC/RMPE) Concept of System Support (CSS) for guidance pertaining to identifying deficiencies, sustainment of, testing and deployment of HAC/RMPE software to include Reserve Force Target List (RFTL) changes. Personnel involved in the control and deployment of ICBM software must know the requirements of this instruction and Air Force (AF) publications that pertain to their responsibilities. This instruction applies to all operational ICBM units, Twentieth Air Force (20 AF), 625th Strategic Operations Squadron (625 STOS), and 377th Test and Evaluation Group (377 TEG) involved in ICBM targeting and software activities. This instruction does not apply to Air Force Reserve and Air National Guard units. This instruction may be supplemented by lower units. Supplements will be sent to AFGSC Missile Operations Support Branch (AFGSC/A3ON) for coordination prior to certification and approval. Suggestions for improving this instruction are encouraged. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the DAF Form 847, *Recommendation for Change of Product*. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) AFI 33-322, *Records Management and Information Governance Program*, and disposed

of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). The authorities to waive wing, and unit level requirements in this publication are identified with a tier number ("T-0, T-2, T-3") following the compliance statement. See DAFMAN90-161 for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate tier waiver approval authority, utilizing guidance identified in DAFMAN90-161. See **Attachment 1** for a glossary of references and supporting information.

***SUMMARY OF CHANGES***

This document has been substantially revised and needs to be completely reviewed. Major changes include a title change to coincide with parent document change, removal of obsolete items, updated terminology and office symbol changes.

## Chapter 1

## RESPONSIBILITIES

**1.1. General.** This instruction contains requirements and information necessary for the control and deployment of ICBM targeting and operational software programs. It provides a descriptive summary of requirements for deploying, controlling, sustaining, and reporting deficiencies for ICBM targeting and operational software programs.

1.1.1. Users of this instruction will forward queries, waiver requests, clarification questions, and recommendations to HQ AFGSC/A3ON with a courtesy copy to 20 AF Emergency War Orders (EWO) Branch (20 AF/A3NK). Depending on the nature of the issue, HQ AFGSC/A3ON will coordinate with HQ AFGSC/SE, 20 AF/A3NK, 625 STOS, USSTRATCOM Missile Control Branch (USSTRATCOM/J374), Air Force Safety Center, Weapons Safety Division (AFSEC/SEW), and other agencies as appropriate.

1.1.2. To avoid duplication of effort, ICBM wings will coordinate their inputs through 20 AF/A3NK prior to submission to HQ AFGSC/A3ON. Users will submit inputs in writing (e-mail is acceptable). Following evaluation and coordination, HQ AFGSC/A3ON will respond to all users of this instruction as appropriate. If there are inconsistencies between this document and the volumes of USSTRATCOM EAP-STRAT or EWO clarification messages, the volume or guidance messages will take precedence until the conflict is resolved.

**1.2. Responsibilities.**

1.2.1. HQ AFGSC/A3ON will:

1.2.1.1. Request USSTRATCOM/J374 produce certified copies of master software CDs in current operational encryption key for use at operational units using the ICBM Code Processing System (ICPS) as needed.

1.2.1.2. Direct an AFGSC qualified AF Two-Person Concept (TPC) team to participate in Nuclear Safety Cross Check Analysis (NSCCA) of program data. A3ON may request USSTRATCOM/J374 support to participate in NSCCA. Any requests for USSTRATCOM/J374 support shall be not later than three weeks prior to the date of the NSCCA and will include a line of accounting (LOA) for funds to accomplish the mission.

1.2.1.3. Coordinate the delivery of various Minuteman (MM) targeting CDs to the operational units.

1.2.1.4. Ensure all ICBM units are supplied with the most current versions of flight and ground program CDs compatible with the operational targeting programs.

1.2.1.5. Request USSTRATCOM/J374 support for 625 STOS with production of Removable Storage Media (RSM) or load Head Disk Assemblies (HDA) for targeting data validation.

1.2.1.6. Serve as the central point of contact for overall planning, management, and deployment of modification and improvement programs for operational ICBM weapon systems and certified software described in DAFMAN91-119 and AFI 63-125.

1.2.1.7. Serve as the single point of contact for contractor or Air Force Materiel Command (AFMC) requests for operational targeting, ground, or flight program CDs.

1.2.1.8. Provide 625 STOS with written guidance for responding to contractor or AFMC requests for targeting, ground, or flight program CDs.

1.2.1.9. Serve as HQ AFGSC focal point for sustainment hardware and software for the MM III weapon system regarding Minuteman Operational Targeting Program (MOTP), MOTP Database (MOTPDB), Operational Flight Program (OFP), Operational Ground Program (OGP), Console Operations Program (COP), Trajectory and Missile Parameter (TAMP) updates, Launch Facility (LF) Master Database (DB) updates, Execution Plan Program (EPP) and EPP/Message Analysis (EPP/MA) DBs updates.

1.2.2. HQ AFGSC/A3TT will provide overall management of the ICBM Force Development Evaluation (FDE) program and establish requirements for the update or modification of targeting databases to support test range operations.

1.2.3. HQ AFGSC/A10LI will:

1.2.3.1. In conjunction with HQ AFGSC/A10F, HQ AFGSC/A10I, HQ AFGSC/A10M, and HQ AFGSC/A10T, direct and coordinate all phases of ICBM system, subsystem, weapon, and equipment acquisition from requirement identification through initial operational capability (IOC).

1.2.3.2. Serve as HQ AFGSC focal point and HQ AFGSC OPR with ICBM System Program Office (SPO) (AFNWC/NM) for developmental hardware and software for advanced missile systems regarding MOTP, OFP, OGP, COP, TAMP updates, LF Master DB (LFMDB) updates, EPP, and EPP/MA DB updates.

1.2.3.3. Provide and coordinate new, modified or advanced missile systems Targeting Material requests to HQ AFGSC/A3ON.

1.2.3.4. Consolidate and coordinate AFGSC ICBM Targeting Materials request to HQ AFGSC/A3ON during development phase.

1.2.4. 625 STOS will:

1.2.4.1. Generate ICBM targeting and database materials to support strategic war planning, the ICBM FDE test program, targeting system upgrade testing, and Reentry Vehicle (RV) fuzing data for the Service Select, Test, Assess, and Report (STAR) program.

1.2.4.2. Monitor and coordinate the design, development, acquisition, and implementation of ICBM targeting and execution system hardware and software.

1.2.4.3. Serve as the verification agency for all ICBM targeting and is the OPR for production, control, distribution, and associated computer processing for targeting and execution plan material for the MM III weapon system, including training versions.

1.2.4.4. Produce and validate the following ICBM Data CDs listed in **paragraph 1.2.4.4.1** through **paragraph 1.2.4.4.4**. The CDs are transported under TPC to units in accordance with DoDM 5200.01, Volume 3, *DoD Information Security Program: Protection of Classified Information*, DAFMAN16-1404V3, *Information Security Program: Protection of Classified Information*, and DAFI 91-101 AFGSCSUP, *Air Force Nuclear Weapons Surety Program* (as supplemented by AFGSC): **(T-0)**

1.2.4.4.1. MOTP Database CD

1.2.4.4.2. LFMDB CD

1.2.4.4.3. EPP/MA Database CD

1.2.4.4.4. MM Target Case Input and Execution Plan Case Input (TCI/EPCI) CD

1.2.4.5. Provide configuration management for the following databases: EPP/MA, MM LFMDB, and MOTP.

1.2.4.6. Maintain a variety of computer programs and databases capable of producing a wide range of analyses such as missile force analysis, maximum and minimum booster range capabilities, targeting efficiency analysis, target achievability, and laydown configurations. These analysis programs support current and future US missile systems.

1.2.4.7. Provide analysis, software, and/or CDs upon written requests to HQ AFGSC/A3ON. Organizations requesting analysis or software/CDs must provide an info copy to 625 STOS. Requests must contain a point of contact, suspense, detailed description of parameters or forces to be analyzed and projected use or purpose of the analysis, software and/or CDs. Requesting agencies may have to provide data for the analysis if it is not readily available to 625 STOS.

1.2.4.8. Serve as Targeting Materials Control Officer (TMCO) on behalf of AFGSC/A3O by overseeing the production, distribution, and destruction of target materials.

1.2.5. Wing EWO Plans Flight (OSX) is responsible for all wing operational matters pertaining to targeting materials management. OSX will manage administration of the targeting materials program, designate duties of the TMCO, coordinate EWO targeting requirements with unit staff agencies, and manage and coordinate other targeting materials listed in this publication and AFGSCI13-5204-S, *Intercontinental Ballistic Missile (ICBM) Emergency War Order (EWO) Operations.*

1.2.6. Wing Codes Flight (OSB) is responsible for verification, control, generation, loading, fielding, tracking and disposition of software products IAW EAP-STRAT Vol 16, and higher-level guidance. **(T-0)**

## Chapter 2

## SOFTWARE DEPLOYMENT

**2.1. Software Deployment Process.** It is imperative only properly developed, tested, and certified software is fielded in an operational ICBM unit or used in operational test launches. Operational software, certified by the Operations Control Board (OCB), must be used for operational test launches. Software certified as ready for operational testing, after completion of developmental testing, shall be used for software operational tests. Software may be used for other testing purposes prior to certification after proper coordination with AFGSC/A3O, Air Force Nuclear Weapons Center ICBM Systems Engineering Office (AFNWC/NIE), and other applicable agencies, as necessary (e.g. AFSEC, AFNWC Surety and Certification Division (AFNWC/NTS), AFGSC/SE, and USSTRATCOM/J374).

**2.2. Nuclear Certified Software.** Software or associated support software that commands, controls, targets, or retargets ICBMs is considered software requiring nuclear certification. Nuclear critical software evaluation can be accomplished by NSCCA, or Independent Validation and Verification (IV&V). The following paragraphs outline the NSCCA process.

2.2.1. NSCCA. An NSCCA has the single objective of ensuring the program cannot perform in any way that could contribute to a nuclear safety violation. An NSCCA is accomplished in parallel with software development by an independent contractor to ensure critical software does not contain improper design, programming, fabrication, or application. The analysis will ensure a software application does not contribute to:

2.2.1.1. Unauthorized or inadvertent pre-arming, arming, launching, or releasing of a nuclear weapon or nuclear weapon system.

2.2.1.2. Premature or unsafe operation of a nuclear weapon system.

2.2.1.3. Delivery of a nuclear weapon outside the specified boundary of the planned target.

2.2.1.4. Unauthorized, improper, or erroneous display of status or classified information that could degrade nuclear surety.

2.2.1.5. Improper handling of classified cryptographic codes, invalid verification, or the retrieval of such codes by unauthorized persons in a manner that could degrade nuclear surety.

2.2.2. The NSCCA contractor provides a report of their crosscheck and analysis to AFNWC/NM. AFNWC/NM approves the report and includes it in a certification package. AFNWC/NM delivers the certification recommendation report to AFNWC/NTS and AFSEC/SEW. AFSEC/SEW will review the report and assess whether the software meets the stringent certification requirements for use with nuclear weapons.

2.2.3. Nuclear Safety Design Certification. A determination by AFSEC/SEW that is forwarded to AFNWC/NTS and AFNCW/NM that all applicable nuclear safety criteria for a given hardware or software design have been met and the design is authorized for use with nuclear weapons – also referred to as "nuclear safety certification" or "design certification" IAW AFI 63-125.

2.2.4. AFNWC Review. AFNWC/NM and AFNWC/NTS will complete and review the NSCCA report, test and evaluation information and the AFSEC/SEW certification letter and forward this information to HQ AFGSC/A3O. If the software did not pass the certification requirements, HQ AFGSC/A3O must decide whether to continue the program and coordinate with AFNWC/NM on a corrective action plan. This plan must take into account the time and cost of another NSCCA after the software developer corrects the problem.

2.2.5. TPC. Once the NSCCA software certification demonstration – also referred to as "bit-for-bit comparison" is complete, the government will place the software under TPC control IAW DAFI 91-101, *Air Force Nuclear Weapons Surety Program*. The software will remain under TPC until decertified or destroyed. **(T-0)**

2.2.6. HQ AFGSC/A3O Software Certification. For operational software, HQ AFGSC/A3O will review the Software Version Document (SVD), findings from the Operational Test and Evaluation (OT&E), NSCCA report, AFNWC nuclear certification summary, to include the software being listed on the Master Nuclear Certification Listing (MNCL), and AFNWC/NM Review and Release Memorandum. If the software meets requirements, HQ AFGSC/A3O will certify the software is ready for use and notify AFNWC/NM, USSTRATCOM/J374, AFSEC/SEW, HQ AFGSC/SEW, 20AF/A3TV, 625 STOS, affected units, and other units as applicable. A memorandum will document HQ AFGSC/A3O certification for use. If the software does not meet requirements, HQ AFGSC/A3O will notify AFNWC/NM of discrepancies. HQ AFGSC/A3O and AFNWC/NM will then agree on a plan of action to either correct the software, field it with the discrepancy or discontinue the program. Software with discrepancies will require HQ AFGSC/SEW and AFSEC/SEW approval prior to fielding and must not affect nuclear surety/safety.

2.2.7. HQ AFGSC/A3O Deployment Authorization. HQ AFGSC/A3O and HQ AFGSC/SEW are the final approval authorities for deploying new, modified, or associated support software to the field which commands, controls, or retargets ICBMs. HQ AFGSC/A3O will coordinate with USSTRATCOM/J374, AFNWC/NM, AFSEC/SEW, HQ AFGSC/SEW, 20 AF/A3N, and 625 STOS, as applicable, and any other necessary agencies prior to fielding to ensure contractor, NSCCA certification, testing, technical order (T.O.) changes, and training are complete and the criteria in AFI 63-125 and DAFI 91-101 are met. HQ AFGSC/A3O will generate a deployment order with approval from HQ AFGSC A3. The deployment order is transmitted via HQ AFGSC Command Center to the applicable units for action.

**2.3. Development Activities.**

2.3.1. T.O. In-Process Reviews (IPR) and Publication Reviews. T.O. IPRs and publication reviews are periodically hosted by the contractor/subcontractor to demonstrate to the government the necessary level of fidelity is incorporated into operations and maintenance T.O.s and manuals. T.O. Validation and Verification (V&V) is accomplished by AFNWC/NM and 20 AF (or by units with 20 AF and AFNWC/NM oversight). AFNWC/NM and 20 AF will accomplish all T.O. checklists which are affected by the program at an operational test site(s) at either Vandenberg SFB or Hill AFB (an engineering model may be used as well) to ensure the T.O. is written correctly and achieves the desired results. Once V&V is complete, the T.O.s are ready for use in the field; however, the system must be nuclear certified by AFNWC and authorized for duplication, distribution, and use by HQ AFGSC/A3O and 20 AF prior to deployment at an operational unit.

2.3.2. Operational Test and Evaluation (OT&E). Various kinds of OT&E are conducted during a system's life cycle to ensure the Air Force acquires and maintains operationally effective and suitable systems to meet user requirements. OT&E will be conducted in an operationally realistic environment at either Vandenberg SFB or Hill AFB. OT&E helps identify and resolve deficiencies as early as possible. Initial Operational Test and Evaluation (IOT&E) is conducted to determine the operational effectiveness and suitability of systems undergoing Research and Development (R&D) efforts.

**2.4. Non-Nuclear Certified Software.** ICBM software not requiring nuclear certification must be tested and released by AFNWC/NM to AFGSC/A3ON and approved for operational use by HQ AFGSC/A3O. All software used in the field or in support of ICBMs must be tested to ensure the software meets the user needs/requirements (e.g. AF Forms 1067). All software used in the field or in support of any ICBM system/sub-system must be the same revision/version that is annotated in Automated Computer Program Identification Number System (ACPINS). Except for the NSCCA requirement and AFNWC nuclear certification, the process is nearly identical to nuclear certified software.

2.4.1. HQ AFGSC/A3O Authorization for Use. For operational software, HQ AFGSC/A3O will review the Software Version Description (SVD), the findings from the ICBM FDE and any information/recommendation from AFNWC/NM. If the software meets requirements, HQ AFGSC/A3O will authorize the software for use in the field and notify AFNWC/NM, USSTRATCOM/J374, AFSEC/SEW, 20 AF/A3N, affected units, and other units, as applicable. A memorandum will document approval. If the software does not meet requirements, HQ AFGSC/A3O will notify AFNWC/NM of discrepancies. HQ AFGSC/A3O and AFNWC/NM will then agree on a plan of action to correct the software, field it with the discrepancy (if minor), or discontinue the program.

2.4.2. Software and Databases on Targeting Material Identification Letters (TMIL). 625 STOS will provide HQ AFGSC/A3ON with a draft copy NLT 7 days prior to effective date.

**2.5. ICBM Unit Software Deployment.** HQ AFGSC/A3O will generate a deployment order with approval from HQ AFGSC A3. The deployment order is transmitted via HQ AFGSC Command Center to the applicable units for action.

2.5.1. Prior to fielding new or modified software, units must possess an authorization letter from HQ AFGSC/A3O and appropriate T.O. changes. For operations weapon systems T.O.s, a unit must have sufficient copies of the appropriate changes to ensure every Launch Control Center (LCC) has updated T.O.s prior to software deployment.

2.5.2. Units will verify the appropriate change by comparing the delivered software to ACPINS.

2.5.3. Units must use the MNCL to verify certification status and configuration of all nuclear certified software prior to deployment. The MNCL home page link is **https://members.lcmp.af.mil/MNCL/Menu** and is managed by AFNWC/NTS. **(T-2)**

2.5.4. If incorrect software/programs/CDs are loaded into an operational LCC and/or LF, accomplish the following:

2.5.4.1. Load the correct version as soon as possible.

2.5.4.2. Report the incident to HQ AFGSC/A3ON as soon as possible through J-GSOC/JNOC at DSN: 331-1285. HQ AFGSC/A3ON will contact USSTRATCOM/J374 (if applicable) with operational impact and corrective actions required. AFGSC/A3O will provide contact information to the JNOC.

2.5.4.3. Accomplish any HQ AFGSC/A3O mandated corrective actions.

2.5.4.4. Accomplish appropriate actions in accordance with AFI 91-114, *Safety Rules for the Intercontinental Ballistic Missile System.* Coordinate with applicable agencies and consider the following actions. For an LCC, transfer flight responsibility until investigation and corrective actions are complete. For an LF, remove the sortie from alert status, accomplish actions to ensure it is not launch capable, and safe the sortie, as required, until investigation and corrective actions are complete. **(T-2)**

2.5.4.5. Contact HQ AFGSC/SEW at DSN: 781-9793 to determine if reporting is required IAW AFMAN 91-221, *Weapons Safety Investigations and Reports.* **(T-2)**

## 2.6. 625 STOS Software Program.

2.6.1. The following programs are used by 625 STOS to generate and validate targeting materials:

2.6.1.1. Strategic Targeting Support Software (STSS) supporting MM III is hosted on 625 STOS's REACT Virtual Address eXtension (VAX) computer system. The STSS simulates the operations of the LCC's Weapon System Processor (WSP) for execution of the OTP and EPP. For Operational Test Launch (OTL), STSS runs a Minuteman Trajectory Simulation Program (MTSP) to produce range safety data and nominal trajectory data. STSS can also perform engineering analysis of the OTP and other WSP programs and DBs.

2.6.1.2. The MERGER program produces the LFMDBs. The LFMDBs are produced on Strategic Targeting and Application Computer System (STACS). MERGER is not a nuclear-certified software program.

2.6.1.3. Quality Inspection Checker Program (QUICK) verifies the data on the LFMDB. QUICK is a nuclear-certified software program used on STACS.

2.6.1.4. The Mission Planning Program (MPP) produces a data set on STACS used by the EPP DBG to build the annual force-wide EPP/MA operational and trainer DBs. The MPP is not a nuclear-certified software program.

2.6.1.5. EPP Database Generator (DBG) verifies the data on the EPP/MA DBs. EPP DBG is a nuclear-certified software program used on STACS.

## Chapter 3

## CONTROL OF OPERATIONAL TARGETING SOFTWARE

**3.1. Critical Components.** The programs and CDs listed in **paragraph 3.1.1** through **paragraph 3.1.8** are critical components. Adhere to the requirements of USAF TPC control. TPC requirements apply to AFGSC, and all subordinate unit personnel. Nuclear certification requirements are delineated in AFMAN 91-119, *Safety Design and Evaluation Criteria for Nuclear Weapon Systems Software* and AFI 63-125. Critical components for targeting include: **(T-2)**

3.1.1. MOTP Executable/TAMP DB

3.1.2. EPP DBG Executable

3.1.3. EPP Executable

3.1.4. QUICK

3.1.5. STACS Hard Drives

3.1.6. OGP Executable

3.1.7. OFP Executable

3.1.8. COP Executable

**3.2. Non-critical Components.** The programs and CDs listed in **paragraph 3.2.3.1** through **paragraph 3.2.3.6** are not critical components; however, they require TPC control to ensure system integrity. Adhere to the requirements of USAF TPC control. TPC requirements apply to AFGSC, and all subordinate unit personnel. The following exceptions apply:

3.2.1. Contractor/AFNWC/NM Facilities. Test versions of the programs and CDs listed below that are used at contractor/AFNWC/NM facilities do not require TPC.

3.2.2. 576th Flight Test Squadron (576 FLTS): Test versions of the programs and CDs listed below that are used in the 576 FLTS Wing Codes Processing System (WCPS) require TPC handling to maintain system integrity. However, once 576 FLTS personnel transfer data to WCPS products for use in tests, TPC is not required.

3.2.3. Non-critical components for targeting, that require TPC, include:

3.2.3.1. TCI/EPCI CDs.

3.2.3.2. LF Master DB CDs.

3.2.3.3. EPP/MA DB CDs. (Retain Operational and Training copies under TPC)

3.2.3.4. MM OTP DB CD.

3.2.3.5. MPP Executable.

3.2.3.6. MERGER Executable.

**3.3. Operational Test Launch (OTL) Software Production.**

3.3.1. 625 STOS will use the STSS to generate range safety data, nominal trajectory data, and special analysis when requested to support ICBM flight testing at Vandenberg SFB. 625 STOS

is responsible for maintaining accountability of, and distributing electronic copies of these classified materials.

3.3.2. 625 STOS will oversee generation and processing of OTL materials for FDE to ensure timely completion and shipment. 625 STOS will designate a project officer responsible for generating and verifying all computer products necessary to meet OTL requirements. 625 STOS will also designate a verification officer to monitor the OTL materials production and provide a quality control check IAW internal checklist procedures. Upon assembly of all required materials, a quality check is performed with the project officer and the verification officer to ensure all OTL targeting materials and range safety data are complete and accurate.

3.3.3. 625 STOS will provide OTL data, via electronic delivery, NLT 60 days prior to the OTL date. 625 STOS must receive all required materials, to include the Aimpoint Document and the Test Execution Order, a minimum of 15 duty days prior to the required delivery date.

**3.4. Range Safety Materials.** The STSS produces range safety data for OTLs. The nominal trajectory print defines missile flight by position and altitude of each missile stage and re-entry system. The MTSP provides engineering state vectors for each object reentering the atmosphere with respect to downrange radars. This data facilitates selective acquisition of reentering objects.

## Chapter 4

## MINUTEMAN TARGETING CAPABILTIES

**4.1. MM Targeting Capabilities.** The MM Missile Guidance Computer (MGC) within the Missile Guidance System (MGS) stores four sets of target data, each target set constituting a particular mission. Each sortie requires the installation of appropriate target cases to be able to launch. Once target sets have valid case data loaded, each individual target set may be updated when new targeting data is addressed to any of the target sets. Additionally, each sortie has execution plan data, which provides execution options and launch timing that become effective upon receipt of a PLC-A.

**4.2. Configurations.** Line two of the target case input denotes the sortie's configuration identification through the configuration data string.

**4.3. Remote Targeting Description.** MM has the capability to transfer Force Direction Message (FDM) targeting data received over the Strategic Automated Command and Control System (SACCS) or via Advanced Extremely High Frequency (AEHF) directly into the Weapon System Control Element (WSCE) for input, generation, and Remote Data Change (RDC) by the COP.

**4.4. MM Targeting Materials.**

4.4.1. MOTP. Written to operate in the LCC WSP, MOTP simulates the missile’s flight to generate unique launcher/target dependent constants. These constants are encoded, transmitted to the LF, and used by the flight program. MOTP uses case input data from the Bulk Storage Loader (BS/L), WSP, or manual keyboard input. For Target Case Generation (TCG), the case input provides a case number, sortie identification, target data, and other trajectory and reentry vehicle fuzing information. Additionally, MOTP uses information from the MOTP DB, TAMP DB, and LFMDB.

4.4.2. MOTP DB. Contains geodetic, climatological, generic Inertial Measurement Unit (IMU) coefficients, and Minimum Case Input data. The MOTP DB CD is loaded into the HDA.

4.4.2.1. Geodetic Data. Precise launcher location and gravity data for missile trajectory computations. All geodetic data is based on DoD World Geodetic System's (WGS 84) reference ellipsoid. There are two sets of geodetic data, Missile Launch Site Data (MLSD) and Launch Region Gravity Model (LRGM).

4.4.2.1.1. Missile Launch Site Data. Produced by the National Geospatial-Intelligence Agency (NGA) and are refined launch site geodetics. When these geodetics are incorporated into the MLSD listing, they become the launcher geodetic source document for the MOTP DB and the LFMDB.

4.4.2.1.2. Launch Region Gravity Model. Contains launch region peculiar gravity values for the MOTP. This data is produced by NGA.

4.4.2.2. Climatological Data. Upper air densities and winds affect the RV’s trajectory and warhead fuzing. Annual (mean) climatological data for numerous grid points over the target area are developed and compiled into the climatological data set. Climatology is produced by the Combat Climatology Center.

4.4.2.3. Generalized Error IMU Compensation (GENERIC) Coefficients. These coefficients are contained in the DB but are no longer used by the MOTP for IMU compensation model to calculate the position and velocity corrections at Stage 3 thrust termination.

4.4.2.4. Minimum Case Input. Reduces the amount of data the keyboard operator must input. Minimum input recalls pre-stored data and default settings that select quantities and options normally specified in the case input.

4.4.3. LFMDB. Contains specific launch site data to include gravity values, launcher geodetic latitude/longitude, and selected timer settings. The following timer values are included on the CD: Single vote, Airborne Launch Control Center (ALCC) lockout, ALCC hold off, and CO-OP Enable Display and Response.

4.4.3.1. The LFMDB CD is loaded into the HDA. The LFMDB is also read to a Launch Facility Load Compact Disk (LFLCD) for subsequent upload to the MGS.

4.4.3.2. The actual settings of the operational and test timer values will be maintained by HQ AFGSC/A3ON and A3TT, respectively. Request any changes to those timer values in writing. Include a statement of the effect on OTLs. Coordinate with 20 AF/A3NK, 625 STOS, HQ AFGSC/A3O, HQ AFGSC/A10LI, AFGSC/SEW, and AFNWC/NM with an information copy sent to AFSEC and AFNWC.

4.4.4. TAMP DB. Contains the mass properties for all missile and reentry system configurations, as well as the WGS 84 earth reference model. The MOTP uses the TAMP region data identified on the case input for TCG.

4.4.5. TCI/EPCI. Contains sortie, target and timing data, and execution options for use in the MM III weapon system.

4.4.6. EPP. The executable program used to generate sortie-unique execution plan constant sets. When combined with the EPP DB and the squadron EPCI data, the EPP will generate missile-unique execution plan constants to be remotely transferred to the sorties in preparation for Preparatory Launch Command-A (PLC-A) processing.

4.4.7. EPP/MA DBs. Contains PLC-A numbers and their corresponding attack options for two revisions. It also contains a message analysis function so that the executed option(s) can be determined from the execution characters received in an Emergency Action Message (EAM).

## Chapter 5

## TARGET MATERIAL RECEIPT/VERIFICATION

**5.1. Targeting Materials.** Units will maintain a list of current targeting materials. HQ AFGSC/A3O will provide the TMIL which lists current EPP, TCI/EPCI, MOTP, TAMP, MOTP DB, LFMDB, and EPP/MA DB CDs by title, identification number, CD number, classification, and date produced. Guidance will identify targeting materials to be superseded or destroyed. For operational and 576 FLTS TMILs, 625 STOS will provide HQ AFGSC/A3O with a draft copy NLT 7 days prior to effective date. 625 STOS may provide HQ AFGSC/A3O with a draft annex for TMILs if the change to the TMIL will be due to a temporary adjustment that will last no longer than 30 calendar days.

5.1.1. 576 FLTS only. When in receipt of contractor-provided CDs, the TMCO or ATMCO must provide a written inventory to 625 STOS and courtesy copy HQ AFGSC/A3O within 15 duty days of receipt of the CDs.

5.1.2. Only the TMCO/ATMCO will receive and/or open targeting materials. The TMCO will accomplish the following verification procedures upon receipt of targeting materials:

5.1.2.1. Ensure the CD information on the label matches the number on the current TMIL. If discrepancies exist, notify 625 STOS immediately by telephone. Place the questionable CD in appropriate storage and do not use it until 625 STOS provides resolution. Resolution must be coordinated with HQ AFGSC/A3ON.

5.1.2.2. Target Materials Custodians (576 FLTS: TMCO/ATMCO) will verify all CDs as soon as possible after receipt and before operational use. Verification consists of ensuring the WCPS successfully reads/loads each CD. As applicable, CDs include LFMDB, EPP, TCI/EPCI, MOTP, TAMP DB, MOTP DB, and EPP/MA DBs.

5.1.3. If any CD fails to verify or load during field operations, the TMCO will notify 625 STOS immediately by secure telephone and follow-up message. Place failed CD in appropriate storage and do not use it for operational targeting or OTLs. 625 STOS will provide resolution on the final disposition of the CD.

**5.2. Titles.** Units will not alter the title(s) of any WCPS generated materials, with the exception of parenthetical descriptions (for example, the WCPS generates the title “REACT MOTP TAMP”).

**5.3. Distribution.**

5.3.1. Targeting materials are distributed in sealed packages through administrative service channels. The method of distribution (special aircraft, courier, or mail) depends on the nature of the material, classification, and its effective date.

5.3.2. Unit OSB and 576 FLTS will control, store, and document destruction of all issued media.

**5.4. Destruction of Target Materials:**

5.4.1. The HQ AFGSC/A3O TMIL authorizes destruction of targeting materials. The TMCO notifies OSB/576 FLTS personnel of materials identified for destruction. Units will not

destroy targeting materials until they receive a TMIL authorizing destruction. All destruction requests should be sent to HQ AFGSC/A3ON with an info copy to 625 STOS.

5.4.2. Destroy targeting data on optical media (CDs) in accordance with DoDM 5200.01 Volume 3 and the evaluated products list (EPL) produced by National Security Agency (NSA). Only NSA – approved degaussers may be used. Destroy targeting data on magnetic tapes by either degaussing or burning. Degaussing is the preferred means of destroying magnetic target materials. **(T-0)**

5.4.3. SLD 30/SE and 576 FLTS only: OTL Range Safety, Nominal Trajectory, and target case printouts as well as compact discs will be destroyed no later than six months after the applicable test launch unless notified by 625 STOS to retain this data for longer periods. These materials may be retained for engineering purposes. When no longer needed, destroy in accordance with DoDM 5200.01, Volume 3 and DAFMAN16-1404, Volume 3.

GLENN T. HARRIS
Brigadier General, USAF
Director of Operations

**Attachment 1**

**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION**

***References***

DoDM5200.01V1_DAFMAN_16-1404V1, *Information Security Program: Overview, Classification, and Declassification,* 6 April 2022

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DAFI 91-101_AFGSCSUP, *Air Force Nuclear Weapons Surety Program*, 19 December 2022

AFI 91-114, *Safety Rules for the Intercontinental Ballistic Missile System,* 6 January 2023

DAFMAN 91-118, *Safety Design Criteria for Nuclear Weapon Systems*, 13 March 2020

DAFMAN 91-221, *Weapons Safety Investigations and Reports*, 18 December 2024

AFGSCI 13-5204, (S) *Intercontinental Ballistic Missile (ICBM) Emergency War Order (EWO) Operations,* 22 November 2020

DoDM 5200.01V3_DAFMAN 16-1404V3_AFGSCSUP, *Information Security Program: Protection of Classified Information,* 11 Apr 2022

***Prescribed Forms***

None.

***Adopted Forms***

DAF Form 847, *Recommendation of Change of Product*

***Abbreviations and Acronyms***

**ACPINS**—Automated Computer Program Identification Number System

**AF**—Air Force

**AFGSC**—Air Force Global Strike Command

**AFMC**—Air Force Material Command

**AFSEC**—Air Force Safety Center

**ALCS**—Airborne Launch Control System

**ATMCO**—Alternate Target Material Control Officer

**BS/L**—Bulk Storage/Loader

**CMCC**—Computer Memory Confidence Check

**COP**—Console Operations Program

**DB**—Database

**DoD**—Department of Defense

**EPCI**—Execution Plan Case Input

**EPLCCP/MA**—Execution Plan Program/Message Analysis

**EPP DBG**—Execution Plan Program Data Base Generator

**EPP**—Execution Plan Program

**EWO**—Emergency War Order

**FDE**—Force Development Evaluation

**FDM**—Force Direction Message

**FLTS**—Flight Test Squadron

**GENERIC**—Generalized Error IMU Compensation

**HDA**—Head Disk Assembly

**HQ**—Headquarters

**IAW**—In Accordance With

**ICBM**—Intercontinental Ballistic Missile

**ICPS**—ICBM Code Processing System

**IMU**—Inertial Measurement Unit

**IOC**—Initial Operational Capability

**LCC**—Launch Control Center

**LF**—Launch Facility

**LFLCD**—Launch Facility Load CD

**LFMDB**—Launch Facility Master Database

**LOA**—Line of Accounting

**LRGM**—Launch Region Gravity Model

**MCC**—Missile Combat Crew

**MGC**—Missile Guidance Computer

**MGS**—Missile Guidance Set

**MLP**—Master Lesson Plan

**MLSD**—Missile Launch Site Data

**MM**—Minuteman

**MOTP**—MM Operational Targeting Program

**MPP**—Mission Planning Program

**MSP**—Missile Simulation Program

**MTSP**—MM Trajectory Simulation Program

**NGA**—National Geospatial-Intelligence Agency

**NLT**—No Later Than

**NSA**—National Security Agency

**NSCCA**—Nuclear Safety Cross-Check Analysis

**OCB**—Operations Control Board

**OFP**—Operational Flight Program

**OGP**—Operational Ground Program

**OSB**—Wing Codes Flight

**OSX**—Wing EWO Plans Flight

**OTL**—Operational Test Launch

**QUICK**—Quality Inspection Check Program

**RDC**—Remote Data Change

**REACT**—Rapid Execution and Combat Targeting

**RSM**—Removable Storage Media

**RV**—Reentry Vehicle

**SACCS**—Strategic Automated Command and Control System

**SPO**—Systems Program Office

**STACS**—Strategic Targeting and Application Computer System

**STAR**—Service Select, Test, Assess, and Report

**STOS/ALCS**—Strategic Operations Squadron Airborne Launch Control System Branch

**STOS**—Strategic Operations Squadron

**STSS**—Strategic Targeting Support Software

**TAMP**—Trajectory and Missile Parameter

**TCG**—Target Constants Generation

**TCI**—Target Case Input

**TEG**—Test and Evaluation Group

**TMCO**—Target Material Control Officer

**TMC**—Target Materials Custodian

**TPC**—Two Person Concept/Two Person Control

**VAX**—Virtual Address eXtension

**WCPS**—Wing Code Processing System

**WGS**—World Geodetic System

**WSCE**—Weapon System Control Element

**WSP**—Weapon System Processor