

Chapter 8

RAPID EXECUTION AND COMBAT TARGETING (REACT) HIGHER AUTHORITY COMMUNICATIONS/RAPID MESSAGE PROCESSING ELEMENT (HAC/RMPE) SYSTEMS

8.1. Scope. This chapter covers operational and test HAC/RMPE software, the HAC/RMPE software portion of the Missile Procedures Trainer (MPT) and the Minuteman Enhanced Proficiency (MEP) trainer software and the HAC/RMPE Message Generator software. This chapter conforms to the Level 1 and Level 2 support tasks defined in the Software Normalization Memorandum of Agreement (MOA) (see details in Attachment 2).

8.1.1. **Affected Units.** AFSPC units affected by this agreement are HQ AFSPC, the 576th Flight Test Squadron (FLTS)-part of the Space Warfare Center, HQ 20th Air Force, 625th Missile Operations Flight (MOF) and the operational missile units. The Air Education and Training Command (AETC) unit affected by this agreement is the 392nd Training Squadron (TRS), part of the 381st Training Group (TRG). The AFMC unit affected by this agreement is the ICBM SPO, part of the Ogden Air Logistics Center (OO-ALC/LM).

8.2. HAC/RMPE Documents. A complete list of HAC/RMPE software documentation can be found at the OO-ALC Software Control Center. HAC/RMPE software documentation is maintained and distributed by OO-ALC/LMEZ. The documents listed below provide basic program and support guidance:

8.2.1. **Operational Requirements Document.** *SAC SORD 14-86-I/III Rapid Execution and Combat Targeting (REACT).*

8.2.2. **Program Management Directive (PMD).** *PMD 2313(3)/11213F/11215F/64312F ICBM Integrated Weapon System Management (IWSM) - Appendix G, 26 Mar 97.*

8.3. Background. This instruction specifies responsibilities between Air Force Space Command, the 392 TRS, and the ICBM SPO for HAC/RMPE software support.

8.4. Objectives. The objectives of this chapter are to:

8.4.1. Define HAC/RMPE software support requirements.

8.4.2. Define the HAC/RMPE software support concept and high-level processes.

8.4.3. Identify roles, responsibilities and relationships of all organizations involved with providing and receiving HAC/RMPE software support.

8.5. Administrative. The Office of Primary Responsibility (OPR) for this chapter is HQ AFSPC/DOM. The AFMC point of contact is OO-ALC/LME. Recommended changes will be submitted to HQ AFSPC/DOM.

8.6. System Operational Concepts and Requirements:

8.6.1. **Mission.** The REACT program upgraded Minuteman III Launch Control Centers (LCCs) with Weapon System Control Consoles (WSCCs). The missions of the Minuteman weapon system and missile units have not changed. HAC/RMPE provides the message processing capability of the Weapon System Control Console (WSCC).

8.6.2. Operational Concept:

8.6.2.1. The WSCC is the primary duty station for the missile combat crew in the Minuteman LCC. Through the WSCC, the missile crew monitors and controls up to 50 remote missile sites in their squadron and responds to higher authority directions. The WSCC increases the speed and efficiency with which the missile crew handles all higher authority message traffic and improves ICBM responsiveness and pre-launch survivability.

8.6.2.2. The WSCC has two main parts: the Weapon System Control Element (WSCE) and the HAC/RMPE. The WSCE controls all weapon system related functions, processes National Command Authority derived data passed from the HAC/RMPE and performs remote rapid retargeting of Minuteman III ICBMs. HAC/RMPE integrates all higher authority communications received through the Strategic Automated Command and Control System (SACCS), the Air Force Satellite Communications system (AFSATCOM) and the Survivable Low Frequency Communications System in addition to performing automated rapid message processing, error correction, duplicate message suppression and alarm integration. The missile crew, interfacing with HAC/RMPE, completes message processing, corrects errors and determines message validity. HAC/RMPE will also integrate the Minuteman Minimum Essential Emergency Communications program when fielded. Execution values and related information are passed from the HAC/RMPE to the WSCE. The missile crew also uses HAC/RMPE to perform SACCS and AFSATCOM station-keeping functions.

U 8.6.2.3. The HAC/RMPE software is influenced by many factors. Changes to Single Integrated Operational Plan (SIOP) planning values and timing always require changes to the HAC/RMPE software. The SIOP normally undergoes scheduled changes, with set effective dates. Occasionally, the SIOP undergoes an emergency change which is effective immediately. HAC/RMPE software changes can also be driven by revisions to Chairman, Joint Chiefs of Staff (CJCS) and U.S. Strategic Command (USSTRATCOM) Emergency Action Procedures (EAPs), problems identified by system operators, Reserve Force Target List (RFTL) revisions, human-machine interface considerations and other factors.

8.6.2.4. The MPTs/MEPs are used to provide missile crew member training and evaluation. Ideally, crew members will be trained on all weapon system changes in the MPT/MEP prior to the change being implemented operationally. 20 AF/DO will determine if MPT/MEP training prior to alert duty is required based on the nature of any HAC/RMPE software changes. AFSPC requires that all MPTs/MEPs reflect full operational functionality.

? 8.6.2.5. AFMC will use a non-SIOP version of the HAC/RMPE software for day-to-day testing activities to minimize the exposure of SIOP information. Test beds will be upgraded temporarily to Top Secret-SIOP during testing and troubleshooting of operational software.

8.6.2.6. Missile crews will use manual backup procedures whenever the installed software version is not working correctly or is out-of-date, or whenever the system is down.

8.7. HAC/RMPE Software Support Concept. The ICBM SPO will implement changes to the HAC/RMPE software and manage its configuration IAW the ICBM IWSM PMD and the Software Normalization MOA.

8.8. Operational System Parameters. The mission requirements for REACT and HAC/RMPE are stated in the REACT SORD.

8.8.1. Availability. The REACT system shall have a minimum mission availability of 99.5 percent for a single LCC and 95 percent for a MPT/MEP. Other mission reliability and maintainability requirements may be found in the SORD, paragraph IV.A.1.d.

8.8.2. Timelines. System operation timeline requirements are classified and may be found in the REACT SORD, Section IV.A.

8.8.3. Security. The WSCC sustainment program will operate under the security requirements documented by the ICBM Security Classification Guide, the EAP-CJCS Classification Guide and all applicable AFSPC and USSTRATCOM security instructions. When HAC/RMPE hardware has training or test software installed, the facility and the personnel must be cleared for Top Secret. When actual SIOP data is loaded in HAC/RMPE equipment, the classification is TS-SIOP to ESI.

8.8.4. Interoperability. The HAC/RMPE software must fully integrate and operate with the WSCE, the MPT/MEP and current and future communications systems in the LCC.

8.9. Database Support. The HAC/RMPE software interfaces with a SIOP parameters database and a RFTL database. All changes to database information require a recompilation and redistribution of HAC/RMPE software and therefore are classed as Level 2 software support. USSTRATCOM J331/J521/J524 provides the necessary data elements for both SIOP parameters and RFTL databases.

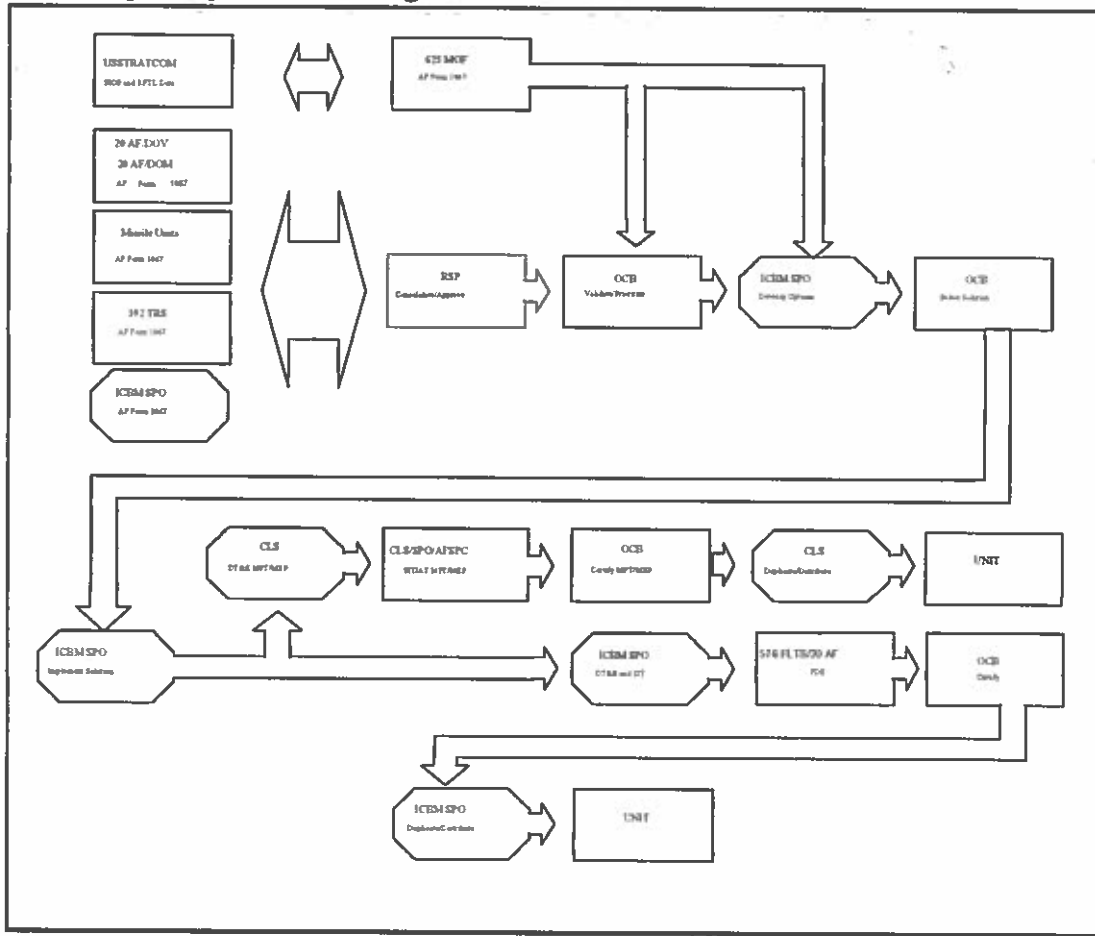
Operational Training. The OCB will determine when system operators and 576 FLTS personnel require training on changes to the HAC/RMPE software.

8.10. Identify Anomalies, Improvements, Revisions:

8.10.1. Anomalies and Improvements:

8.10.1.1. Anyone associated with the system may report software anomalies or propose improvements to HAC/RMPE software using an AF Form 1067, also referred to as a change request in this chapter (see **Figure 8.1**). AFSPC personnel, including system operators in the field, will report anomalies or suggest system improvements. ICBM SPO personnel and contractors will report anomalies or suggest improvements discovered during system testing or engineering analysis. The discovering organization will document the anomaly or suggested improvement on a change request, attach any information or associated data (printouts, logs, etc.) which may aid in problem analysis or replication, recommend a precedence (e.g., routine, urgent or emergency), and then submit the change request to the Requirements Screening Panel (RSP) (20 AF/DOV) IAW local procedures.

Figure 8.1. Change Request Flow Diagram.



ICBM SPO

OCB

576 FLTS/20 AF

ICBM SPO

USSTRATCOM

ICBM SPO

AF Form 1067

ICBM SPO

AF Form 1067

Missile Units

AF Form 1067

625 MOF

Form 1067

AF

OCB
CLS/SPO/AFSPC
CLS
ICBM SPO
OCB
OCB
CLS
AF Form 1067
392 TRS
RSP
SIOB and RFTL Data
20 AF/DOV
20 AF/DOM
Consolidate/Approve
Select Solution
Develop Options
Validate/Prioritize
Duplicate/Distribute
UNIT
DT&E MPT/MEP
SIT/AT MPT/MEP
Certify MPT/MEP
FDE
Implement Solution
DT&E and SIT
Certify
UNIT
Duplicate/Distribute

8.11. Software Support Process:

8.11.1. The originating organization will submit emergency non-SIOB change requests to the RSP within 6 hours of problem identification.

8.11.2. SIOB and RFTL Revisions:

8.11.2.1. USSTRATCOM J331/J521/J524 are required to notify the Commander Task Force 214 (20 AF/CC), 20 AF/DO, and 625 MOF/TABM of all SIOP and targeting revisions. 625 MOF/TABM will notify and submit resulting change requests to the OCB so that the software change process is energized.

8.11.2.2. For emergency SIOP revisions, 625 MOF/TABM will immediately notify HQ AFSPC/DOM, 20 AF/DO, OO-ALC/LME, the HAC/RMPE Software Support Facility (HSSF) and OO-ALC/LMBT of the required revision and the effective date via telephone. During off-duty hours and holidays, 625 MOF/TABM may contact HQ AFSPC/DOM through the AFSPC Command Center, 20 AF/DO through the 20 AF Missile Operations Center (MOC), OO-ALC/LME and OO-ALC/LMBT through the OO-ALC/LM Alert Center and the HSSF through the USSTRATCOM Command Center. 625 MOF/TABM will submit an emergency change request to the OCB as soon as possible, but will not delay initial notification to do so.

8.11.2.3. 625 MOF/TABM will work with USSTRATCOM J331/J521/J524 to ensure HSSF personnel are kept abreast of new requirements as they develop and the scheduled effective date. 625 MOF/TABM personnel are collocated with USSTRATCOM and the HSSF and will ensure the HSSF receives all required materials from USSTRATCOM.

8.12. Validate, Prioritize And Forward Change Requests:

8.12.1. Requirements Screening Panel:

8.12.1.1. The RSP will consolidate, review, approve or disapprove, and set the precedence (e.g., routine, urgent or emergency) for all non-SIOP, non-RFTL change requests. The RSP will submit all approved change requests to the OCB. The RSP will submit an information copy of approved emergency change requests to OO-ALC/LME, OO-ALC/LMBT and the HSSF. The RSP will return all disapproved change requests to the originators with rationale for disapproval and send an information copy to OO-ALC/LME and the OCB.

8.12.1.2. In the event of an emergency non-SIOP change request, the 20 AF/DO may act on behalf of the RSP. 20 AF/DO or the RSP will immediately notify HQ AFSPC/DOM, OO-ALC/LME, the HSSF and OO-ALC/LMBT via telephone of the emergency change request and the effective date. During off-duty hours and holidays, 20 AF/DO may contact HQ AFSPC/DOM through the AFSPC Command Center, OO-ALC/LME and OO-ALC/LMBT through the OO-ALC/LM Alert Center and the HSSF through the USSTRATCOM Command Center. 20 AF/DO will submit emergency change requests to the RSP as soon as possible but will not delay initial notification to do so. Change requests acted on by 20 AF/DO will be reviewed at the next RSP meeting.

8.12.2. Operations Control Board:

8.12.2.1. The OCB will serve as the official Level 1 single point of contact for taskings to the ICBM SPO.

8.12.2.2. The OCB will review change requests approved by the RSP. The OCB will determine the validity of change requests, prioritize them and forward them to OO-ALC/LME, OO-ALC/LMBT and the HSSF with an information copy sent to HQ SWC/XRT. The OCB will return invalid change requests to the originator through the RSP with rationale for the "invalid" determination and send an information copy to OO-ALC/LME. For urgent and Category II emergency changes, the OCB will negotiate with the ICBM SPO to determine when the software

release must be present in the field. For routine changes, the OCB will determine which valid change requests to include in the next scheduled change IAW the timelines in paragraph 8.31.

8.12.2.3. In the event of an emergency problem or revision, the AFSPC/DOM may act on behalf of the OCB. AFSPC/DOM or the OCB will transmit valid emergency change requests to the OO-ALC/LME, OO-ALC/LMBT and the HSSF as soon as possible, but within 6 hours of OCB validation. Change requests acted on by AFSPC/DOM will be reviewed at the next OCB meeting.

8.12.2.4. The following priority system will be used by the OCB when reviewing change requests:

8.12.2.4.1. Operational Software Priority Scale:

8.12.2.4.1.1. One (1) - A SIOP change or a change needed to return functionality to HAC/RMPE.

8.12.2.4.1.2. Two (2) - A change needed to correct a message processing deficiency, reception deficiency or a deficiency that partially affects system functionality with no workaround.

8.12.2.4.1.3. Three (3) - A change needed to correct a message processing deficiency, reception deficiency or a deficiency that partially affects system functionality but a workaround is in place.

8.12.2.4.1.4. Four (4) - A change that corrects a deficiency which has no effect on system functionality.

8.12.2.4.1.5. Five (5) - A change that is an improvement or enhancement to the system.

8.12.2.4.2. MPT/MEP Priority Scale:

8.12.2.4.2.1. One (1) - A SIOP change or a change needed to return functionality to MPT/MEP.

8.12.2.4.2.2. Two (2) - A change needed to correct a deficiency that affects training and has no workaround.

8.12.2.4.2.3. Three (3) - A change needed to correct a deficiency that affects training but a workaround is in place.

8.12.2.4.2.4. Four (4) - A change that corrects a deficiency which has minimal effect on training.

8.12.2.4.2.5. Five (5) - A change that has no training impact.

8.12.2.5. The OCB will maintain a master list of all validated operational and MPT/MEP change requests. This master list will be revised and distributed to concerned organizations at least semi-annually.

8.12.2.6. When required, an ICBM SPO representative will brief the OCB on the status of all development and problem resolution efforts and provide analysis using prescribed metrics. The OCB will notify the ICBM SPO at least 5 days in advance of when a briefing is required.

8.12.2.7. When required, the ICBM SPO will provide the OCB a written report on the current status of changes underway. This report will include cost, schedule and technical status of all change requests being addressed. The OCB will distribute the report to concerned organizations.

8.13. Develop Solution:

8.13.1. The ICBM SPO will examine each change request it receives and determine if it is Category I or II. For Category II change requests, the ICBM SPO will develop trade studies of proposed design solutions based on the OCB's priority list, firm effective dates and prudent application of resources.

8.13.2. Level 1 representatives may work with the ICBM SPO as advisors on technical issues and requirements interpretation. This will include participation in requirements, design and test readiness reviews for software development efforts. The ICBM SPO will notify the OCB of all ICBM SPO program reviews including requirements, design and test readiness reviews. Level 1 representatives will be members of the ICBM SPO CCB. If the Level 1 representatives disagree with CCB decisions, the matter will be brought before the OCB for resolution with the CCB.

8.13.3. The ICBM SPO trade studies will include cost estimates, schedules, impacts to other systems/subsystems, interface changes, documentation affected, impact to other work in progress, risks involved and estimated source lines of code impacted. Each proposed solution will be technically feasible for implementation.

8.13.4. All proposed schedules will comply with response times IAW the HAC/RMPE Concept of Software Support. When creating schedules, the HSSF will plan for each Level 1 support action to take the maximum allowable time.

8.13.5. Workarounds. In some emergency situations, it may be necessary for system operators to respond with temporary solutions to restore the system to operational status. The ICBM SPO will provide engineering assistance to restore operations on a case-by-case basis as requested by the OCB. 20 AF/DO is the approving authority for all ICBM SPO workaround procedures.

8.14. Propose Solution:

8.14.1. For each change request, the ICBM SPO will forward a written response to the OCB. The written response will contain the trade studies of alternate solutions and make recommendations on which solution is preferable. The ICBM SPO will recommend combining change requests where feasible.

8.14.2. For emergency change requests, the ICBM SPO will determine if the change request is Category I or II. For Category I emergency change requests, a design solution will be pursued immediately. For Category II emergency change requests, the ICBM SPO will respond to the OCB within 24 hours with an estimate of the scope of change required and a plan to develop and provide solutions. The initial response to the OCB may be over the telephone with a written report to follow. The OCB and the ICBM SPO will negotiate the "present in the field date" based on the initial response.

8.15. Select Final Solution:

8.15.1. The OCB will select a final solution based upon the ICBM SPO proposals and recommendations. The OCB will consider schedule, cost and risk factors when selecting a solution. The ICBM SPO will advise the OCB, address the technical aspects of each option and provide further information as requested. The OCB will notify the ICBM SPO of the selected solution and send a copy to HQ SWC/XRT.

8.15.1.1. For routine and urgent change requests to HAC/RMPE software, the OCB will be allowed 3 working days after receipt of the ICBM SPO proposed solutions to select the final solution.

8.15.1.2. For emergency change requests to HAC/RMPE software, the OCB will be allowed 6 hours after receipt of the ICBM SPO proposed solutions to select the final solution.

8.15.2. Following OCB selection of a final solution, the ICBM SPO will generate ECPs for each affected baseline. The ECPs will define the solution and include cost estimates, schedules, impacts to other systems, an assessment of risk, any affected engineering drawings and other technical data impacted. To minimize paperwork and speed analysis, related change requests and ECPs will be combined into a single change package to the maximum extent practical.

8.15.3. Each ECP will be submitted to the ICBM SPO CCB with an information copy sent to HQ SWC/XRT. The SPO CCB will evaluate proposed changes for documentation, interface and weapon system integration impacts. The CCB will approve or disapprove the ECP. The AFSPC member of the SPO CCB will report the CCB proceedings and outcomes to the OCB. The CCB Directive (CCBD) and board minutes will formally reflect the disposition of each ECP. The SPO CCB will send a copy of the CCB minutes to the OCB; disapproved ECPs with the rationale for disapproval will also be sent to the OCB for further review.

8.15.4. RFTL revisions happen 3 times per year, once in conjunction with the SIOP revision and twice separately. Since the separate RFTL revision is a simple Category I change to RFTL database values, it will not go through the ECP/CCB process.

8.15.5. The OCB will notify the ICBM SPO if 576 FLTS and 20 AF/DO must be included in the software change process to ensure that 576 FLTS and 20 AF/DO personnel are familiar with the software release and have proper knowledge for conducting Operational Test and Evaluation (OT&E).

8.15.6. The OCB will notify the ICBM SPO, 20 AF/DO, the 381 TRG and HQ SWC/XRT when a system demonstration for system operators is required. A system demonstration will take place during Development Test and Evaluation (DT&E) or OT&E and is intended to ensure system operators understand the nature of an upcoming change in order to properly train combat crews and unit personnel.

8.16. Design and Modify Software:

8.16.1. Using the ECP, the HSSF will then implement the CCBD by formally designing the software change and performing the resulting source code modifications. SIOP and RFTL revisions will be incorporated into the appropriate database. The HSSF will design software changes using processes in compliance with Level 3 of the Software Engineering Institute's (SEI's) Capability Maturity Model (CMM), as a minimum.

8.16.2. Following modification, the HSSF will provide a SIOP training values database (received from 20 AF/DOME) along with the modified operational HAC/RMPE Message Processor software to the Contractor Logistical Support (CLS) contractor. These products become the basis for the MPT/MEP and test versions of the HAC/RMPE software. The CLS contractor will then integrate the changes and recompile the MPT Control Program. The CLS contractor will also integrate all changes into and recompile the MEP software. The CLS contractor will use an ICBM SPO provided VAX platform, engineering models and software tools for performing software integration and compilation activities. The VAX will be housed and maintained by the CLS contractor.