DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, DC 20314-1000

ER 10-1-54

CECW-CE

Regulation
No. 10-1-54

30 June 2013

Engineering and Design
ROLES AND RESPONSIBILITIES
MODELING, MAPPING, AND CONSEQUENCES PRODUCTION CENTER

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1. Purpose. This regulation establishes the roles and responsibilities of the national Modeling, Mapping, and Consequences (MMC) Production Center mandatory center of expertise and standardization located within the Vicksburg District, U.S. Army Corps of Engineers (USACE). This regulation has been prepared to comply with the requirements in ER 1110-1-8158, Corps Wide Center of Expertise Program.

2. Applicability. This regulation applies to USACE Commands responsible for Civil Works projects.

3. Distribution. This document is approved for public release. Distribution is unlimited.

4. References.

a. ER 10-1-51, Organizations and Functions – Roles and Responsibilities Dam Safety Modification Mandatory Center of Expertise

b. ER 11-1-320, Civil Works Emergency Management Programs

c. ER 1110-2-1156, Safety of Dams - Policy and Procedures

d. ER 1110-1-8158, Corps Wide Centers of Expertise Program

e. EC 1165-2-214, Civil Works Review

f. CECW-CE memo establishing MMC Production Center Standard Operating Procedures, 24 May 2010

g. CECW-CE memo, “Decision Paper for Recertification of the US Army Corps of Engineers Modeling, Mapping and Consequences Production Center Mandatory Center of Expertise and Standardization (CEMVK-MMC-MX)”, 18 July 2012

h. MMC Production Center Standard Operating Procedures, March 2013

5. Background. USACE has developed, through joint collaboration between the Critical Infrastructure Protection and Resilience (CIPR) Program, the Dam Safety Program and

the Levee Safety Program, an integrated set of technical capabilities and products to support risk assessment and management efforts for Corps civil works infrastructure. These capabilities are intended to support risk analysis efforts to improve the risk profile of Corps civil works infrastructure and prioritize life-cycle investments to enhance infrastructure resilience. The MMC Production Center was established in 2009.

a. The first MMC Production Center Standard Operating Procedures memorandum was distributed to USACE Dam Safety Officers by the HQUSACE Director, Engineering and Construction on 24 May 2010. Updated Standard Operating Procedures were distributed in April 2011. The current Standard Operating Procedures are dated March 2013. The USACE MMC Production Center was established as a national center of expertise charged with producing hydraulic models, inundation maps, consequence estimations, and detailed assessment reports following USACE national standards. The MMC Production Center has been providing technical expertise, support, and peer review for USACE dams, levees and related infrastructure to support the CIPR, Dam Safety and Levee Safety Programs since its inception.

b. The USACE Office of Homeland Security (CECW-HS), under the auspices of the CIPR Program, has collaborated with the U.S. Department of Homeland Security, designated as the Dams Sector-Specific Agency, in the development of a Consequence-Based Top Screen (CTS) methodology. The CTS methodology represents a consistent sector-wide process to identify and characterize high-consequence facilities. The MMC Production Center supports CECW-HS annual participation in this sector-wide prioritization process by applying the CTS methodology to USACE projects whose potential failure, damage, or disruption could lead to the most significant consequences. This systematic process provides the initial step of the security risk assessment and management framework needed to implement an effective CIPR program across USACE. The resulting consequence assessment studies also support CIPR's criticality screening and security risk assessment efforts.

c. The MMC Production Center supports USACE Safety Program risk assessment activities such as Periodic Assessments, Issue Evaluation Studies, Dam Safety Modification Studies, Base Condition Risk Assessments, Operational Risk Assessments, Emergency Action Plans, Training and Exercises during implementation of USACE Dam Safety and Levee Safety Program initiatives. A comprehensive list of roles and responsibilities for the USACE Dam Safety Program and CIPR Program are included as Appendix A and Appendix B, respectively.

6. Policy. The roles and responsibilities of the USACE MMC Production Center mandatory center of expertise and standardization (MMC-MX) are identified in the following sub-paragraphs.

a. Support. The MMC Production Center will serve as a national center of expertise that provides production capability, standards maintenance and technical advice for modeling, mapping and consequences estimation products required by the missions of

the USACE CIPR, Dam Safety and Levee Safety Programs routine and non-routine risk assessment activities.

(1) The MMC Production Center is a mandatory center of expertise for the following USACE activities.

(a) Developing modeling, mapping and consequences estimates and reports required for implementing the CTS methodology for USACE dams, levees and associated structures.

(b) Developing modeling, mapping and consequences estimates and reports required for Dam Safety Program routine and non-routine risk assessments such as Periodic Assessments and Issue Evaluation Studies and maintaining associated USACE standards for modeling, mapping and consequences products including standards for emergency action plan (EAP) maps.

(c) Developing modeling, mapping and consequences estimates and reports required for Levee Safety Program risk assessments and maintaining associated USACE production standards for modeling, mapping and consequences products.

(2) The MMC Production Center provides additional support to programs.

(a) Additional modeling, mapping and consequences-related activities of CIPR Program exercises and criticality screening and security risk assessment efforts for dams, levees and associated structures.

(b) Additional Dam Safety Program support including agency technical reviews (ATR); providing technical PDT members for dam safety modification projects; support beyond mandatory production tasks for Issue Evaluation Study risk assessments and documents as requested by the Risk Management Center (RMC); and support beyond mandatory production tasks for dam safety modification decision documents, design documentation reports and post-construction risk re-evaluation.

(c) Additional Levee Safety Program modeling, mapping and consequences-related activities as requested by the Risk Management Center and the National Levee Database Program Manager.

b. Policy Development. The MMC Production Center supports the continued development of national policy supporting the CIPR, Dam Safety and Levee Safety Programs and HQUSACE. The MMC Production Center identifies gaps in existing policy to HQUSACE and suggests improvements to existing policy. It also participates in HQUSACE strategic planning efforts as requested.

c. Quality Management. In accordance with EC 1165-2-209 the MMC Production Center is responsible for quality assurance and control for all products developed by the

center. In accordance with ER 1110-2-1156 the MMC Production Center maintains a quality management system for all products developed by the center. Key elements of the quality management system are defined below.

(1) The MMC Production Center executes an internal review program and produces interim drafts before finalizing products. Districts support this effort by performing independent quality reviews of the MMC-produced hydraulic models, inundation map atlases and consequence assessment reports prior to their official release.

(2) MMC Production Center standards, processes and quality review procedures are fully documented in the center's standard operating procedures (SOP) memorandum. The SOP is updated annually and distributed to all Dam Safety Officers and Dam Safety Program Managers.

(3) In order to ensure the MMC Production Center is measuring itself against enforceable customer service criteria and maintaining customer service quality standards established in the SOP a standard questionnaire is distributed to center customers. Results are summarized and reported annually. Results of the first annual questionnaire are summarized in reference g.

(4) The MMC Production Center is committed to measuring performance within an earned value management paradigm. Key performance metrics and earned value analyses are reported quarterly.

d. Data Management. Following CIPR, Dam Safety and Levee Safety Program guidance the MMC Production Center is responsible for managing and distributing modeling, inundation mapping and consequences estimation products developed by the center. As such the MMC Production Center must maintain a robust internal data management system for its production activities. Finalized MMC Production Center products for the Dam Safety and CIPR Programs are archived on the Risk Assessment for Dam Safety system (RADS II). Upon finalization, districts have responsibility for further local dissemination and incorporation of MMC products into local program products. The MMC may support national and regional release of data at the direction of the Headquarters Program Managers for CIPR, Dam Safety or Levee Safety as appropriate. MMC Production Center data management responsibilities involving the Corps Water Management System (CWMS), National Levee Database (NLD), and the National Inventory of Dams (NID) are in general keeping with the procedures established for Dam Safety MMC products whereby MMC-produced data are transferred upon finalization to the USACE element having primary data management responsibility.

e. MMC Production Center Management Group. The MMC Production Center Management Group consists of the MMC Production Center Director; MMC Production Center Modeling Branch, Mapping Branch and Consequences Branch Chiefs; and the liaisons to the CIPR, Dam Safety and Levee Safety Programs. These management

functions are widely distributed throughout USACE divisions and districts with the intent of obtaining MSC input into the operation of the center.

f. MMC Production Center Steering Committee. The MMC Production Center supports the CIPR, Dam Safety and Levee Safety programs under the general direction and oversight of the MMC Production Center Steering Committee. Committee members are the CIPR Program Manager; USACE Special Assistant for Dam and Levee Safety; Hydraulic, Hydrologic and Coastal (HH&C) Community of Practice (COP) Leader; Geospatial COP Leader; USACE Lead Economist; and Risk Management Center Director.

g. Technical Competency. The MMC Production Center is responsible for supporting efforts to coordinate technology development and to enhance USACE technical competency in the areas of consequences estimation and scientific and engineering analyses and mapping of dams and levees in coordination with the CIPR, Dam Safety and Levee Safety Programs. The MMC Production Center coordinates with COPs, districts and other agencies and organizations to develop relationships that promote competency in these areas.

(1) The MMC Production Center sustains national subject matter experts (SMEs) for modeling, inundation mapping and consequences estimation of dams, levees and associated structures.

(2) The MMC Production Center supports development of career paths within its organization structure and identifying skill gaps and planning to eliminate gaps in the technical areas of modeling, inundation mapping and consequences estimation of dams, levees and associated structures.

(3) The MMC Production Center develops and maintains training curricula and provides training on modeling, mapping and consequences assessment procedures for dams, levees and associated structures. This training combined with distributing work to district PDT members and mentoring them as they perform center tasks is the primary means in which the center strives to eliminate technical competency gaps.

h. A-E Services. The MMC Production Center will maintain sufficient A-E contracts to ensure the availability of specialized skills necessary for the advancement of the CIPR, Dam Safety and Levee Safety missions and program execution required for modeling, mapping and consequences estimation. The primary resources to execute the mission of the center will be district staff assigned to virtual PDTs managed by the MMC Production Center.

i. Coordination and Communication. The MMC Production Center shall actively maintain a web page on the Technical Excellence Network (TEN) or other designated knowledge management portal. The web based portal shall identify subject matter experts in the areas of modeling, mapping and consequences estimation of dams,

levees and associated structures. The MMC Production Center will coordinate with COPs, districts and other agencies/organizations to develop strategic partnerships that promote the advancement of the USACE MMC mission.

j. Support for Others. The MMC Production Center is the mandatory center of expertise and specialization for CIPR, Dam Safety and Levee Safety Programs modeling, mapping and consequences assessment as defined in paragraph 6a(1) and as such plays a key role in communicating with other agencies and stakeholders on topics central to the center's mission. The MMC Production Center also collaborates with other USACE centers and other agencies to develop standard processes and tools necessary for USACE to share vital information during a natural or man-made disaster. Funding for documentation and product development supporting outside agencies is through reimbursable funds.

k. Roles and Responsibilities – Overall Dam Safety Program. As noted above, a matrix providing a comprehensive listing of roles and responsibilities for the USACE Dam Safety Program is included as Appendix A. The matrix is published in several documents with the master version of the matrix published in ER 1110-2-1156. The master version of the matrix governs if future changes result in conflicts between ER 1110-2-1156 and the copy published in Appendix A of this regulation.

7. Organizational Structure/Command and Control. The MMC Production Center organization is under the command and control of the Vicksburg District Commander. The senior rater for the Director of the MMC Production Center is the Vicksburg District Commander. The Special Assistant for Dam and Levee Safety at HQUSACE may serve as the intermediate rater for the Director of the MMC Production Center. Appendix C graphically displays the command and control structure.

8. Conflict Resolution. In the event a conflict exists between the MMC Production Center (CEMVK-MMC-MX) and other Corps entities the Chief, Engineering and Construction Division, HQ shall have final decision making authority with recommendations from the MMC Steering Committee.

9. Funding. The MMC Production Center is a reimbursable organization. Funding for all activities of the MMC Production Center will be provided through Headquarters or project funds. Funding from Headquarters will generally consist of funds from the Guidance Update and Modification Program (GUMP) (GE account) and/or the National Programs for development of specific products. Project funds will be from the various accounts including Investigations, Construction, Operation and Maintenance, and Flood Control and Coastal Emergencies. Management functions will be charged to overhead.

10. HQUSACE Proponents. The HQUSACE proponents for the MMC Production Center are the USACE Chief of Engineering and Construction through the USACE Special Assistant for Dam and Levee Safety, and the CIPR Program Manager through USACE Office of Homeland Security.

11. Upward Reporting. The MMC Production Center submits monthly activity summary reports for the purpose of tracking project schedules, ongoing activities, and product development for Dam Safety, Levee Safety and CIPR assigned projects. A quarterly financial and quality management report is submitted to the HQUSACE proponent within two weeks of the conclusion of each quarter.

FOR THE COMMANDER:

Cheryl L. Partee

3 Appendixes
(See Table of Contents)

CHERYL L. PARTEE
Chief of Staff

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APPENDIX A

USACE Dam Safety Program
Roles and Responsibilities Matrix

A.1. Roles and Responsibilities. The USACE Dam Safety Program Roles and Responsibilities Matrix are published in several documents with the master version of the matrix published in Appendix N of ER 1110-2-1156. The master version of the matrix governs if future changes result in conflicts to arise between ER 1110-2-1156 and the copy published in other documents.

A.2. Legend of Role Symbols and Organizational Symbols. The Symbols used in the matrices are defined in Tables A.1 and A.2.

Table A.1 – Legend of Symbols

P	Primary - This represents the organization that primarily executes this role/task.
O	Oversight - This organization will provide the oversight to verify effective execution.
S	Support - This organization would be expected to be involved in supporting this activity on a regular basis (It is noted that all the organizations will support every function as necessary, but the "S" indicates the expectation of a more routine and higher level of support).
M	Mandatory - This is a mandatory role/function for this organization. Other organizations are mandated to utilize this organization for this function or this organization is mandated to maintain this service for use by the Agency. The details of this mandate will be defined within the Engineering Regulation establishing each center.

Table A.2 – Organizational Symbols

HQ	Headquarters, USACE
MSC	Major Subordinate Commands (Regions/Divisions)
Districts	Local Geographic Corps of Engineers District
RMC	Risk Management Center
ERDC	Engineering Research and Development Center
DSPC	Regional Dam Safety Program Centers
DSMMCX	Dam Safety Modification Mandatory Center of Expertise
MMC	Modeling, Mapping, and Consequence Center of Expertise
DSOG	Dam Safety Senior Oversight Group
DSPCMG	Dam Safety Production Center Management Group
DSSC	Dam Safety Steering Committee
DSPPT	Dam Safety Policy and Procedures Team
DSPCSC	Dam Safety Production Center Steering Committee

A.3. Roles and Responsibilities Matrix. The matrix consists of three tables for Overall Management, Routine Management, and Dam Safety Modification Management (Tables A.3, A.4, and A.5).

Table A.3 – Overall Dam Safety Program Management

Responsibilities	HQ	MSC	District	RMC	ERDC	DSPC	DSMMCX	MMC	DSOG	DSPC MG	DSSC	DSPPT	DSPC SC
Overall Dam Safety Program Management													
Periodic review/approval of centers	M			S			S	S			S		
Participation in NDSRB and ICODS	P	S		S	S			S			S		
Select/Appoint/Approve USACE DSO	M								S				
Select/Appoint/Approve Regional DSO	O	M											
Sustain National SME's in Dam Safety engineering	O	S	S	S	S	S	M	S		O	O		
Sustain Regional SME's in Dam Safety engineering		O	S			M							
QMS (Dam Safety National level)	M	S		S	S		S	S	S	S	S	S	
Quality Management System for DS Risk Products	O			M		S	S	S					
Quality Management System for MMC Products	O			O				M					
Management of Dam Safety Records													
Maintain project records for USACE dams			M			S							
Maintain project records for routine activities	O	O	M	S	S			S			O		
Maintain project records for DS modification activities	O	O	S	S	S	M	O	S		O			
Maintain TEN for centers	M			S	S		S	S					
Budget development	M	s	S	S	S	S	S	S	O				
Policies/Procedures	M	S	S	S	S	S	S	S			O	S	
Strategic Planning	M	S		S	S	S	S	S	S	S	S	S	O
Initiate and Manage Strategic Partnerships	M	s		S			S	S			O		
Asset Mangement	O	P	S	S							S		
R&D	O	S	S	S	M		S	S			S	S	
Maintain National A-E contracts experienced in dam engineering	O		S	S		S	M	S		O			
Maintain Regional A-E contracts experienced in dam engineering			S	S		P	S	S					
Manage Dam Safety Portfolio/DSAC	M	S	S	S		S	S	S	O				
Portfolio Risk Communication	M	S	S	S		S	S				S		
Project Risk Communication	O	S	M	S		S	S	S					

Table A.4 – Routine Dam Safety Program Management

Responsibilities	HQ	MSC	District	RMC	ERDC	DSPC	DSMMCX	MMC	DSOG	DSPC MG	DSSC	DSPPT	DSPC SC
Routine Dam Safety Program Management													
Quality Management System (Regional)	O	P	S										
Quality Management System (District)													
Develop Processes for QMS	O	O	P										
Develop Performance Measurements	P	S	S	S							S	S	
Track Performance (Including DS Scorecard)	O	O	P								S	S	
QC Reviews		O	P	O									
ATR	O	O	S	M									
IEPR Type II	O	O	S	M									
Manage Routine Dam Safety Program													
Select/Appoint/Approve District DSO	O	O	M										
Select/Approve District DSPM		O	P										
Conduct Dam Safety Committee Meetings (Regional)	O	M	S										
Conduct Dam Safety Committee Meetings (District)		O	M										
Periodic Inspection	O	O	M								O		
Periodic Assessment													
Facilitate Risk assessment/PFMA	O	O		M									
Perform Risk Assessment and Prepare Documentation	O	O	M	S				S					
Produce Mapping, Models and Consequences	O	O	S	S				M					
Instrumentation Program	O	O	M	S		S					O		
Develop/Maintain IRRMP and Implement IRRMs	O	O	M	O		S		S			O		
Develop/Maintain and Implement IOP	O	O	M	O		S		S			O		
Dam Safety Training (For Dam Operators, etc)	O	O	M								O		
Emergency Action Plans	O	O	M					S			O		
Emergency Engineering Services/Floodfighting, etc.	S	S	P	S	S	S	S	S			O		
Technical Competency (TC) Management													
Coordinate with CoPs to identify agency gaps in DS Skills	P	S	S	S							S		
Develop/Maintain Training Curricula to close gaps	P	S	S	S							S		
Develop District level plan to eliminate gaps	O	S	P								S		
Implement Plan to eliminate TC gaps	O	S	P	S							S		
Coordinate/Integrate with Related CoPs	O	S	P	S				S			S		
Manage Routine Dam Safety Projects													
Establish the Project Management Plan		O	M										
Project Management (PM)		O	M										
Lead Engineer		O	M										
Non-Technical PDT Members		O	M										
Technical PDT Members (in-house/A-E)		O	M			S		S					
Construction PDT Members		O	M										
Design Documentation Report		O	P					S					
Production of Plans and Specifications		O	P										
Cost Engineering Services		O	P										
Engineering & Design during Construction		O	P										
Advertise, Award and Administer Construction Contract		O	P										

Table A.5 – Dam Safety Modification Program Management

Responsibilities	HQ	MSC	District	RMC	ERDC	DSPC	DSMMCX	MMC	DSOG	DSPC MG	DSSC	DSPPT	DSPC SC
Dam Safety Modification Program Management													
Quality Management System	O	O	S	O		P	O			S		S	
Develop Performance Measurements	O	O	S	S		S	M	S		S			
Track Performance	O	O	S	S		P	M			S			
Project Review Plans	O	O	M	O		S							
QC Reviews		O	S	P		P	O	P					
ATR	O		S	M		P	P	S					
IEPR	O		S	M		S							
Manage Dam Safety Modificaton Mission													
Manage and coordinate SOG activities	M			S		S	S	S	P				
Chair Dam Safety Production Steering Committee	M												
Chair DSPC Management Group meetings							M						
DSPC Management Group meeting members	M			M		M	M	S					O
Technical competency Management													
Develop Dam Safety Engineer career path	O	S		S		S	M	S		S	O		O
Coordinate with CoPs to identify gaps in DS Skills	O		S	S		S	M	S		S			O
Develop a plan to eliminate gaps	O	S	S	S		S	M	S		S			O
Develop/Maintain Training Curricula	O			S			M	P		S			O
Implement Plan to eliminate TC gaps	O	S	S	S		S	M	P		S			O
Develop a mentoring program for DS	O	S	S	S		S	M	S		S			O
Implement/execute mentoring program	O	S	S	S		S	M	P		S			O
Maintain the Dam Safety Investment Plan	O	S	S	O		S	M	S		S			O
Coordinating workload among DSPCs	O	S	S	S		S	M			S			O
Coordinate/Integrate with Related CoPs	M	S	S	S		S	S	S				O	
Ensure districts receive effective service	O	S		S		M	O	S		S			O
Reimbusable support for others (national)	O	P	S	S		S	S	S		S			O
Reimbusable support for others (international)	P	S	S	S		S	S	S		S			O
408 implementation	O	O	P			S	S						
Manage Dam Safety Modification Projects													
Establish the Project Management Plan	O		M	S		O	O	S					
Project Manager		O	P										
Lead Engineer	O	O				M	O						
Non-Technical PDT Members		O	P										
Technical PDT Members (in-house/A-E)		O	S	S		P	O	S					
Construction PDT Members		O	P			O	S						
Issue Evaluation Studies													
Risk assessment	O	S	S	M	S	S	S	S	O				
Document Preparation	O	O	M	S		S	S	S	O				
Produce Mapping, Models and Consequences	O		S	O		S	S	M	O				
Dam Safety Modifications													
Preparation of Decision Documents (DSMS/R)	O	O	S	O		M	O	S	O	O			
Design Documentation Report	O	O	S	O		P	O	S	O				
Production of Plans and Specifications	O	O	S	O		P	O		O				
Cost Engineering Services	O	O	S	O		P	O		O				
Engineering & Design during Construction	O	O	S	S		P	O						
Advertise, Award and Administer Construction Contract	O	O	M			S	S						
Re-evaluation post-construction risk	O		S	M		S	S	S	O				

Appendix B

USACE Critical Infrastructure Protection and Resilience (CIPR) Program Roles and Responsibilities

B.1. The U.S. Army Corps of Engineers (USACE) Office of Homeland Security (CECW-HS), under the auspices of the Critical Infrastructure Protection and Resilience (CIPR) program, leads USACE's efforts to develop, implement, and sustain an integrated security risk assessment and management framework for Corps civil works critical infrastructure. These risk management activities actively promote the implementation of the USACE Campaign Plan Goal 3b (*Improve Resilience and Lifecycle Investment in Critical Infrastructure*).

a. The CIPR program has collaborated with the U.S. Department of Homeland Security, designated as the Dams Sector-Specific Agency, in the development of a Consequence-Based Top Screen (CTS) methodology. The CTS methodology represents a consistent sector-wide process to identify and characterize high-consequence (critical) facilities. "Critical infrastructure" is defined as systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters; see USA PATRIOT Act of 2001. This definition has also been adopted, by reference, in the Homeland Security Act of 2002.

b. CECW-HS participates each year in this sector-wide prioritization process by applying the CTS methodology to USACE projects whose potential failure, damage, or disruption could lead to the most significant consequences. The CTS methodology includes a consequence-based prioritization procedure, which is applied to projects meeting one or more of the criticality thresholds identified by the Dams Sector. This systematic process provides the initial step of the security risk assessment and management framework needed to implement an effective CIPR program across USACE by informing decisions regarding the need for additional analyses and security risk assessments. The development of consequence assessment studies to support criticality screening and security risk assessment efforts is supported through a national cadre associated with the USACE Modeling, Mapping, and Consequence Estimation (MMC) Production Center under the oversight of the CIPR program.

B.2. The USACE CIPR policy is outlined as part of Engineering Regulation ER 1110-2-1156, "Engineering and Design Safety of Dams – Policy and Procedures", Chapter 23 (Physical Security of Dams), dated 28 October 2011. Chapter 23 delineates corporate guidance to division and district personnel on conducting security risk assessments for Civil Works critical facilities (e.g. dams and navigation locks). This guidance describes the consequence-based process used to screen, identify, and prioritize high-consequence (critical) civil works projects as the initial step to conduct security risk assessments, and identifies the security risk assessment methodology (Common Risk Model for Dams) to be applied to civil works critical projects.

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Appendix C

Modeling, Mapping, and Consequences (MMC) Production Center
Command and Control