Army Regulation 50–7

Nuclear and Chemical Weapons and Materiel

Army Reactor Program

Headquarters
Department of the Army
Washington, DC
28 March 2009

UNCLASSIFIED

SUMMARY of CHANGE

AR 50–7
Army Reactor Program

This major revision, dated 28 March 2009--

- Changes responsibility for Nuclear Accident or Incident Response and Assistance from Commanding General, Training and Doctrine Command to the Deputy Chief of Staff, G-3/5/7 (para 1-8).

- Adds responsibility for the Office of the Provost Marshal General to provide security comment and review during reactor studies (para 1-12).

- Changes responsibility for administering the Reactor Staff Certification Program from commanders responsible for reactor facilities to the reactor facility director (para 1-24*f*).

- Revises Army Reactor Program objectives to clearly emphasize safety, security, radiation exposure (as low as reasonably achievable) maintenance, and environmental concerns (para 1-28).

- Updates the membership of the Army Reactor Council (para 1-29*b*).

- Revises titles of required reactor documentation to be consistent with industry terminology (table 2-1).

- Revises Operational Reviews and the Department of the Army Inspector General inspections and evaluations (chap 5).

- Combines chapter 7, Operator Requirements and chapter 8, Operator Training Program into one chapter, chapter 7, Operator Qualification and Training (chap 7).

- Provides additional guidance for behaviors expected of reactor operators, reactor leaders, and senior reactor leaders to be consistent with industry standards (para 7-5).

- Revises the protocol of the Army Reactor Council’s Operational Review (app B).

- Makes administrative changes throughout.

Headquarters
Department of the Army
Washington, DC
28 March 2009

*Army Regulation 50–7

Effective 28 April 2009

Nuclear and Chemical Weapons and Materiel

Army Reactor Program

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the Secretary of the Army

History. This publication is a major revision.

Summary. This regulation establishes policies, assigns responsibilities, and prescribes procedures for implementing the Army Reactor Program to ensure that Army reactors are operated in a safe, secure, and reliable manner from activation through decommissioning. This regulation designates the Deputy Chief of Staff, G–3/5/7 as the proponent of the Army Reactor Program and establishes the Army Reactor Office under the U.S. Army Nuclear and Combating Weapons of Mass Destruction Agency to coordinate the Army Reactor Program.

Applicability. This regulation applies to the Active Army, the Army National Guard/Army National Guard of the United States, the U.S. Army Reserve, and the Army civilian employees. During mobilization, the proponent may modify the procedures in this publication to support policy changes as necessary.

Proponent and exception authority. The proponent of this regulation is the Deputy Chief of Staff, G–3/5/7. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this regulation by providing justification that includes a full analysis of the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25-30 for specific guidance.

Army management control process. This regulation does not contain management control provisions.

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from the Deputy Chief of Staff, G–3/5/7, 400 Army Pentagon, Washington, DC 20310–0430.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publication and Blank Forms) directly to the Office of the U.S. Army Nuclear and Combating Weapons of Mass Destruction Agency (MONA–CWA), 7150 Heller Loop, Suite 101, Springfield, VA 22150–3198 with a copy furnished to the Office of the Deputy Chief of Staff, G–3/5/7, 400 Army Pentagon, Washington, DC 20310–0430.

Distribution. This regulation is available in electronic media only and is intended for command levels C, D, and E for the Active Army, the Army National Guard/ Army National Guard of the United States, and the U.S. Army Reserve.

Contents (Listed by paragraph and page number)

*This publication supersedes AR 50–7, dated 16 August 1996.

UNCLASSIFIED

Contents—Continued

Contents—Continued

Contents—Continued

Table List

Glossary

Chapter 1
Introduction

Section I
General

1–1. Purpose
This regulation establishes Department of the Army (DA) policies, assigns responsibilities, and prescribes procedures for the Army Reactor Program (ARP). The purpose of the ARP is to ensure that Army reactors are operated in a safe, secure, and reliable manner from activation through decommissioning. This regulation designates the Deputy Chief of Staff, G–3/5/7 (DCS, G–3/5/7) as the proponent for the ARP, and the U.S. Army Nuclear and Combating Weapons of Mass Destruction Agency (USANCA) as the focal point for the management of the ARP and the Army Reactor Office (ARO).

1–2. References
Required and related publications and prescribed and referenced forms are listed in appendix A.

1–3. Explanation of abbreviations and terms
Abbreviations and special terms used in this regulation are explained in the glossary.

Section II
Responsibilities

1–4. The Assistant Secretary of the Army (Installations and Environment)
Assistant Secretary of the Army (Installations and Environment). The Assistant Secretary of the Army (Installations and Environment) provides policy, program guidance, and oversight for reactors and reactor property undergoing decommissioning to ensure safety, environmental, and occupational health statutory compliance.

1–5. The Assistant Secretary of the Army (Acquisition, Logistics and Technology)
Assistant Secretary of the Army (Acquisition, Logistics and Technology). The Assistant Secretary of the Army (Acquisition, Logistics and Technology) provides guidance on the management of reactors used for research, development, and testing.

1–6. The Deputy Chief of Staff, G–1
a. Deputy Chief of Staff, G–1. The Deputy Chief of Staff, G–1 provides general staff supervision for personnel reliability and establishes personnel policies to support implementation of the Army Nuclear Surety Program.

b. Monitors personnel standards and procedures to ensure effective and uniform implementation of the Personnel Reliability Program (PRP).

1–7. The Deputy Chief of Staff, G–2
Deputy Chief of Staff, G–2. The Deputy Chief of Staff, G–2—

a. Supervises counterintelligence support to reactor sites and activities.

b. Established the Army Personnel Security Program (AR 380–67).

1–8. The Deputy Chief of Staff, G–3/5/7
Deputy Chief of Staff, G–3/5/7. The DCS, G–3/5/7 has responsibility and advocacy for the ARP operations. The DCS, G–3/5/7—

a. Coordinates policy for the ARP.

b. Establishes policies for the safe, secure, and reliable operation of Army reactors.

c. Implements DOD surety policies.

d. Functions as the Army Staff (ARSTAF) single point of contact for reactor matters, except for radiation safety issues which are under the purview of the Army Safety Office.

e. Provides surety review and comment during reactor studies.

f. Coordinates on surety issues of all reactor study reports.

g. Integrates other ARSTAF program responsibilities into the ARP.

h. Approves reactor facility reliability operating standards and certification process.

i. Approves, in coordination with policy proponents when appropriate, policy and procedures for the authorization, acquisition, accounting, control and disposition of nuclear reactors and reactor fuel.

j. With concurrence of the Assistant Chief of Staff for Installation Management (ACSIM) and the Director of Army

Safety (DASAF), approves environmental protection and monitoring management policy and procedures and ensures that all environmental documentation required by AR 200–1 is properly prepared.

k. With concurrence of the ACSIM and the DASAF.

(1) Approves decommissioning strategy policy and execution procedures.

(2) Approves deactivated reactor environmental, safety, and security standards.

(3) Approves deactivated reactor management policy.

l. In coordination with DASAF.

(1) Approves each reactor study report identified in table 2–1 of this regulation before the ARO issues the appropriate permit.

(2) Approves permit amendments.

(3) Approves the removal of permit suspensions.

m. Limits authorization for operation of a reactor facility, either active or deactivated, and possession of reactor fuel to the first general officer or Senior Executive Service member in the chain of command.

n. Provides a member to the Army Reactor Council (ARC). This member is normally from the Office of the Director of Strategy, Plans, and Policy.

o. Develops and publishes guidance for Nuclear Accident or Incident Response and Assistance (NAIRA).

1–9. The Deputy Chief of Staff, G–4

Deputy Chief of Staff, G–4. The Deputy Chief of Staff, G–4—

a. Manages logistical aspects of the ARP.

b. Develops policy and procedures for the authorization, acquisition, accounting, control, and disposition of nuclear reactors and nuclear material.

1–10. The Assistant Chief of Staff for Installation Management

Assistant Chief of Staff for Installation Management. The Assistant Chief of Staff for Installation Management—

a. Provides policy guidance on environmental protection and environmental restoration issues pertaining to both active and inactive reactors.

b. Provides oversight of installation restoration activities associated with the closure of reactor sites.

c. Provides assistance to the ARC in developing deactivated reactor environmental standards.

d. Provides a member to the ARC.

1–11. The Inspector General

Inspector General. The Inspector General directs and performs independent inspections and evaluations of the ARP to ensure compliance with the reactor policies established by the DCS, G–3/5/7 and other agencies within and outside the Department of Defense (DOD).

1–12. The Provost Marshal General

Provost Marshal General. The Provost Marshal General—

a. Provides security review and comment during reactor studies.

b. Coordinates security issues of all reactor study reports.

c. Establishes policies for the security of Army Reactors (AR 190–54).

d. Provides a member to the ARC.

1–13. The Surgeon General

Surgeon General. The Surgeon General—

a. Establishes medical policies and procedures in support of the ARP.

b. Provides policy and guidance on occupational and public health.

c. Provides policy and guidance on the medical aspects of programs to train and certify personnel.

d. Participates in reactor studies as required.

e. Provides a member to the ARC. The radiological hygiene consultant normally fulfills this responsibility.

1–14. The Director of Army Safety

Director of Army Safety. The Director of Army Safety (DASAF), Office of the Chief of Staff, Army, as proponent for Army Safety (in accordance with AR 385–10) and Army Radiation Safety (in accordance with DA Pam 385–24)—

a. Oversees the Army-wide radiation safety program.

b. Coordinates on all reactor studies and on any other action identified by the ARO that involves reactor safety.

c. Coordinates Department of Energy (DOE) assistance in support of reactor health and safety under provisions of section 91*b* of the Atomic Energy Act of 1954, Section 2121(b), title 42, United States Code, through the Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs).

d. In coordination with DCS, G–3/5/7.

(1) Approves each reactor study report identified in table 2–1 of this regulation before the ARO issues the appropriate permit.

(2) Approves permit amendments.

(3) Approves the removal of permit suspensions.

e. Implements Nuclear Accident Investigation Board responsibilities.

f. Provides a health physicist and a safety professional to serve as members of the ARC.

g. Provides assistance to the ARC in developing deactivated reactor safety standards.

h. Serves as DA focal point for reactor and decommissioning safety issues.

1–15. The Chief of Public Affairs

Chief of Public Affairs. The Chief of Public Affairs manages public affairs activities in support of the ARP.

1–16. The Commander, United States Army Corps of Engineers/Chief of Engineers

Commander, U.S. Army Corps of Engineers/Chief of Engineers. The Commander, U.S. Army Corps of Engineers/Chief of Engineers—

a. Acts as the single point of contact at Headquarters, Department of the Army (HQDA) for nuclear reactor engineering and design, reactor construction, and decommissioning design and implementation.

b. Develops procedures for compliance and ensures compliance with all safety and environmental requirements for deactivated reactors.

c. Conducts decommissioning studies and report status of reactor facilities undergoing decommissioning, with a copy furnished to the DASAF.

d. Ensures compliance with environmental requirements for designing, constructing, and decommissioning Army nuclear reactors. Informs the ARO of the status of the National Environmental Policy Act process for reactors.

e. Coordinates on all pre-construction, preoperational, initial, or decommissioning reactor studies.

f. Coordinates on all operational and special reactor studies that have the potential for major modifications that would affect reactor systems safety or security or could cause significant revision to the facility decommissioning plan as determined by the ARO.

g. Participates in reactor audits and studies, as requested.

h. Executes environmental restoration activities as directed by the ACSIM.

i. Provides a member to the ARC.

j. Formulates decommissioning strategy and execution procedures.

k. Develops deactivated reactor management policy.

1–17. The Director, U.S. Army Nuclear and Combating Weapons of Mass Destruction Agency

Director, U.S. Army Nuclear and Combating Weapons of Mass Destruction Agency. The Director, U.S. Army Nuclear and Combating Weapons of Mass Destruction Agency—

a. Manages the ARP for the DCS, G–3/5/7.

b. Establishes and maintains the ARO, and designates the Army Reactor Program Manager (ARPM).

c. Serves as focal point for interaction and coordination with DOD, DOE, Nuclear Regulatory Commission (NRC), other Federal and State agencies, and Army agencies involved in the ARP.

d. Issues reactor permits and amendments, in coordination with the DASAF.

e. Issues certification letters to applicants who successfully complete the reactor operator certification process.

f. Conducts reactor studies and supporting activities as required.

g. Forwards reactor studies and proposals contained in table 2–1 of this regulations to the DCS, G–3/5/7 and DASAF for approval.

h. Oversees reactor system audits.

i. Performs Quality Assurance Program Reviews.

j. Develops and issues design and evaluation criteria for reactors based on the ARP objectives described in this regulation.

k. Reviews reactor personnel training requirements, certification procedures, and qualification criteria to assure compatibility with applicable national nuclear standards.

l. Authorizes tests and experiments which are not addressed in existing reactor documents.

m. Performs other reactor related tasks as directed by the DCS, G–3/5/7.

n. Establishes, serves as Chairman, and provides a member to the ARC.

o. Provides chairperson, executive secretary, and staff support required for each study conducted by, or directed by, the ARC.

p. Determines agencies that will be required to provide members to augment the ARC personnel.

q. Requests participation in reactor studies from appropriate agencies.

r. Provides the Director of Strategy, Plans and Policy, DCS, G–3/5/7, an annual report that contains the status of open ARC recommendations with copies provided to the Radiological Hygiene Consultant (Office of The Surgeon General) and the DASAF.

s. Establishes reactor facility reliability operating standards and certification process based on Federal statutes and DOD directives.

t. Oversees United States Army Corps of Engineers (USACE) decommissioning execution.

u. Oversees USACE execution of deactivated reactor management program.

v. Establishes security classification guidance for the ARP.

1–18. The Commanding General, U.S. Army Test and Evaluation Command

Commanding General, U.S. Army Test and Evaluation Command. The Commanding General, U.S. Army Test and Evaluation Command—

a. Provides guidance for management of the Army's operational testing, developmental and continuous evaluation programs.

b. Provides a member to the ARC.

1–19. The Commander, U.S. Army Installation Management Command

Commander, U.S. Army Installation Management Command. The Commander, U.S. Army Installation Management Command—

a. Ensures subordinate commands provide base support to reactor facilities on post.

b. Authorizes subordinate commands to enter memoranda of understanding to support the reactor permit holder/mission commander.

1–20. The Director, U.S. Army Test and Evaluation Office

Director, U.S. Army Test and Evaluation Office. The Director, U.S. Army Test and Evaluation Office—

a. Implements a surety program in accordance with AR 50–5.

b. Provides guidance on the U.S. Army Test and Evaluation Command (ATEC) testing program.

1–21. Commanders, Army Commands, Army Service Component Commands, and Direct Reporting Units possessing nuclear reactors

Commanders, Army Commands, Army Service Component Commands, and Direct Reporting Units possessing nuclear reactors. The Commanders, Army Commands, Army Service Component Commands, and Direct Reporting Units possessing nuclear reactors will—

a. Ensure that command nuclear health, surety, security, and safety programs are consistent with AR 50–5, AR 190–54, DA Pam 40–18, DA Pam 385–24, and this regulation.

b. Notify the ARO of plans to build or acquire a reactor as early as possible in the development process and before applying for a reactor system construction permit.

c. Apply for appropriate reactor permits by submitting the documents listed in table 2–1 of this regulation to the ARO.

d. Send reports and plans required by this regulation to the ARO.

e. Provide technical support and data to the organizations participating in nuclear reactor studies.

f. With USACE, implement a quality assurance program for designing, constructing, and decommissioning reactor facilities and for major modifications that affect reactor system safety or security.

g. Establish a reactor safety program.

h. Forward changes to the reactor facility which involve positive unreviewed safety questions (USQs) or a change to the technical specifications through command channels to the ARC for review.

i. Send requests for conducting tests or experiments that are not addressed in existing nuclear reactor documents to the ARO.

j. Submit security/augmentation force requirements to HQDA in the appropriate force submission system to allow HQDA to allocate taskings to the appropriate force providers and provide Army Force Generation/Global Force Management (ARFORGEN/GFM) system visibility.

k. Provide a member to the ARC.

1–22. Commanders of subordinate commands possessing nuclear reactors

Commanders of subordinate commands possessing nuclear reactors. The commanders of subordinate commands possessing nuclear reactors will—

a. Implement a surety program in accordance with AR 50–5.

b. Review reports and activities of the Reactor Facility Safety Committee (RFSC), and provide a copy of the minutes through command channels to the ARO for subsequent ARC review.

c. Forward changes to the reactor facility which involve positive USQs or a change to the technical specifications through command channels to the ARC for review.

d. Conduct reviews of reactor safety, security, operations, and personnel reliability programs. Manage the workload of the test facilities.

e. Submit security/augmentation force requirements to HQDA in the appropriate force submission system to allow HQDA to allocate taskings to the appropriate force providers and provide ARFORGEN/GFM system visibility.

f. Provide a member to the ARC.

1–23. Commanders responsible for reactor facilities

Commanders responsible for reactor facilities. The commanders responsible for reactor facilities will—

a. Ensure the safety, security, and reliability of reactor operations.

b. Implement a nuclear surety program in accordance with AR 50–5.

c. Implement a safety program in accordance with AR 385–10, and designate, in writing, a person to be the Reactor Radiation Safety Officer (RRSO) for the reactor facility.

d. Develop and implement SNM inventory procedures and perform an annual inventory.

e. Organize a RFSC.

f. Forward changes to the reactor facility which involve positive USQs or a change to the technical specifications through command channels to the ARC for review.

g. Provide a representative to the ARC.

h. Identify, investigate, report, and correct problems that affect the ARP.

i. Submit security/augmentation force requirements to HQDA in the appropriate force submission system to allow HQDA to allocate taskings to the appropriate force providers and provide ARFORGEN/GFM system visibility.

j. Develop a crisis communication plan to inform workforce and general public in the event of an incident.

1–24. Reactor facility directors

Reactor facility directors. The reactor facility directors will—

a. Manage a safe, secure, and reliable reactor facility.

b. Establish a reactor staff training program for reactor operators.

c. Report to the ARO and ARC any safety defects or positive USQs involving reactor operations.

d. Forward changes to the reactor facility which involve USQs or a change to the technical specifications through command channels to the ARC for review.

e. Implement a quality assurance program.

f. Administer the Reactor Staff Certification Program.

1–25. Reactor safety manager

Reactor safety manager. The reactor safety manager (RSM) is the point of contact, independent of the reactor operations staff, for safety matters. As independent advisor to the responsible reactor facility commander, the RSM identifies safety problems to the reactor facility director and responsible reactor facility commander for resolution. The RSM performs duties in accordance with this regulation.

Section III
The Army Reactor Program

1–26. Policy

The Army's reactor policy is to follow NRC guidelines, as well as the recommendations of the National Council on Radiation Protection and Measurements, and American National Standards Institute (ANSI).

1–27. The Army Reactor Program concept

The ARP establishes policies, assigns responsibilities, and prescribes procedures to ensure that Army reactors are designed, constructed, operated, maintained, and decommissioned in a safe secure, and reliable manner, in compliance with laws, regulations and agreements, and consistent with sound practices. It also provides controls to prevent the loss of special nuclear material (SNM), nuclear accidents, incidents, or unauthorized reactor operations.

1–28. The Army Reactor Program objectives

The ARP objectives provide positive measures that—

a. Minimize the probability of a reactor accident or incident.

b. Minimize the severity of a reactor accident or incident.

c. Maintain radiation exposures to the public, the environment, and operating personnel to levels within regulatory limits and as low as reasonably achievable (ALARA).

d. Ensure adequate physical security of reactor facilities and special nuclear material.

e. Ensure regulatory compliance with environmental and transportation requirements.

f. Ensure reactor facilities undergoing decommission meet unrestricted release conditions. Decommissioning to a lesser standard requires ARC approval to protect current and future Army interests.

1–29. Army Reactor Council

a. The ARC is chartered by DCS, G–3/5/7 to provide overall executive oversight which assures that the ARP complies with DOD directives concerning—

(1) Reactor safety.

(2) Radiation exposures of personnel and the general public.

(3) Environmental protection.

(4) Physical security of special nuclear material.

b. The members of the ARC are from the DCS, G–3/5/7; DASAF; USANCA; USACE; Office of the Provost Marshal General (OPMG); Office of The Surgeon General (OTSG); ACSIM; ATEC; ACOMs; ASCCs and DRUs with reactor facilities; and subordinate commands possessing reactor facilities. Representatives to the ARC are from commands responsible for reactor facilities.

c. The ARC—

(1) Monitors the utilization of operating Army reactors and coordinates within the Army and with other Services and Defense agencies to assure that the ARP is fully responsive to national nuclear testing, research, and other requirements.

(2) Approves proposals for new reactors and sponsors associated technical studies, as required.

(3) In coordination with the ACSIM, approves decommissioning decisions and plans and certifies when decommissioning actions are completed. Approves changes to the reactor facilities which involve USQs or a change to the technical specifications.

(4) Reviews the manpower and funding level of the ARPs and initiates appropriate action to remedy deficiencies in operational staffing. This is particularly important because the reactors require minimum baseline funding and staffing to maintain expertise and assure compliance with mandatory requirements. Reactors undergoing major modifications or decommissioning actions may require a significant multi-year funding commitment.

(5) Conducts an Operational Review, to include health, environmental protection, safety, and security, to provide assurance that Army nuclear reactor systems are designed, built, and operated in accordance with all legal requirements.

(6) Meets as required, and at least semiannually.

1–30. Army Reactor Office

a. The ARO is an organizational element of USANCA, under the leadership of the ARPM.

b. The ARPM—

(1) Manages the ARO.

(2) Serves as Executive Secretary to the ARC.

(3) Monitors Federal statutes and DOD instructions to ensure their inclusion, as required, in Army regulations and policy applicable to the ARP.

(4) Convenes meetings of the ARC as required, but at least semiannually.

(5) Tracks disposition of issues raised by the operating commands or others for action.

(6) Follows up on ARC decisions through studies, changes to Army regulations, resource allocation, or other means.

(7) Engages consultants to perform expert studies when required.

(8) Issues an annual report on the ARP, incorporating input from the ARC and from each reactor project.

(9) Participates in Department of the Army Inspector General (DAIG) reactor facility inspections (RFIs) and nuclear management evaluations (NMEs) as requested.

(10) Obtains resolutions of Army regulations and directives.

(11) Collects, coordinates and provides guidance on the mission and operation of operating and proposed reactors and resources required to support operation and regulatory requirements.

(12) Tracks unresolved issues to resolution.

(13) Coordinates with non-Army agencies concerning reactor projects and utilization to avoid duplication and maximize use of DOD resources.

(14) Reviews reactor system documents and changes contained in table 2–1 of this regulation.

(15) Keeps HQDA, Office of the Chief of Public Affairs informed of reactor operations, including, but not limited to, Serious Incident Reports, commissioning and decommissioning plans, routine reports and studies.

1–31. Supplemental guidance

a. This regulation establishes safety, environmental compliance, security, and reliability of Army reactors, both active and inactive, as command responsibilities.

b. This regulation does not restrict the authority of a commander to deviate from normal policies and procedures in an emergency, if compliance would aggravate the situation or prevent return to a normal operating environment. The commander will make required reports (in accordance with AR 50–5 and AR 385–10) in a timely manner and coordinate with proper authorities to the maximum extent possible to ensure that inappropriate actions do not exacerbate the situation. The report will include any deviations from policy that the commander approved.

c. Commanders may reference this regulation as authority to request support or equipment necessary to implement authorized optional procedures to enhance the safety and security of nuclear reactors for which they are responsible.

d. The ARP, the ARO, and the ARC have been established to assist commanders in the execution of their responsibilities. These entities will use their expertise to that end, and will coordinate with Army and other organizations to help commanders ensure safe, secure operations.

e. Nuclear surety program activities address every aspect of the operational life of nuclear reactors. These activities include:

(1) Nuclear safety programs and procedures to ensure compliance with approved safety analysis report and technical specifications.

(2) Physical security measures to preclude unauthorized access to and use of SNM, ancillary equipment, and documents.

(3) Procedures to ensure the reliability of personnel designated for or assigned to nuclear duty positions.

(4) Logistical procedures (for example, issue, storage, handling, maintenance, and transportation).

(5) Operational procedures that impact the safety and security of nuclear reactors.

(6) Nuclear Accident and Incident Response and Assistance (NAIRA).

f. DA reactor security matters will be managed as directed by AR 190–54. AR 190–54 prescribes the physical security policy, criteria, and standards for securing reactor facilities and the SNM used as reactor fuel.

g. Users of this regulation need to have knowledge of AR 25–55 and AR 340–21 to ensure compliance with the collection of any personally identifiable information.

Chapter 2
Reactor Permits

2–1. Permit types

All Army reactor construction, commissioning, operation, testing and decommissioning requires a permit. The ARO issues five types of permits—

a. Construction permit to build or acquire the reactor.

b. Load and test permit to receive fuel, initialize core loading, and characterize and test the reactor.

c. Operational permit for routine use of the reactor.

d. Decommissioning permit to decommission the reactor.

e. Special permits to cover other operations.

2–2. Application procedures

Each responsible commander will send applications for reactor permits through command channels to the ARO. Content of the applications will be specified by the ARO. Applications may include—

a. Type of permit application.

b. Proposed facility use.

c. Time period for which the permit is required.

d. Documentation listed in table 2–1 of this regulation, as applicable.

2–3. Permit approval

a. A new permit is required for any significant change in the operations of the facility.

b. Commanders submit permit applications, with supporting documentation listed in table 2–1, to the ARO for review and approval. The ARO issues permits after DCS, G–3/5/7 and DASAF approval of the appropriate reactor study report.

Table 2–1
Supporting Documents for Reactor Study Permits

Permit Type	Supporting Documentation	Reactor Study
Construction	1. Preliminary Safety Analysis Report 2. Preliminary Decommissioning Plan 3. Preliminary Physical Security Plan 4. Preliminary Emergency Plan 5. Preliminary Health Physics Plan 6. Approved Environmental Impact Statement or Environmental Assessment 7. Environmental Radiation Monitoring Plan	Initial
Load and Test	1. Updated Safety Analysis Report 2. Updated Decommissioning Plan 3. Updated Physical Security Plan 4. Updated Emergency Plan 5. Updated Health Physics Plan 6. Preliminary Technical Specifications 7. Preliminary Training Plan 8. Preliminary Requalification Plan 9. Preliminary Maintenance Plan	Pre-operational
Operational	1. Facility Safety Analysis Report 2. Facility Decommissioning Plan 3. Facility Physical Security Plan 4. Facility Emergency Plan 5. Facility Health Physics Plan 6. Facility Technical Specifications 7. Facility Training Plan 8. Facility Requalification Plan 9. Facility Maintenance Plan	Operational
Special	1. Special Safety Analysis Report 2. Appropriate Supporting Documents	Special
Decommissioning	1. Approved Environmental Impact Statement or Environmental Assessment 2. Historical Site Assessment 3. Coordination documents with State Historical Project Office (if required) 4. Compliance agreements/consent decrees, etc that involve other regulators and stakeholders in the decommissioning 5. Proposed classification of areas for cleanup. 6. Any applicable agreements between responsible commander and garrison organizations to be in place during decommissioning 7. Safety and Health framework, identifying how personnel and radiation safety will be managed. 8. Waste management and disposal plan 9. Final Decommissioning Plan	Decommissioning

2–4. Permit

The permit holder is bound to comply with all requirements identified in the permit, to include commitments within the safety analyses, technical specifications, environmental permits, approved studies and the permit itself.

a. These commitments should be implemented through facility plans, specifications and procedures.

b. The permit holder shall maintain documentation which demonstrates compliance with specific permit requirements.

c. The permit holder shall notify the ARO in the event of unusual conditions, especially those which could affect operational safety or permit compliance. Chapter 6 provides further guidance for notification and reporting.

d. Review and periodically update Safety Analysis Reports (SARs) to address cumulative changes to the facility or other relevant conditions.

2–5. Permit amendment approval

Only DCS, G–3/5/7 and DASAF may approve permit amendments. An amendment application includes a description of the proposed change, with the justification and updates to any of the affected documents from table 2–1. Based upon these documents, the ARO conducts a study which concludes with a recommended disposition.

2–6. Permit suspension

The ARO or the facility's operational chain of command may suspend permits if the reactor staff fails to maintain the requirements of the permit, or if worker or public safety is at risk. The DRU or ACOM commander will immediately

notify the ARO of the suspension, which remains in effect pending review by the ARO and HQDA. The HQDA approval (DCS, G–3/5/7 and DASAF) will be required to remove the suspension.

Chapter 3
Reactor Studies

3–1. General
Reactor studies document the evaluation of Army reactors for compliance with the ARP objectives (paragraph 1–28) and the system design and evaluation criteria to support permit applications, or address emergent conditions or USQs. Study participants will ensure facility operations and programs meet the commitments in required facility documentation. The ARO appoints the study chairman and designates organizations to participate in the studies.

3–2. Philosophy
Reactor studies qualify, and quantify when possible, the risk being accepted by the Army in connection with any activity at an Army Reactor Facility. Army Headquarters (DCS, G–3/5/7 and DASAF) approves reactor permits based upon a balance between those risks and the expected benefits of proposed operations.

3–3. Study reports
a. The ARO documents study conclusions and recommendations. Study participants will sign the report for their organizations.

b. The HQDA (DCS, G–3/5/7) will provide guidance to the ARO on the scope of the study.

c. The ARO publishes and distributes the study reports.

3–4. Initial Reactor Study
This study evaluates the system early in the development cycle to determine whether the design provides adequate reactor safety and security. This study is conducted when the design concept is firm so that deficiencies can be corrected without undue cost.

3–5. Pre-operational Reactor Study
This study evaluates the organization's readiness to conduct initial reactor operations and determines whether construction and staffing provide adequate reactor safety and security. Investigation for this study may include an on-site review of permit implementation.

3–6. Operational Reactor Study
This study examines safety features in the system's design, facility technical specifications, and procedures to ensure the system meets the ARP objectives. The study also evaluates a system's readiness to conduct continuing operations.

3–7. Special Reactor Study
As recommended by the ARO and approved by HQDA (DCS, G–3/5/7 and DASAF), studies may be used to evaluate—

a. Potentially unsafe conditions revealed through operational experience.

b. Modifications, alterations, or retrofits that affect reactor safety or security.

c. Tests that affect reactor safety or security.

d. Significant changes or modifications in the operational concept that affect reactor safety or security.

e. Any other condition that could affect reactor safety or security.

3–8. Decommissioning Reactor Study
This study evaluates the ability of the DRU, ACOM and/or USACE to decommission the reactor. Decommissioning actions cannot begin until the study is approved by HQDA (DCS, G–3/5/7 and DASAF).

3–9. Study findings
The ARO will recommend the action agency and suspense for each finding requiring corrective action. The action agency must send the ARO a status report of corrective actions taken. The action agency will submit monthly status reports until corrective action is completed. The ARO determines whether corrective action is complete.

Chapter 4
Management Programs and Documentation

4–1. Reactor Safety Program

a. Reactor Safety Program. The Reactor Safety Program must comply with Army safety program requirements and address all types of risks present in the facility and its operation. Specific to nuclear safety, the program must include at least the following elements—

b. Safety Analysis Reports. The format of NUREG 1537, Guidelines for the Licensing of Non-Power Reactors, may be used as a guide for formatting the following reports:

(1) Preliminary Safety Analysis Report (PSAR) will contain information about the proposed system in relation to the development program.

(2) Updated Safety Analysis Report will contain the proposed operational concept and information about the reactor.

(3) Facility Safety Analysis Report (FSAR) will contain a description of the reactor and how it will be operated.

c. Special Safety Analysis Report. The Special Safety Analysis Report (SSAR) will contain a description of the reactor and the proposed modifications, procedural change, or test.

d. Technical Specifications. Technical specifications are derived from the SAR, which is important to nuclear safety. Technical specifications include the following components, as appropriate:

(1) Safety limitations, limiting safety system settings, limiting conditions for operation.

(2) Surveillance requirements.

(3) Design features.

(4) Administrative controls. The reactor facility director shall ensure that facility procedures and processes implement the specific requirements contained in Technical Specifications, and will report failures to comply with these requirements as prescribed in the specification itself, and in accordance with other reporting guidance such as chapter 6 of this regulation.

e. Unreviewed safety question process. The reactor facility director shall develop and implement a procedure to identify and analyze the effects to nuclear safety margin of proposed changes, tests, or experiments, and to identify any analytic inadequacy which could—

(1) Increase the probability or severity of an accident or malfunction of equipment important to the safety analysis.

(2) Introduce the possibility of an accident or malfunction which was not previously considered.

(3) Reduce the margin of safety as defined in the basis of any Technical Specifications. A positive USQ must be approved by the ARC. It should be consistent with 10 CFR 50.59, but tailored to consider the characteristics of the reactor facility and operation, such as design, hazardous inventory and location.

f. Reactor Facility Safety Committee. Each responsible commander will establish a RFSC to ensure coordination among organizations involved in reactor construction, operations, and decommissioning. The following guidelines apply—

(1) Each responsible commander, or his or her designated representative, shall chair the committee. The RFSC may be combined with other radiation safety councils or committees if they fully address all reactor matters at each meeting.

(2) The committee must have a written charter, including opening procedures and voting rules.

(3) Each reactor facility director, RRSO, RSM, garrison safety officer, and garrison radiation safety officer are members. There must also be at least one member from outside the facility who is knowledgeable in the design and operation of the particular reactor type at the facility.

(4) The committee will include representatives from the military medical services, civil engineering, safety, disaster preparedness, local environmental office, and the office of the staff judge advocate as appropriate.

(5) The committee must meet at least semiannually.

(6) Participants advise the chair on matters affecting reactor safety security, reliability, and environmental issues.

(7) Each responsible commander, or his or her designated representative, maintains minutes, assigns action items, and provides a copy of the minutes through command channels to the ARO for subsequent ARC review.

(8) Committee minutes will be maintained per AR 25–400–2.

4–2. Health Physics Plan

The reactor facilities will be designed to ensure that exposure of personnel to radiation is maintained ALARA and to ensure that potential future health problems are not encountered. Each facility must, therefore, maintain a formal radiological safety program documented by an approved Health Physics Plan. The Health Physics Plan is maintained as a single entity and contains the following management and procedural details—

a. Health physics personnel responsibilities and staff organization.

b. Training of personnel (AR 385–10).

c. Personnel monitoring and exposure limits, procedures for recording exposures, and procedures for evaluating overexposures (DA Pam 40–18 and DA Pam 385–24).

d. Procedures for issuance of work permits in radiation areas.

e. Maximum acceptable contamination levels (AR 385–10).

f. Operational monitoring and surveys (DA Pam 385–24).

g. Use, maintenance, and calibration of radiation monitoring equipment (AR 385–10 and TB 43–180).

h. Decontamination procedures.

i. Radioactive waste disposal and effluent release procedures (AR 385–10).

j. Radiation storage area (location and procedure for use).

k. Radiation placarding and labeling (DA Pam 385–24).

l. Procedures during an emergency, including accidents and incidents, and the duties of personnel in such events (AR 385–10 and AR 50–5).

m. Procedures for qualifying health physics personnel.

n. Health physics records and documentation (AR 25–400–2, DA Pam 25–403 and DA Pam 50–5).

o. Procedures to validate a commitment to keep all radiation exposures ALARA.

4–3. Personnel Reliability Program

The PRP provides assurance that personnel are reliable, not under the influence of any substance, and are not mentally or physically impaired in a way that could adversely affect their performance. Each responsible commander will implement the PRP in accordance with AR 50–5.

4–4. Environmental Radiation Monitoring Plan

This plan outlines the collection and analysis of environmental radiation monitoring samples. The plan must comply with NRC guidelines and National Council on Radiation Protection and Measurements recommendations approved by the ARC.

4–5. Training Plan

The reactor facility director will ensure that the training necessary to maintain the technical and professional competence of reactor personnel is conducted and documented. The training plan outlines the operating personnel training program and the reactor health physics training program. The training plan includes a reactor operator certification plan, which includes maintenance of operator qualification. This plan is reviewed by the ARO and DASAF.

4–6. Physical Security Plan

The physical security plan provides measures for resource protection and for countering threats that may be directed against the reactor system and must comply with the requirements in AR 190–54.

4–7. Emergency Plan

This plan contains emergency procedures for dealing with emergencies and accident situations unique to a reactor facility. This plan will be exercised at least annually by each reactor facility director in coordination with the responsible commander.

4–8. Facility Maintenance Plan

The reactor facility director will ensure that the maintenance necessary to sustain quality reactor operations is conducted on a continual basis and documented. Facility documentation will specify those maintenance tasks that are reactor-related and which of the tasks require direct supervision. All reactor-related maintenance requires pre-approval by the on-duty reactor leader, or supervisor, and will be performed or supervised by a reactor leader or supervisor.

4–9. Quality Assurance Program

a. Quality assurance is a continuous process to prevent or reduce any impact on public health and safety as a result of a facility's operation. The quality assurance program will include such key elements as:

b. Review and trending of performance and conditions observed during reactor operations, surveillance and inspections

c. Management of facility modifications to avoid the emergence of USQs.

d. Causal analysis of events, conditions, near misses and USQs to identify underlying conditions or opportunities to improve operational consistency.

4–10. Decommissioning Plan

This plan identifies status and operating history, radioactive material inventory, planned decommissioning program, radiological and non-radiological safety analyses, and organization and control.

Chapter 5
Audits, Reviews, and Inspections

5–1. Annual Reactor Audit (internal) in accordance with Operational Review Protocol

Each RSM audits reactor programs in appendix B annually. Areas may be audited in one effort, or the review may be scheduled throughout a 12-month period. A report documents the annual audit. The annual audit may be combined with other safety inspections, audits, or reviews. Audit reports will be maintained by each RSM and will be available for inspection by the ARC and the DAIG.

5–2. Quality Assurance Program Review

The Quality Assurance Program Review (QAPR) is a series of reviews to assess the DRU or ACOM quality assurance programs. It is conducted on an as-required basis by the ARO during design, construction, decommissioning, and major modifications. The review covers quality assurance records and procedures affecting design, fabrication, construction, equipment installation, and test and checkout. The requirements are separate from routine inspections. Each reactor facility director will notify the ARO before beginning any modification that affects reactor safety or security. The ARO will determine if a QAPR is needed. The ARC will periodically visit permitted facilities that have undergone a significant change in the operation of the facility as part of the QAPR.

5–3. Operational Review

The ARC conducts an Operational Review annually to determine if a facility is operating in compliance with its operational permit. The ARC continuously monitors operational reactor systems, and assesses each area in Appendix B. A report documents the findings, observations, and commendable items found during the review. It also provides an assessment of the areas under review. The reviewed organization is responsible for correcting each finding as quickly as possible and providing monthly status reports through command channels to the ARC until all findings requiring corrective action are completed. The report includes an estimated completion date for all corrective actions. The ARC determines whether corrective action is complete.

5–4. Department of the Army Inspector General inspections and evaluations

The DAIG will conduct RFIs and NMEs in accordance with AR 50–5.

Chapter 6
Reporting

6–1. Reactor operating reports

The reactor facility director will send through command channels to the ARO an initial reactor startup report, quarterly reactor operating reports and an annual summary reactor operating report (due 30 June). Annual reports summarize reactor system use, corrective maintenance, unscheduled shutdowns, reportable occurrences, and changes and tests.

6–2. Environmental radiation monitoring reports

The reactor facility director will send—

a. Quarterly reports to the local environmental manager, installation radiation safety office, and installation environmental protection office which include the results of area monitoring, sample analyses, and other significant data (such as, releases into the environment exceeding allowable levels). A copy of the quarterly reports will be forwarded to the ARO through command channels.

b. Annual reports of summarized data to the ARO (due 30 June).

6–3. Abnormal events and unreviewed safety questions

The reactor facility director shall notify the ARO in a timely manner of events or conditions which could have a significant impact on reactor safety or security.

Chapter 7
Operator Qualification and Training

Section I
Operator Qualification

7–1. Operator qualifications
Technical qualifications of certified operators are specified in facility documentation reviewed by the ARO.

7–2. Medical examinations
A medical examination is required before certification or when a significant change in medical status occurs. The ARO will coordinate with the OTSG to establish medical examination criteria for certified reactor operating staff members. In the process of qualifying an operator, the reactor facility director will coordinate with the supporting medical facility to determine that the operator meets the medical criteria established by the ARO. The ARO requires copies of approved waivers for certified reactor operating staff members including detailed statements of any limitations associated with the waiver. The limitations are included in the operator certification letter.

7–3. Medical restrictions
Medical restrictions are imposed by the reactor facility director at the recommendation of the local medical authority.

Section II
Operator Training

7–4. Candidate training
The reactor facility director will—

a. Establish a training program to provide candidates with the knowledge and skills needed to safely operate and maintain the reactor and ensure its security.

b. Include any other topics applicable for each operator position and review the training biennially.

c. Make the training program commensurate with the level of responsibility in paragraph 7–5 of this regulation.

7–5. Required abilities
a. Reactor operator. The reactor operators (ROs) must have the ability to operate the controls and monitor the instrumentation of the reactor and perform other required tasks during normal, abnormal, and emergency operations. In general, ROs exhibit the following individual behaviors—

(1) Communicate to create shared understanding.

(2) Anticipate error-likely situations.

(3) Confirm the integrity of the defenses.

(4) Improve personal capabilities.

b. Reactor leader. The reactor leaders (RLs) must have the ability to daily supervise reactor operations and maintenance of the reactor facility. They direct the activities of ROs. They must be proficient in reactor-related administrative requirements. The RLs are responsible for compliance with technical specifications and the operating permit. In general, RLs exhibit the following leader behaviors—

(1) Facilitate open communications.

(2) Promote teamwork to eliminate error-likely situations and strengthen defenses.

(3) Search for and eliminate organizational weaknesses that create conditions for error.

(4) Reinforce desired jobsite behaviors.

(5) Value the prevention of errors.

c. Senior reactor leader. The senior reactor leaders (SRLs) must have the abilities of the ROs and RLs. Additionally, they must have the added experience and training to be responsible for facility-specific responsibilities such as the safety evaluation of reactor tests and experiments.

7–6. Requalification program
The reactor facility director will establish an ongoing requalification program for certified operators to ensure competence, address topics not reinforced by direct or constant use, and improve weak performance areas. The requalification program implements the approved requalification plan. The reactor facility director may integrate the requalification plan and the training plan into a single coordinated program. Individuals must be requalified every 2 years, effective from the date of certification. The reactor facility director may request an extension of up to 90 days for extenuating circumstances. The reactor facility director will submit their requalification plan for review, through command channels, to the ARO every 2 years. The plan will contain—

a. Course content covering the categories in table 7–1 as applicable to each specific reactor facility.

b. Descriptions of tests and passing criteria. Requalification tests may be administered before training.

c. A schedule of training which completes each major topic in 2 years.

7–7. Recurring training requirements

Certified reactor operating staff members will meet the following recurring training requirements:

a. Review the contents of abnormal and emergency procedures annually.

b. Receive training on changes to facility documentation, including procedures, before performing certified duties affected by the changes.

c. Be promptly retrained if any evaluation indicates a deficiency in a critical area.

7–8. Training documentation

The reactor facility director will maintain the following training and certification documents:

a. Current training and requalification programs.

b. Documents used in certification and requalification, including operating procedures and training and reference materials.

c. Training and certification records, including copies of completed training, current medical certification, the certification letter issued by the ARO, and decertification records.

7–9. Operator certification process

a. Certification tests. The ARO will implement initial certification tests. The reactor facility director will implement follow-on certification tests. The certification of reactor operations staff members will be through written and performance tests. The written test will cover the categories in table 7–1 as applicable to each specific reactor facility. A passing score in all applicable categories is required for certification. The performance test will evaluate an individual's operational and/or maintenance skills, performance, knowledge, and ability to communicate. Performance testing will be conducted under the supervision of a certified SRL. Candidates who fail either test may retake it after completing remedial training. Candidates who fail in one or two categories of the written test may be retested in the failed categories; otherwise they must retake the entire test.

b. Applications and document reviews. After ensuring the applicant is qualified, the reactor facility director will forward the following through command channels to the ARO—

(1) Results of certification test.

(2) Copies of current operational procedures (normal and emergency), current operational data and formulas, and test questions, including acceptable answers for each question and credit to be given for each question or parts of questions.

c. Official certification. Upon review of certification test results, the ARO will issue a certification letter to applicants who successfully complete the certification process. Certification is valid for six years from the date of issue or until decertification. Existing certifications will expire on the date noted on the certification. Future certifications will be issued for six years.

7–10. Operator proficiency requirements

a. Minimum reactivity manipulations. Each quarter, certified operators must perform at least two significant reactivity manipulations, as defined by the reactor facility director. Certified operators not meeting this requirement must be supervised by a reactor leader while performing operations until they satisfactorily perform these manipulations.

b. Absence from certified functions. A certified operator who has not actively performed certified functions for 4 months must demonstrate satisfactory knowledge and proficiency to the reactor facility director or SRL before returning to certified duties.

c. Suspension from certified duties. Suspension temporarily prohibits an individual from performing any certified duties until all corrective conditions are met, as determined by the reactor facility director. A suspension may not exceed 120 calendar days and the reactor facility director must notify his or her major subordinate command if all corrective conditions cannot be fulfilled within that time.

7–11. Operator decertification

The reactor facility director, responsible commander, and ACOM, ASCC or DRU commander have authority to decertify an operator based on disqualification, lack of proficiency, or to ensure the safety or security of a nuclear reactor system. Decertification is not punitive and does not constitute grounds for administrative or disciplinary action, but authorities may use the information leading to decertification for appropriate actions. The decertification authority must notify the reactor facility director, responsible ACOM or DRU commander, and ARO as applicable. The reactor facility director must personally notify the decertified individual verbally and in writing.

7–12. Duty hour limitations

The reactor facility director will establish duty hour limitations to ensure safe operations.

Table 7–1
Major Training Categories

Training category	Required topics
Theory and Principles of Reactor Operation	nuclear, radiation, reactor theories; thermodynamics; heat transfer; fluid flow
Facility Design and Operating Characteristics	safety and emergency systems; facility design, operating characteristics and safety analyses; nuclear safety-related utilities; and experiment and test facilities
Facility Instrumentation and Control Systems	nuclear and process instrumentation, control systems, and experimental instrumentation and controls
Normal, Abnormal, and Emergency Procedures	normal, abnormal, and emergency procedures and administrative controls
Radiological Control and Safety	special nuclear material and radioactive materials handling, safe practices, and radiation protection and instruments
Administration	administrative controls, rules, applicable regulations, and permits
Technical Specifications	technical specifications
Security	security procedures and requirements to include two person rule
Fuel Handling (excluding operators)	procedures and criticality controls, rules, and limitations
Maintenance Tasks	tasks required to maintain the facility

Appendix A
References

Section I
Required Publications

AR 50–5
Nuclear Surety (Cited in paras 1–22, 1–23, 1–32.)

AR 190–54
Security of Nuclear Reactors and Special Nuclear Materials (Cited in paras 1–12, 1–22, 1–32, 4–9.)

AR 200–1
Environmental Protection and Enhancement (Cited in para 1–8.)

AR 360–1
The Army Public Affairs Program (Cited in para 1–31.)

AR 380–67
The Department of the Army Personnel Security Program (Cited in para 1–7.)

AR 385–10
Army Safety Program (Cited in paras 1–14, 1–32.)

DA Pam 385–24
Army Radiation Safety Program (Cited in paras 1–14, 1–22.)

Section II
Related Publications

AR 15–1
Committee Management

AR 20–1
Inspector General Activities and Procedures

AR 25–55
The Department of the Army Freedom of Information Act Program

AR 25–400–2
The Army Records Information Management System (ARIMS)

AR 40–13
Medical Support-Nuclear/Chemical Accidents and Incidents

AR 40–66
Medical Record Administration and Health Care Documentation

AR 190–13
The Army Physical Security Program

AR 190–14
Carrying of Firearms and Use of Force for Law Enforcement and Security Duties

AR 190–45
Law Enforcement Reporting

AR 340–21
The Army Privacy Program

AR 380–13
Acquisition and Storage of information Concerning Nonaffiliated Persons and Organizations

AR 381–10
U.S. Army Intelligence Activities

AR 381–12
Subversion and Espionage Directed Against U.S. Army (SAEDA)

AR 381–45
Investigative Records Repository

AR 525–13
Antiterrorism

AR 530–1
Operations Security (OPSEC)

AR 600–8–10
Leaves and Passes

AR 600–8–104
Military Personnel Information Management/Records

AR 600–37
Unfavorable Information

AR 600–85
Army Substance Abuse Program (ASAP)

AR 680–29
Military Personnel, Organization, and Type of Transaction Codes

DA Pam 25–403
Guide to Recordkeeping in the Army

DA Pam 40–11
Preventive Medicine

DA Pam 40–18
Personnel Dosimetry Guidance and Dose Recording Procedures for Personnel Occupationally Exposed to Ionizing Radiation

DA Pam 50–5
Nuclear Accident or Incident Response and Assistance (NAIRA) Operations

DA Pam 385–40
Army Accident Investigation and Reporting

DA Pam 750–8
The Army Maintenance Management System (TAMMS) User Manual

ANSI/ANS–1–2000
Conduct of Criticality Experiments http://www.new.ans.org/store/

ANSI/ANS–8.1–1998; R2007
Nuclear Criticality Safety in Operations with Fissionable Material Outside Reactors http://www.new.ans.org/store/

ANSI/ANS–8.3–1997; R2003
Criticality Accident Alarm System http://www.new.ans.org/store/

ANSI/ANS–8.7–1998
Guide for Nuclear Criticality Safety in the Storage of Fissile Materials http://www.new.ans.org/store/

ANSI/ANS–8.19–2005
Administrative Practices for Nuclear Criticality Safety http://www.new.ans.org/store/

ANSI/ANS–8.23–2007
Nuclear Criticality Accident Emergency Planning and Response http://www.new.ans.org/store/

ANSI/ANS–8.24–2007
Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations http://www.new.ans.org/store/

ANSI/ANS–14.1–2004
Operation of Fast Pulse Reactors http://www.new.ans.org/store/

ANSI/ANS–15.1–2007
The Development of Technical Specifications for Research Reactors http://www.new.ans.org/store/

ANSI/ANS–15.4–1988; R2007
Selection and Training of Personnel for Research Reactors http://www.new.ans.org/store/

ANSI/ANS–15.8–1995; R2005
Quality Assurance Program Requirements for Research Reactors http://www.new.ans.org/store/

ANSI/ANS–15.11–1993; R2004
Radiation Protection at Research Reactor Facilities http://www.new.ans.org/store/

ANSI/ANS–15.16–1982; R2000
Emergency Planning for Research Reactors http://www.new.ans.org/store/

ANSI/ANS–15.17–1981; R2000
Fire Protection Program Criteria for Research Reactors http://www.new.ans.org/store/

ANSI/ANS–15.21–1996; R2006
Format and Content for Safety Analysis Reports for Research Reactors http://www.new.ans.org/store/

ANSI/ANS–58.3–1992; R1998
Physical Protection for Nuclear Safety Related Systems and Components http://www.new.ans.org/store/

ANSI/HPS–N13–12–1999
Surface Volume Radioactivity Standards for Clearance http://hps.org/hpssc/

DODD 3025.1
Military Support to Civil Authorities (MSCA)

DODD 5210.83
DOD Unclassified Controlled Nuclear Information (UCNI)

DODI 5210.42
Nuclear Weapon Personnel Reliability Program (PRP)

DODI 5210.63 (O)
DOD Procedures for Security of Nuclear Reactors and Special Nuclear Material

DODI 5210.67
Special Nuclear Material Information, Security Classification Guidance

CJCSM 3150.03B
Joint Reporting Structure Event and Incident Reports

Section III
Prescribed Forms
This section contains no entries.

Section IV
Referenced Forms
Unless otherwise indicated, DA forms are available on the APD Web site (www.apd.army.mil).

DA Form 2028
Recommended Changes to Publications and Blank Forms

Appendix B
Operational Review Protocol
The following are examples of questions that would be appropriate for the OPREV. They are grouped into three subject areas: Reactor Operations, Safety and Security.

B–1. Reactor Operations
a. Certified operations personnel:
(1) Is the number of certified operators suitable?
(2) Do unnecessary certified operators exist?
(3) Do operators receive good daily supervision?
(4) If operator changes occur in the middle of an operation, is there an appropriate system in place to accommodate the changes?
(5) Are supervisor/leader absences from the facility allowed? If allowed, are they handled appropriately?
(6) Does a system exist for ensuring that the necessary operations people are in the facility during operations?
(7) Is the operator initial training and certification process adequate?
(8) Is the recertification process adequate?
(9) Is there a routine review and checkout of operators by management?
(10) Are all operators performing sufficient operations to maintain proficiency?
(11) Do operators have the knowledge they need to operate safely?
b. Procedures:
(1) Do adequate written procedures exist for the areas given below?
(a) calibration of safety systems and trip setpoints
(b) emergencies
(c) facility radiation safety
(d) facility record keeping
(e) fuel inventory and control
(f) handling of fuel
(g) internal QA and QC
(h) local organization audits
(i) monitoring burst parameters
(j) power calibrations
(k) reactor shutdown
(l) reactor startup
(m) routine operations, both steady state and burst
(n) safety evaluations of experiments
(o) safety evaluations of facility modifications
(p) surveillance and maintenance of reactor support components
(q) surveillance and maintenance of safety systems
(r) use of irradiation facilities
(s) use of special test fixtures
(2) Are the procedures clearly written with an appropriate level of detail?
(3) Are the procedures quickly accessible and being followed?
(4) Are the procedures being maintained and updated as necessary?
c. Equipment Surveillance:

(1) Is there a mechanism to ensure that surveillance and maintenance items are properly scheduled, performed, and audited?

(2) Are all of the Technical Specification and permit requirements addressed in the surveillance program?

(3) Is there an audit mechanism to ensure that all of the surveillance parameters are within their prescribed limits?

d. Operations records:

(1) Are records for the following subjects properly maintained?

(a) current, as-built drawings of the facility

(b) environmental monitoring

(c) fuel inventories

(d) key control files

(e) operating logs

(f) operator certificates

(g) operator medical and PRP files

(h) operator proficiency files

(i) operator training and requalification files

(j) post-operation checks

(k) pre-operation checks

(l) reportable occurrences

(m) safety evaluations of modifications, experiments and tests

(n) safety-related maintenance operations

(o) Technical Specification and permit required surveillance results

(2) Are the records dated, signed when required, easily understood and legible?

(3) Do the records contain sufficient data to enable events to be reproduced?

(4) Are required records archived?

(5) Are required records kept secure from theft, flood and fire?

(6) Are record retention requirements being met?

(7) Are specific documents easily retrievable?

(8) Are adequate reviews being performed to identify unreviewed safety questions in operations, tests, experiments, and facility modifications?

e. Procedures and Practices:

(1) Do clearly defined limits exist on experiments and tests?

(2) Is there an appropriate mechanism for the review and approval of tests and experiments?

(3) Is there a mechanism for approval/authorization of each reactor operation?

(4) Is there an adequate mechanism for keeping the facility Health Physicist informed of operations, tests and experiments?

(5) Is there an adequate mechanism for ensuring that radioactive materials are appropriately transferred to a licensed receiver?

(6) Are experimenters aware of limits imposed on the operations for their experiments?

f. Review of Records:

(1) Does a clear audit trail exist for tests and experiments that have been performed at the facility?

(2) Have prior tests and experiments had proper approval before they were performed?

(3) Does a clear accountability trail exist for any radioactive materials that may have been produced during the tests or experiments?

B–2. Safety (in accordance with AR 385–10)

a. Industrial Safety:

(1) Are facility spaces adequately clean, orderly, and free of trip and slip hazards?

(2) Are compressed gas cylinders properly maintained as follows?

(a) free of corrosion or defects that would render them unfit

(b) plainly marked with the type of gas

(c) kept away from sources of heat

(d) capped whenever regulator is not installed

(e) at least 40 feet from highly flammable or combustible materials

(f) empty cylinders marked “empty”

(g) valves shut on empty cylinders

(h) securely held in an upright position

(i) pressure tested every five years

(j) moved with hand truck equipped with safety chain or strap

(3) Are flammable liquids stored in adequate safety containers?

(4) Are flammable liquid storage areas properly labeled?

(5) Are the number, types, and locations of fire extinguishers adequate?

(6) Are fire extinguishers properly maintained?

(7) Are equipment power cords properly grounded and in good condition?

(8) Are polychlorinated biphenyls (PCB)-contaminated transformers and capacitors properly identified?

(9) Are Material Safety Data Sheets present, properly completed, and readily accessible for each hazardous chemical in the facility?

(10) Is adequate personal protection and/or emergency equipment available for the hazardous materials at the facility?

(11) Is the facility lockout/tagout procedure sufficient to isolate potential hazardous energy before maintenance is performed?

(12) Are confined space policy and procedures established and implemented?

(13) Is adequate fall protection provided where required?

(14) Are ergonomic hazards sufficiently identified and mitigated?

(15) Are hazards associated with manual material handling sufficiently identified and managed?

(16) Are machines appropriately guarded where they present a mechanical hazard to personnel?

b. Radiation Safety:

(1) Are the following areas being adequately addressed?

(a) effluent monitoring

(b) waste disposal

(c) personnel monitoring

(d) RADIAC and dosimeter calibrations

(e) experiment contamination/activation monitoring

(f) proper use of radiation instrumentation

(g) radioactive material shipments

(h) area monitoring

(i) radiation safety training of workers

(j) environmental monitoring

(k) receipt and storage of radioactive materials

(l) leak testing of sealed sources

(2) Is an approved radiation protection program in place and effectively implemented?

(3) Is health physics support adequate to meet the facility's needs?

(4) Is the working relationship between the health physics personnel and reactor operations personnel good?

(5) Do health physics personnel have the authority to terminate operations that they consider unsafe?

(6) Are written health physics procedures available for routine functions?

(7) Is an effective procedure in place to ensure radiation detection equipment is properly functioning and in calibration before used?

(8) Is a record being maintained of the radioactive material being produced?

c. Recordkeeping: Are the following records being properly maintained?

(1) personnel radiation exposures

(2) radiation safety program requirements

(3) radioactive effluents

(4) radioactive material inventories

(5) radioactive material transferred

(6) radiological training for visitors

B–3. Security

a. Emergency Response Planning:

(1) Is an appropriate emergency response organization in place?

(2) Are the staff aware of their responsibilities in the plan?

(3) Is the system for activating the emergency response organization realistic?

(4) Is the staff capable of activating the response organization from offsite?

(5) Are the response actions of the support organizations clearly understood and

(6) agreed upon by the involved parties?

(7) Are the drills/exercises adequate?

(8) Are evaluators or observers used?
(9) Are sufficient emergency supplies available and in suitable locations?
(10) Is training being conducted for facility personnel and support personnel?
(11) Are the following records being maintained?
(a) emergency equipment maintenance and inventory
(b) emergency exercise and drill scenarios and critiques
(c) emergency response training files
(d) emergency plan reviews and revisions
(12) Is there a crisis communication plan to inform workforce and general public in the event of an incident?
b. Physical Security:
(1) Does an approved physical security plan exist?
(2) Is the physical security plan being implemented properly?
(3) Are the facility personnel aware of their security responsibilities?
(4) Are security drills and exercises adequate?
(5) Have security personnel received proper radiation safety training?
(6) Is the security organization appropriate?
(7) Are security plan files and security training files being properly maintained?

Glossary

Section I
Abbreviations

ACSIM
Assistant Chief of Staff for Installation Management

ALARA
as low as is reasonably achievable

ACOM
Army Command

ANSI
American National Standards Institute

ARC
Army Reactor Council

ARFORGEN
Army force generation

ARP
Army Reactor Program

ARPM
Army Reactor Program manager

ARO
Army Reactor Office

ARSTAF
Army Staff

ASCC
Army Service Component Command

ATEC
U.S. Army Test and Evaluation Command

CFR
Code of Federal Regulation

DA
Department of the Army

DAIG
Department of the Army Inspector General

DASAF
Director of Army Safety

DCS, G–3/5/7
Deputy Chief of Staff, G–3/5/7

DOD
Department of Defense

DOE
Department of Energy

DRU
Direct Reporting Unit

ERM
environmental radiation monitoring

FSAR
facility safety analysis report

GFM
Global Force Management

HQDA
Headquarters Department of the Army

IDN
initial distribution number

NAIRA
nuclear accident or incident response and assistance

NCRP
National Council Radiation Protection and Measurement

NEPA
National Environmental Policy Act

NME
nuclear management evaluation

NRC
Nuclear Regulatory Commission

NUREG
Nuclear Regulatory Commission Regulation

OCPA
Office of the Chief of Public Affairs

OPMG
Office of the Provost Marshal General

OTSG
Office of The Surgeon General

PRP
Personnel Reliability Program

PSAR
preliminary safety analysis report

QAPR
quality assurance program review

RFSC
reactor facility safety committee

RFI
reactor facility inspection

RL
reactor leader

RO
reactor operator

RRSO
reactor radiation safety officer

RSM
reactor safety manager

SAR
safety analysis report

SNM
special nuclear material

SRL
senior reactor leader

SSAR
special safety analysis report

SSC
Structure, system, or component

UFSAR
updated final safety analysis report

USACE
U.S. Army Corps of Engineers

USAMEDCOM
U.S. Army Medical Command

USANCA
U.S. Army Nuclear and Combating Weapons of Mass Destruction Agency

USQ
unreviewed safety question

Section II
Terms

Change
Any proposed activity (including modifications to facility equipment or procedures, or new tests or experiments) that may affect a design, function, or method of performing or controlling the function of a structure, system, or component (SSC) as described in the FSAR, or an evaluation that demonstrates that intended functions will be accomplished. An activity involving an SSC not explicitly described in the FSAR that has the potential to impact the function of an SSC which is explicitly described in the FSAR is also considered a change.

Deactivation
The removal or safe storage of fuel or any components that would create criticality within a reactor and the suspension or termination of the operating permit for the nuclear reactor facility.

Decommissioning
The removal of a facility safely from service and reduction of residual radioactivity to a level that permits release of the property for unrestricted use and termination of permit.

Facility Safety Analysis Report (FSAR)
Documentation which describes a nuclear reactor facility; design and operation; hazards and materials; management programs, and controls; and the considerations and reasoning used to support the conclusion that the facility can be operated safely and securely. The analysis considers a range of potential accidents, including the maximum hypothetical accident. It represents the design bases for the 10 CFR 50.59 change process, for training reactor operators, for preparing reactor operator certification examinations, and for preparing inspections and OPREVs. It is important that the FSAR remain an accurate, current description of the facility and be periodically updated.

Nuclear Management Evaluation
An evaluation conducted by the DA, DRU or ACOM IG of nuclear operations with inquiry into the nuclear functions and responsibilities of staff agencies, inspection teams, major and intermediate command levels, and assistance teams to determine management, systemic, or functional problem areas in the Army nuclear programs attributable to any echelon.

Nuclear Reactor
A mechanical device in which fissile material is used to produce a controlled, chain reaction (nuclear fission) to produce heat and radiation for practical application and research, development, and testing.

Nuclear Reactor Facility
A nuclear reactor system, associated buildings, auxiliary equipment, and the reactor staff required for its operation, maintenance, and support. The facility includes—

a. The structures, systems, and components (SSCs) as described in the FSAR.

b. The design and performance requirements for such SSCs as described in the FSAR.

c. The evaluations or methods of evaluation as described in the FSAR for such SSCs which demonstrate that their intended functions(s) will be accomplished.

Nuclear Reactor System
Any equipment or device, except a nuclear weapon or weapon component, capable of neutron multiplication through nuclear fission of special nuclear material. This definition includes both critical and subcritical nuclear reactors, subcritical assemblies of special nuclear material, and the supporting associated equipment or devices (if any).

Off-Site
That area beyond the boundaries of a DOD installation including the area beyond the boundary of a national defense area or national security area that has been, or may become affected by a nuclear accident or incident.

Operational Review
A review conducted by the ARC that includes examination of the capability of a nuclear reactor facility to perform specific tasks involving the nuclear reactor and associated equipment, to provide a safe and secure environment, to provide physical security for the special nuclear material and reactor, and to determine if essential administration and support is provided the unit.

Reactor Facility Director
The chief of the organizational unit directly responsible for the operation of a nuclear reactor staff. The term “reactor facility director” as used in this regulation applies to both research and power nuclear reactor systems.

Reactor Facility Inspection
A DA, DRU or ACOM IG inspection that includes examination of the capability of a nuclear reactor facility to perform specific tasks involving the nuclear reactor and associated equipment, to provide a safe and secure environment, to provide a safe and secure environment for the nuclear material and reactor, and to determine if essential administration and support is provided the unit.

Reactor Operations Staff
Includes all organizational elements subordinate to the reactor facility director and responsible for the operation, maintenance, and support of the specific nuclear reactor involved.

Responsible Commander
The immediate commander of the organization directly accountable for the nuclear reactor facility.

Risk
The product of the probability of occurrence and the severity of an accident or of a malfunction of a structure, system, or component (SSC) important to safety as evaluated in the UFSAR.

Source Material
Uranium or thorium, or any combination thereof, in any physical or chemical form or ores which contain by weight 0. 05% or more of uranium, thorium, or any combination thereof. Source material does not include special nuclear material.

Special Nuclear Material
Plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the Nuclear Regulatory Commission, pursuant to the provisions of section 51 of the Atomic Energy Act of 1954, section 2071, title 42, United States Code, determines to be special nuclear material, but does not include source material. Any material artificially enriched by any of the foregoing but does not include source material.

Special Safety Analysis Report (SSAR)
A modification to a reactor system which involves an unreviewed safety question or a change to the technical specifications will be documented in a SSAR and submitted to the ARO for review. This report will describe any proposed changes involved in the technical specification limits of the nuclear reactor system operation and provide an analysis and evaluation demonstrating the safety of this change.

Technical Specifications
The technical specifications state the limits, operating conditions, and other requirements imposed on nuclear reactor facility operations to protect the environment and the health and safety of the facility staff and the general public. The technical specifications are derived from the facility descriptions and safety considerations contained in the safety analysis and represent a comprehensive envelop of safe operation.

Unreviewed Safety Question
A proposed or actual change, test, or experiment, or identified analytic inadequacy which could:

a. increase the probability or consequences of an accident or malfunction of equipment important to the safety analysis;

b. introduce the possibility of an accident or malfunction which was not previously considered, or reduce the margin of safety as defined in the basis of any Technical Specifications.

Section III
Special Abbreviations and Terms
This section contains no entries.

USAPD

ELECTRONIC PUBLISHING SYSTEM
OneCol FORMATTER WIN32 Version 253

PIN:	999999–999
DATE:	04- 1-09
TIME:	13:07:00
PAGES SET:	31
DATA FILE:	C:\wincomp\r50-7.fil
DOCUMENT:	AR 50–7
SECURITY:	UNCLASSIFIED
DOC STATUS:	REVISION