# MODULE 1.0: NRC's NUCLEAR CRITICALITY SAFETY MISSION

**Introduction**

Welcome to Module 1.0 of the Nuclear Criticality Safety Directed Self-Study Course! This is the first of five modules in this directed self-study course. The purpose of this module is to assist you by providing an introduction to the Nuclear Regulatory Commission's role in relation to nuclear criticality safety.

This directed self-study module is designed to assist you in accomplishing the learning objectives listed at the beginning of the module. The module has self-check questions and an activity to help you assess your understanding of the concepts presented in the module.

**Before You Begin**

It is recommended that you have access to the following material:

- ☐ Trainee Guide
- ☐ NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility"*
- ☐ NRC Inspection Procedure 88015*
- ☐ NRC Inspection Procedure 88020*

* Excerpts are included at the end of this module.

**How to Complete this Module**

1. Review the learning objectives.
2. Read each section within the module in sequential order.
3. Complete the self-check questions and activities within this module.
4. Check off the tracking form as you complete the self-check questions and/or activity within the module.
5. Contact your administrator as prompted for a progress review meeting.
6. Contact your administrator as prompted for any additional materials and/or specific assignments.
7. Complete all assignments related to this module. If no other materials or assignments are given to you by your administrator, you have completed this module.
8. Ensure that you and your administrator have dated and initialed your progress on the tracking form.
9. Go to the next assigned module.

## TABLE OF CONTENTS

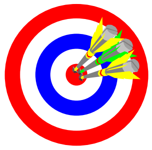
Plan for the Review of a License Application for a Fuel Cycle Facility," Chapter 5, Nuclear Criticality Safety
NRC Inspection Procedure 88015
NRC Inspection Procedure 88020

**LIST OF TABLES**



**LIST OF FIGURES**

## Learning Objectives



1.1 Upon completion of this module, you will be able to relate the mission of the NRC and the role of the inspector and license reviewer in nuclear criticality safety.

1.1.1 Identify the mission of the NRC with respect to nuclear criticality safety.

1.1.2 State the objectives of NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility."

1.1.3 State the purpose of criticality accident alarms.

1.1.4 State the objectives of the NRC Nuclear Criticality Safety Inspection Procedures 88015 and 88020.

1.1.5 Identify inspector activities used to verify licensee compliance with nuclear criticality safety.

**NRC MISSION**

The NRC was established as an independent regulatory agency under the provisions of the Energy Reorganization Act of 1974. Transferred to the Commission were all licensing and related regulatory functions formerly assigned to the Atomic Energy Commission, which was established by the Atomic Energy Act of 1954.

The mission of the NRC is to protect the **health** and **safety** of the public and the environment from the use of source materials at nuclear facilities. To accomplish that mission the NRC promulgates regulations that direct NRC licensed and certified facilities to take appropriate actions to protect the health and safety of the public and their workers. NRC licensed and certified facilities must comply with NRC regulations, and the licensee's management is responsible for establishing programs to ensure that potential problems are promptly identified, resolved, and corrected. NRC staff ensures that the licensee's programs and program implementation are adequate to protect the health and safety of the public and the workers.

## DEFINITIONS

**Nuclear Criticality Safety**

Nuclear criticality safety (NCS) has been defined in several terms. Table 1-1 provides some of the commonly used definitions for nuclear criticality safety.

**Table 1-1. Nuclear Criticality Safety Definitions**

| | DEFINITION | SOURCE |
|---|---|---|
| **Nuclear Criticality Safety...** | is the protection against the consequences of an **inadvertent** nuclear chain reaction, preferably by prevention of the reaction. | ANSI/ANS-8.1-1983, *Nuclear Criticality Safety in Operations With Fissionable Materials Outside Reactors* |
| | may be defined as protection against the consequences of a nuclear **excursion**. | LA-3366 Rev., *Criticality Control in Operations with Fissile Material* |
| | is the **prevention** or termination of **inadvertent** nuclear criticality, mitigation of consequences, and protection against injury or damage due to **accidental** criticality. | DOE Order 5480.5, *Safety of Nuclear Facilities* |
| | is defined as the art of avoiding an **accidental** nuclear **excursion**. | TID-7016 Revision 2, *Nuclear Safety Guide* |
| | is the art and science of **not** building a nuclear **reactor without shielding, coolant, and control**. | Francis Alcorn, former Nuclear Criticality Safety Manager, BWX Technologies |

**Nuclear Criticality Accident**

ANSI 8.1-1983 defines a criticality accident as the release of energy as a result of accidentally producing a self-sustaining or divergent neutron chain reaction.

Another common definition for a nuclear criticality accident is an **unintentional, uncontrolled** nuclear fission chain reaction. It releases large amounts of **undesirable energy in the form of heat and radiation.**

---

**Nuclear Criticality Accident Characteristics**

A nuclear criticality accident may consist of a **single burst** after which the system is exhausted and shuts itself down.

OR

The nuclear criticality accident might be **repetitive**, producing a series of bursts before it exhausts itself and shuts down. See Figure 1-1.

## CRITICALITY ACCIDENT ALARMS

**Purpose**

Criticality accident alarm systems are provided to alert personnel to promptly evacuate an affected area to reduce exposure to radiation from a criticality event. Generally, the criticality accident alarm system is meant to prevent large exposures to many people.

**Background**

A nuclear criticality accident occurs without advance warning. There are no discernable indications that the accident is about to happen. Therefore, nuclear criticality accident alarm systems are after-the-fact alarms. Generally, the alarm will sound at about half a second AFTER the criticality has occurred.

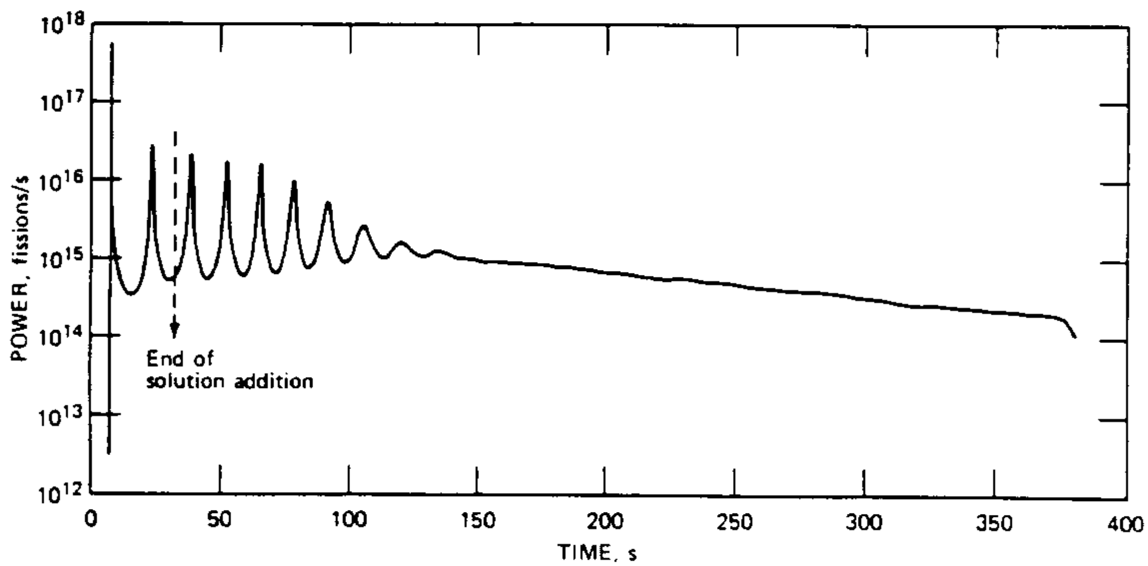



**Figure 1-1. Fission Rate as a Function of Time**

The initial pulse may be followed by successive pulses until the reaction is eventually terminated. Successive pulses can occur for several seconds to several days.

**Regulatory Guidance**

ANSI/ANS-8.3, "Criticality Accident Alarm Systems," addresses not only the need for alarm systems, but also describes the characteristics of alarm signals, dependability, testing procedures, and emergency planning. The specifications for signals include recommended sound pressure levels and activation mechanisms that do not depend on human action.

The Standard also provides guidance on the criteria for system design including:

- Reliability
- Vulnerability
- Seismic Tolerance
- Failure Warning
- Response Time
- Detection Criterion
- Sensitivity
- Spacing

The NRC accepts the guidance and standards delineated in ANSI/ANS-8.3 with some exceptions associated with the requirements of 10 CFR Part 70.24 (see Table 1).

10 CFR 70.24, "Criticality Accident Requirements," specifies that licensees who are authorized to possess special nuclear material in excess of certain amounts are required to maintain a criticality accident alarm system.

**Components**

Criticality accident alarm systems are generally composed of neutron or gamma radiation detectors and annunciation (signal) equipment. In addition, administrative procedures are needed to ensure that the equipment is maintained and properly calibrated.

**Table 1-2. Area/Detector Coverage in 10 CFR 70.24 and ANSI/ANS-8.3**

| Item | 10 CFR 70.24 | ANSI/ANS-8.3 | Notes |
|---|---|---|---|
| Area Coverage | For licensees authorized to possess special nuclear material (SNM) greater than 700 g U-235, 520 g U-233, 450 g Pu, 1500 g U-235 if enriched less than 4wt% U-235 or 450 g of any combination (or half the quantities if massive moderators or reflectors are present), coverage is required in each area in which licensed SNM materials is handled, used or stored. | The need for criticality alarm systems shall be evaluated for all activities in which the inventory of fissionable materials in individual unrelated areas exceeds 700g of U-235, 520 g of U-233, or 450g of Pu-239, or 450g of any combination of these three isotopes or any fissionable isotopes exceeding mass limits in ANSI/ANS-8.15. Coverage is required when personnel would exceed excessive radiation dose. | 70.24 requires coverage in all areas while ANS-8.3 requires only an evaluation with coverage being left to the judgement of the evaluator based on presumed exposure. Licensees may request an exemption for 70.24 if an evaluation determines that a criticality potential does not exist. |
| Detector Coverage | Each area shall be covered by two detectors. | Coverage allowed by two reliable channels in a single detector or by requiring concurrent response of two or more detectors §4.5.1. | 70.24 requires dual detector coverage in all areas while ANS-8.3 §4.5.1 allows reliance on a single detector to initiate the alarm based on reliable detector channels. |

**Detection Criteria**

ANSI/ANS-8.3

Criticality alarm systems shall be designed to detect immediately the minimum accident of concern. For this purpose, in areas where material is handled or processes with only nominal shielding, the minimum accident of concern may be assumed to deliver the equivalent of an absorbed dose in free air of 20 rad at a distance of 2 m from the reacting material within 60 s.

The minimum accident of concern assumption determines the alarm setpoint and the detector spacing in a work area.

10 CFR 70.24

A monitoring system shall be maintained in locations where licensed special nuclear material is handled, used or stored.

The monitoring system shall be capable of detecting a criticality that produces an absorbed dose in soft tissue of 20 rads of combined neutron and gamma radiation at an unshielded distance of 2 meters from the reacting material within one minute.

Coverage of all areas shall be provided by two detectors.

---

**Neutron vs. Gamma Detectors**

The selection of the detector will generally be determined by the fissile material being used and the type of radiation emitted in the event of a criticality accident.

Some facilities can accidentally produce gamma fluxes capable of setting off a criticality alarm without actually having a criticality. This situation would produce false alarms. These facilities would most likely use a neutron detector instead of a gamma detector.

$^{6}$Li used with other elements is an example of a neutron detector. Geiger-Mueller detectors and sodium iodide detectors are examples of detectors used to detect gamma radiation.

---

**Alarm Logic**

Criticality accident alarm logic is a term used when describing the criticality accident alarm system circuitry designed to lessen the incidence of false alarms. It may also be referred to as coincidence control or decision-making logic. It is recommended that there be a response from two out of three detector channels to initiate the alarm. In addition, the failure of any one detector channel would not compromise the functioning of the system. This makes the logic one of two for activation of the alarm signal.

Note that no single contact failure can activate the alarms, and no single contact failure can prevent alarm activation. The alarm relays activate local air horns, alarm lights, or other building evacuation warning devices.

Battery backups should be included in the system to ensure that power is maintained to the accident alarm systems during power failures.

---

**Failure Warning**

Criticality accident alarms and alarm systems generally have built-in signals that indicate a malfunction or loss of power. These signals may be visible, audible, or both. Some alarms have built-in battery back-up systems with battery chargers.

---

**Testing**

The alarms and alarm systems are tested periodically to ensure that:

- The system is operating within the design specifications, especially following modification or repair, including maintenance of redundancy.
- The system responds to radiation as designed.
- The evacuation signal is audible above background noise. This signal must be discernible as an evacuation alarm

Test results are recorded and maintained for each system.

**Location and Spacing**

The location and spacing of detectors is chosen to minimize the effect of shielding by massive equipment or materials. To provide assurance that credible criticality accidents posing a potential risk to personnel will be detected, the licensee performs analyses. For cases in which little or no shielding exists, it may be possible to apply a simple hand calculation to estimate the range of a detector. In cases where simple hand calculations are insufficient, more detailed one-dimensional models can be constructed through the use of either deterministic (e.g., ANISN, DORT) or Monte Carlo (e.g., MCNP) computer codes. The advantage of using a computer code is that spectral effects, absorption, scattering, and distance attenuation are all taken into account simultaneously. More detailed facility and accident scenario-specific models can be constructed through the use of two- or three-dimensional computer codes. In addition to all of the advantages associated with the one-dimensional modeling, a three-dimensional model will include contributions from floor, ceiling, and possibly sky scatter, as well as a more detailed representation of streaming and scatter from room and corridor walls. Two-dimensional models are often adequate for situations where radial symmetry may be assumed.

**DATA REFERENCES FOR CRITICALITY SAFETY GUIDANCE**

There are several data references for criticality safety guidance. The normally accepted general references on criticality parameters are LA-12808, "Nuclear Criticality Safety Guide," and LA-10860-MS, "Critical Dimensions of Systems Containing U-235, Pu-239 and U-233." An additional useful reference is ARH-600, "Criticality Handbook, Vols. I, II, III." These references are usually over conservative, but are useful to get an understanding of the criticality safety problem. As with any reference material, information can be misused without a basic understanding of the subject; therefore, it is recommended that a basic understanding of criticality be a prerequisite for proper use of the information.

**LA-12808**

The Los Alamos National Laboratory Report LA-12808, "Nuclear Criticality Safety Guide," was first issued as the "Nuclear Safety Guide" (classified Atomic Energy Commission report LA-2063) in 1956. In 1957, the guide was reprinted and unclassified as TID-7016. As a result of the declassification, nuclear criticality data was made available outside the Atomic Energy Commission. LA-12808, issued in 1996, is Revision 3 to TID-7016 which corrects errors and incorporates changes suggested by the criticality safety community. Earlier revisions of TID-7016 were intentionally conservative and firmly based on experiments. With the advance of calculational capabilities, but little new experimental data, validated calculations to extend and substitute for experimental data have been incorporated in this latest revision. The broadened database has enabled better interpolation, extension, and understanding of available information, especially in areas previously addressed by undefined but adequate factors of safety. The intent of the guide is to be a useful reference for the beginning criticality specialist to provide starting points for criticality safety evaluations (CSEs).

**LA-10860-MS**

The Los Alamos National Laboratory Report LA-10860-MS, "Critical Dimensions of systems Containing U-235, Pu-239 and U-233," a 1986 revision of the 1964 report TID-7028, is a compilation of critical data obtained from experiments performed in a number of laboratories during the period of 1945 through 1985. It supplements the Nuclear Criticality Safety Guide in presenting critical data on which recommendations of the Guide are based. The data in the report are critical values without safety factors, so it is not a substitute for the Guide or ANSI/ANS 8.1.

**ARH-600**

The Atlantic Richfield Hanford (ARH) Company Criticality Handbook, ARH-600, was produced for ARH employees whose work involved criticality safety considerations. The Handbook combines a number of fissile material handling requirements into a single reference manual and supplements more widely recognized references. Note that some of the data included in the Handbook is less conservative than material from LA-12808 and LA-10860-MS. This is primarily due to a greater amount of available experimental data and to greater confidence in the computer programs presently used in criticality calculations. The Handbook does not attempt to generate "safe" parameters. Wherever generated parameters are considered to have a potential for being nonconservative, comparisons with existing experimental data (if any) are shown or referenced, and an attempt is made to indicate the degree to which the data is nonconservative.

## INTEGRATED SAFETY ANALYSIS

Information in this section is excerpted from 10 CFR Part 70.

### Introduction

In September 2000, 10 CFR Part 70 was amended to add Subpart H to incorporate a performance-based and risk-informed safety program that includes an integrated safety analysis (ISA) process. The ISA process is intended to increase confidence in the margin of safety from all hazards, including criticality, at the facilities affected by this rule. Subpart H required existing licensees (by October 18, 2004) and new applicants (with application) to complete an ISA, correct any potential unacceptable performance deficiencies identified, and submit an ISA summary for NRC approval. The safety program must include process safety information, the ISA including items relied on for safety (IROFS) and management measures to assure that the IROFS are available when called upon to perform their safety function.

### Definitions

Integrated safety analysis (ISA) means "a systematic analysis to identify facility and external hazards and their potential for initiating accident sequences, the potential accident sequences, their likelihood and consequences, and the items relied on for safety. As used here, integrated means joint consideration of, and protection from, all relevant hazards, including radiological, nuclear criticality, fire, and chemical. However, with respect to compliance with the regulations of this part, the NRC requirement is limited to consideration of the effects of all relevant hazards on radiological safety, prevention of nuclear criticality accidents, or chemical hazards directly associated with NRC licensed radioactive material. An ISA can be performed process by process, but all processes must be integrated, and process interactions considered." Management measures mean "the functions performed by the licensee, generally on a continuing basis, that are applied to items relied on for safety, to ensure the items are available and reliable to perform their functions when needed. Management measures include configuration management, maintenance, training and qualifications, procedures, audits and assessments, incident investigations, records management, and other quality assurance elements." Process safety information means "information pertaining to the hazards of the materials used or produced in the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process."

### Other Information

Review of license applications and submittals for NCS hazards requires consideration and evaluation of all the process hazards and technical discipline issues that may affect the NCS of the facility. For further information see NUREG-1513, "Integrated Safety Analysis Guidance Document," NUREG-1520, "Standard Review Plan (SRP) for the Review of a License Application for a Fuel Cycle Facility," and

NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility."

## NRC NUCLEAR CRITICALITY SAFETY LICENSE REVIEW PRACTICES (NUREG-1520)

Information in this section is excerpted from NUREG-1520.

### Introduction

The "Standard Review Plan (SRP) for the Review of a License Application for a Fuel Cycle Facility" (NUREG-1520) provides NRC guidance for reviewing and evaluating the health, safety, and environmental protection aspects of applications for licenses to possess and use special nuclear material (SNM) to produce nuclear reactor fuel. This guidance also applies to the review and evaluation of proposed amendments and license renewal applications for nuclear fuel cycle facilities. Although the SRP is strictly guidance and not a substitute for NRC regulations, the SRP describes the scope, level of detail, and acceptance criteria for reviews. Note: For a mixed oxide fuel cycle facility, NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility," is used instead of NUREG-1520.

### Standard Review Plan Purposes

The principal purpose of this SRP is to ensure the quality and uniformity of reviews conducted by the staff of the NRC's Office of Nuclear Material Safety and Safeguards (NMSS).

The SRP also:

- Provides a well-defined foundation from which to evaluate proposed changes in the scope, level of detail, and acceptance criteria of reviews.
- Makes information about regulatory reviews widely available and improves communication and understanding of the staff review process.
- Serves as regulatory guidance for applicants who need to determine what information to present in a license application and related documents.

### Process

The licensing process includes approving the initial license, subsequent license modifications, and license renewals. To be licensed to use nuclear materials or operate a facility that uses nuclear materials, a facility submits an application to the NRC. Nuclear Criticality Safety (NCS) license reviewers examine license application information to determine the adequacy of the applicant's NCS program. NCS reviewers are the primary reviewers for the NCS section of the SRP and may also be secondary or supporting reviewers in other sections of the SRP (e.g., Organization and Administration, Integrated Safety Analysis, Fire Protection, Management Measures).

## Self-Check Questions 1-1 ✔

Complete the following questions. Answers are located in the answer key section of the Trainee Guide.

1. The nuclear criticality safety mission of the NRC is to:

2. The principal purpose of the SRP (NUREG-1520) is to:

3. What is the purpose of criticality alarms?

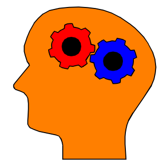
4. What are the two normally accepted general references on criticality parameters?

---

You have completed this section.
Please check off your progress on the tracking form.
Go to Activity 1.

---

## Activity 1 - SRP Purposes



**Purpose:** The purpose of this activity is to state the purposes of the SRP.

**Directions:** Complete the following statement.  Answers are located in the answer key section of the Trainee Guide.

The purposes of the SRP (NUREG-1520) are to....

---

You have completed this activity.
Please check off your progress on the tracking form.

---

## PERFORMANCE-BASED INSPECTIONS

Information in this section is excerpted from the *Inspecting for Performance Course Manual*.

**Introduction**

The NRC has encouraged the practice of using performance-based concepts in conducting inspections. NRC inspectors are also advised to plan their inspections based on safety and reliability impact.

**Definition**

The NRC Performance-Based Inspection Program is based upon evaluating, through direct observation of plant activities, whether quality has been achieved. A performance-based inspection program is one that analyzes and evaluates with emphasis on safety and reliability.

Inspections should be performed:

- On activities that are safety-significant
- In a manner that emphasizes safety and reliability, not trivia with no real impact on facility performance
- By qualified personnel who have the necessary technical capabilities to accurately observe and evaluate an activity

**Preferred Method**

Direct observation is always the preferred inspection method and inspectors should make every effort to observe activities in the selected area. This approach reduces emphasis upon document reviews or attention to indicators that do not impact facility reliability and safety.

The inspector's discussions with plant personnel and their document reviews should be used to enhance and verify performance-based observations.

## NRC NUCLEAR CRITICALITY SAFETY INSPECTION PROCEDURES 88015 and 88020

**Purpose of the NRC Inspection Program**

The primary purpose of the NRC inspection program is to determine that the facility is being operated **safely** in order to protect employees and members of the general public.

**Inspection Procedure Objectives**

The objectives of the Nuclear Criticality Safety Inspection Procedure 88015 are to ensure that the regulatee:

- Maintains an effective nuclear criticality safety program that has established and maintains configuration control over all facility and process operations that affect NCS.
- Obtains NCS advice from an NCS function (NCSF) that acts independently from the production function.
- Avoids undue risk of inadvertent criticality (i.e., the regulatee's activities are conducted safely).

The objectives of the Nuclear Criticality Safety Inspection Procedure 88020 are to ensure that the regulatee:

- Maintains an effective nuclear criticality safety program that has established configuration control over all facility and process operations that affect NCS.
- Obtains and vigilantly implements NCS advice from a technical NCS function (NCSF) that acts independently from the production function.
- Avoids undue risk of inadvertent criticality, (i.e., the regulatee's activities are conducted safely).

See also the NRC Inspection Manual, Chapter 2600, revised September 30, 2002.

**Examples of Inspection Activities**

Table 1-3 provides examples of activities that inspectors may want to include in nuclear criticality safety inspections to verify licensee compliance with NCS. Documents that may assist with the inspection verification and evaluation are also provided.

**Table 1-3. Inspection Objectives and Supporting Activities and Documents**

| If the Inspection Objective is to Determine that the Regulatee... | Then Conduct These Activities, as Appropriate | And Review These Documents, as Needed |
|---|---|---|
| • maintains an effective nuclear criticality safety program that has established and maintains configuration control over all facility and process operations that affect NCS. | • Discuss the methods used to establish safety limits with nuclear criticality safety (NCS) staff.<br>• Validate the assumptions made and conditions used in calculations (computer and hand).<br>• Observe operations to verify the assumptions and conditions match with reality.<br>• Discuss with NCS staff members any abnormal occurrences that may have impacted NCS. | • Safety Analysis Report (SAR)<br>• NCS Analysis<br>• Safety Evaluation Report (SER)<br>• Training Records<br>• Facility License<br>• Computer Code Output<br>• Criticality Safety Audit Reports<br>• Facility Change Requests (FCRs)<br>• Design Documents<br>• Corrective Action Report<br>• NRC Inspection Reports |
| • obtains NCS advice from an NCS function (NCSF) that acts independently from the production function. | • Observe operations in process.<br>• Discuss procedures with supervisors and operators.<br>• Compare drawings, procedures, and FCRs with actual operations.<br>• Discuss training and training objectives with workers.<br>• Observe safety limit postings, labels, markings, and availability of procedures. | • SAR<br>• SERs<br>• Facility NCS Policy<br>• Facility License<br>• Internal Safety Audit Reports<br>• FCRs<br>• Operating Procedures<br>• Material Inventory Control Documents<br>• Log Sheets<br>• Training Records and Training Programs<br>• Periodic Test Results |

**Table 1-3. Inspection Objectives and Supporting Activities and Documents (Continued)**

| If the Inspection Objective is to Determine that the Regulatee... | Then Conduct These Activities, as Appropriate | And Review These Documents, as Needed |
|---|---|---|
| • avoids undue risk of inadvertent criticality, i.e., the regulatee's activities are conducted safely. | • Observe operations in process.<br>• Observe double contingency principle applications.<br>• Observe and discuss operating procedures with operators/workers.<br>• Discuss implementation of specific criticality safety controls with NCS staff and operators.<br>• Observe and evaluate the implementation of criticality safety controls.<br>• Examine unfavorable geometry containers to ensure that they are being used as authorized.<br>• Observe the use of neutron absorbers (poisons) in unfavorable geometry containers used to store liquid special nuclear material (SNM).<br>• Locate criticality safety alarms in the work area and determine if alarms are operable, calibrated, and tested, as required.<br>• Determine how failure of the criticality monitoring equipment would be detected. | • SAR<br>• SERs<br>• Facility License<br>• Double Contingency Principle Implementation Plan<br>• Nuclear Safety Requirements<br>• Operating Procedures<br>• FCRs<br>• Corrective Actions<br>• Calibration Schedules<br>- Monitoring Systems<br>- Criticality Alarms<br>• NCS Review Committee Meeting Minutes, if applicable<br>• Log Sheets |

## Self-Check Questions 1-2 ✓

Complete the following questions. Answers are located in the answer key section of the Trainee Guide.

1. The primary purpose of the NRC inspection program is to determine that the facility is operated **safely** in order to:

2. Define nuclear criticality safety.

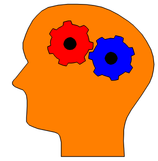
3. List two inspector activities used to verify licensee compliance with NCS.

---

You have completed this section.
Please check off your progress on the tracking form.
Go to Activity 2.

---

## Activity 2 - Inspection Program Objectives



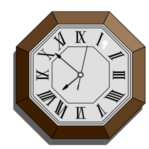
**Purpose:** The purpose of this activity is to state the objectives of the nuclear criticality safety inspection program.

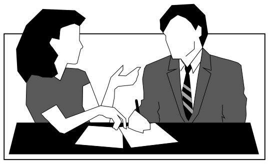
**Directions:** Complete the following statement. Answers are located in the answer key section of the Trainee Guide.

The objectives of the Nuclear Criticality Safety Program Inspection Procedure 88015 are to ensure that the regulatee....

You have completed this activity.
Please check off your progress on the tracking form.

It's time to schedule a progress meeting with your administrator. Review the progress meeting form on the next page. In Part III, As a Regulator, write your specific questions to discuss with the administrator.





## Progress Review Meeting Form

**Date Scheduled:**______________________________ **Location:**______________________

**I. The following suggested items should be discussed with the administrator as to how they pertain to your current position:**

- My role and responsibility for NCS
- Availability and location of current NCS procedures and policies
- Revisions and replacement of NCS policies and procedures
- Impact of the SRP (NUREG-1520) on my day-to-day activities
- Impact of inspection procedures on my day-to-day activities

**II. Use the space below to take notes during your meeting.**

## III. As a Regulator:

How do I verify that:

- Management has established and communicated an adequate NCS policy for workers and plant organizations?
- Management, supervisors, and operators are responsible for and trained in NCS?
- A means for monitoring the effectiveness of the NCS program has been established?
- An NCS technical function independent of operations has been established?

Use the space below to write your specific questions.

## IV. Further assignments? If yes, please note and complete. If no, initial completion of progress meeting on tracking form.

**Ensure that you and your administrator have dated and initialed your progress on your tracking form for this module. Go to the module summary.**

**MODULE SUMMARY**

Main topics presented in this module include:

- NRC Mission
- Purpose of the NRC Inspection Program
- Purpose of Standard Review Plan (NUREG-1520)
- Definitions of Nuclear Criticality Safety
- Role of the Inspector and License Reviewer
- Criticality Accident Alarms
- Data References for Criticality Safety Guidance
- Performance-based Inspections
- NCS Inspection Objectives for Procedures 88015 and 88020
- Examples of Inspection Activities

**Congratulations! You are ready to go to the next assigned module.**