

**CRITICAL (SUB-CRITICAL) FACILITIES**

DATE:

**CONFIDENTIAL  
WHEN COMPLETED**

APPROVED BY OMB: NO. 3150-0056

EXPIRES: 07/31/2005

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**INTERNATIONAL ATOMIC ENERGY AGENCY  
DEPARTMENT OF SAFEGUARDS AND INSPECTION**

**DESIGN INFORMATION  
QUESTIONNAIRE \***

(CONTINUED)

The "Confidential" marking on this form is for IAEA purposes only. It indicates that the IAEA considers the information in the completed form to be 'safeguards confidential' and is not to be confused with any U.S. security classification.

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\* Questions which are not applicable may be left unanswered.

**CRITICAL (SUB-CRITICAL) FACILITIES**

**GENERAL FACILITY DATA**

13. NUMBER OF CRITICAL ASSEMBLIES IN THE FACILITY AND THEIR LOCATION

DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:

**CRITICAL (SUB-CRITICAL) FACILITIES**

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**GENERAL FACILITY DATA**

14. EXPECTED MAXIMUM OPERATING POWER

15. (1) MODERATOR,  
(2) REFLECTOR,  
(3) BLANKET,  
(4) COOLANT

**NUCLEAR MATERIAL DESCRIPTION**

16. MAIN TYPES OF NUCLEAR MATERIAL/  
FUEL AND NOMINAL WEIGHT OF  
NUCLEAR MATERIAL IN THE FACILITY

17. FUEL ENRICHMENT RANGE  
AND PU CONTENT

# CRITICAL (SUB-CRITICAL) FACILITIES

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## NUCLEAR MATERIAL DESCRIPTION

<p>18. DESCRIPTION OF FUEL ELEMENTS (for each type)</p> <ul style="list-style-type: none"><li>- physical and chemical form of fuel;</li><li>- geometrical form or type;</li><li>- dimensions;</li><li>- number of slugs per element;</li><li>- nuclear material and fissionable material and its quantity (with design tolerance);</li><li>- composition of alloy, etc.</li></ul>	<p>DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:</p>
<p>19. CLADDING MATERIAL:</p> <ul style="list-style-type: none"><li>- thickness;</li><li>- composition of material;</li><li>- bonding</li></ul>	
<p>20. SUB-ASSEMBLIES OF FUEL (number of fuel elements per nuclear assembly, arrangement of fuel elements in sub-assembly, configuration and nominal weight of nuclear material per sub-assembly [with design tolerance])</p>	<p>DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:</p>
<p>21. BASIC OPERATIONAL ACCOUNTING UNIT (fuel elements/assemblies, etc.)</p>	<p>DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:</p>

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**NUCLEAR MATERIAL DESCRIPTION**

22. OTHER TYPES OF UNITS

23. MEANS OF NUCLEAR MATERIAL/FUEL IDENTIFICATION

24. OTHER NUCLEAR MATERIAL IN THE FACILITY (each separately identified)

**CRITICAL (SUB-CRITICAL) FACILITIES**

DATE:

CORE	
<p>25. CORE DIAGRAM (for each critical assembly showing the general disposition, core support structure, shielding and heat removal arrangements, channels for fuel elements or sub-assemblies, control rods, moderator, reflector, beam tubes, dimensions, etc.)</p>	<p>DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:</p>
<p>26. RANGES OF CRITICAL MASS AND MAXIMUM RADIUS</p>	
<p>27. DESCRIPTION OF MOST COMMON CONFIGURATIONS</p>	<p>DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:</p>
<p>28. AVERAGE MEAN NEUTRON FLUX IN THE CORE:</p> <p>Thermal:</p> <p>Fast:</p>	
<p>29. INSTRUMENTATION FOR MEASURING NEUTRON AND GAMMA FLUX:</p> <ul style="list-style-type: none"> <li>- accuracy and type of principal instruments;</li> <li>- location of indicator and recorder;</li> </ul>	
<p>30. RADIATION LEVEL OUTSIDE/INSIDE SHIELDING AT SPECIFIED PLACES</p>	<p>RADIATION LEVEL DIAGRAM(S) ATTACHED UNDER REF. NUMBERS:</p>
<p>31. MAXIMUM RADIATION ACTIVITY OF FUEL AFTER REFUELING (at the surface and at a distance of 1 metre)</p>	

**CRITICAL (SUB-CRITICAL) FACILITIES**

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**NUCLEAR MATERIAL FLOW**

<p>32. SCHEMATIC FLOW SHEET FOR NUCLEAR MATERIAL (identification of:  -- measurement points; -- accountability areas; -- inventory location, etc.  for operator purposes)</p>	<p>FLOW SHEET(S) FOR NORMAL OPERATION ATTACHED UNDER REFERENCE NUMBERS:</p>
<p>33. INVENTORY State quantity range and approximate uranium enrichment and plutonium content for:</p> <p>i) Nuclear Material Storage(s)</p>  <p>ii) Core Area(s)</p>  <p>iii) Assembly Core(s) Itself</p>  <p>iv) Other Locations</p>	

**CRITICAL (SUB-CRITICAL) FACILITIES**

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**NUCLEAR MATERIAL HANDLING**

<p>34. NUCLEAR MATERIAL</p> <p>i) Packaging (description)</p> <p>ii) Storage Plan and Arrangements</p> <p>iii) Capacity of Storage</p> <p>iv) Nuclear Material Preparation (description and identification of layout and general arrangement)</p>	<p></p> <p>DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:</p> <p></p> <p>DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:</p>
<p>35. FUEL TRANSFER EQUIPMENT, IF ANY</p>	<p>DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:</p>
<p>36. ROUTES FOLLOWED BY NUCLEAR MATERIAL</p>	<p>DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:</p>

**NUCLEAR MATERIAL HANDLING**

37. MAIN EQUIPMENT USED FOR

i) Nuclear Material Assembling

ii) Nuclear Material Testing

iii) Nuclear Material Measuring

**PROTECTION AND SAFETY MEASURES**

38 BASIC MEASURES FOR PHYSICAL  
PROTECTION OF NUCLEAR MATERIAL



**PROTECTION AND SAFETY MEASURES**

39. SPECIFIC HEALTH AND SAFETY RULES FOR INSPECTOR COMPLIANCE (if extensive, attach separately)

**NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL**

40. SYSTEM DESCRIPTION

Give description of:

- the nuclear material accountancy system;
- the method of recording and reporting accountancy data;
- the procedures for account adjustment after inventory and correction of mistakes, etc.

under the following headings:

- i) General

SPECIMEN FORMS USED IN ALL PROCEDURES ATTACHED UNDER REFERENCE NUMBERS:

**CRITICAL (SUB-CRITICAL) FACILITIES**

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**NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL**

40. SYSTEM DESCRIPTION  
(Continued)

i) General (continued)

ii) Receipts

**CRITICAL (SUB-CRITICAL) FACILITIES**

DATE:

**NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL**

40. SYSTEM DESCRIPTION  
(Continued)

iii) Shipments

iv) Physical Inventory  
Description of procedures, scheduled frequency, methods of operator's inventory taking (both for item and/or bulk accountancy), including relevant assay methods and expected accuracy, access to nuclear material, methods of verification of nuclear material in the core

v) Operational Records and Accounting Records  
(including method of adjustment or correction and place of preservation and language)

LIST OF MAJOR ITEMS OF EQUIPMENT REGARDED AS NUCLEAR MATERIAL CONTAINERS ATTACHED UNDER REFERENCE NUMBERS:

41. HOW OFTEN IS CORE DISASSEMBLED TO PERMIT THE VERIFICATION OF CONTAINED NUCLEAR MATERIAL?

**CRITICAL (SUB-CRITICAL) FACILITIES**

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**NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL**

<p>42. FEATURES RELATED TO CONTAINMENT AND SURVEILLANCE MEASURES (general description of applied or possible measures)</p>	
<p>43. FOR EACH MEASUREMENT POINT OF ACCOUNTABILITY AREAS, IDENTIFIED UNDER QS. 32, GIVE THE FOLLOWING (if applicable)</p> <ul style="list-style-type: none"> <li>i) Description of Location, Type, Identification</li>   <li>ii) Anticipated Types of Inventory Change and Possibilities to Use This Measurement Point for Physical Inventory Taking</li>   <li>iii) Physical and Chemical Form of Nuclear Material (with cladding materials description)</li>   <li>iv) Nuclear Material Containers, Packaging</li>   <li>v) Sampling Procedure and Equipment Used</li> </ul>	<p>SEPARATE SHEET(S) CAN BE ATTACHED FOR EACH MEASUREMENT POINT IF NECESSARY, ATTACH DRAWING(S)</p> <hr/> <p>IF NECESSARY, ATTACH DRAWING(S)</p>

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**NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL**

43. FOR EACH MEASUREMENT POINT OF ACCOUNTABILITY AREAS, IDENTIFIED UNDER QS. 32, GIVE THE FOLLOWING (if applicable)  
(Continued)

vi) Measurement Method(s) and Equipment Used

vii) Source and Level of Random and Systematic Errors (measurements)

viii) Technique and Frequency of Calibration of Equipment Used

ix) Method of Converting Source Data to Batch Data

x) Means of Batch Identification

xi) Anticipated Batch Flow Rate Per Year

xii) Anticipated Number of Items Per Flow and Inventory Batch

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**NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL**

43. FOR EACH MEASUREMENT POINT OF ACCOUNTABILITY AREAS, IDENTIFIED UNDER QS. 32, GIVE THE FOLLOWING (if applicable)  
(Continued)

xiii) Type, Composition and Quantity of Nuclear Material Per Batch (with indication of batch data, total weight of nuclear material in item, the isotopic composition (for uranium), and Pu content, when appropriate; form of nuclear material)

xiv) Features Related to Containment-Surveillance Measures

**OPTIONAL INFORMATION**

44. OPTIONAL INFORMATION (that the operator considers relevant to safeguarding the facility)

Signature of Responsible Officer:

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Date: \_\_\_\_\_