

# ISOTOPIC ENRICHMENT PLANTS



**IAEA**  
International Atomic Energy Agency

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## INTERNATIONAL ATOMIC ENERGY AGENCY DEPARTMENT OF SAFEGUARDS

# DESIGN INFORMATION QUESTIONNAIRE \*

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The purpose of this document is to obtain the facility design information required by the Agency in order to discharge its safeguards responsibilities. It will also serve as a checklist for examination of design information by Agency inspector(s). If, in any area, insufficient space is available add further sheets to the extent necessary.

IAEA USE ONLY	
COUNTRY	
COUNTRY OFFICER	
TYPE	Isotopic enrichment plants
DATE OF INITIAL DATA	
VERIFICATION	
LAST REVIEW AND UPDATING	

## ALL FACILITIES

### GENERAL INFORMATION

<b>1. Name of the facility</b> (include usual abbreviation)			
<b>2. Location and postal address</b>			
<b>3. Owner</b> (Legally responsible)			
<b>4. Operator</b> (Legally responsible)			
<b>5. Description</b> (Main features only)			
<b>6. Purpose</b>			
<b>7. Status</b> (e.g., planned; under construction, in operation; shut down; closed down; decommissioned)			
<b>8. Construction schedule dates</b> (if not in operation)	<b>Start of Construction (MM/DD/YYYY)</b>	<b>Commissioning (MM/DD/YYYY)</b>	<b>Operation (MM/DD/YYYY)</b>
<b>9. Normal operating mode</b> (days only, two shift, three shift; number of days/annum, etc.)			
<b>10. Facility layout</b> (structural containment, fences, access, nuclear material storage areas, laboratories, waste disposal areas, routes followed by nuclear material, experimental and test areas, etc.)	DRAWING(S) ATTACHED UNDER REF. NOs.		
<b>11. Sitting of facility</b> (Maps showing in sufficient detail: location, premises and perimeter of facility, other buildings, roads, railways, rivers, etc.)	DRAWING(S) AND/OR MAPS ATTACHED UNDER REF. NOs.		
<b>12. Names and/or titles and address of responsible officers</b> (for nuclear material accountancy and control and contact with the Agency. If possible attach organization charts showing position of officers)			



**OVERALL PROCESS PARAMETERS**

<p><b>13. Facility description</b> (indicating important items of equipment which use, produce or process nuclear material, all process stages and storage areas and feed, product, tail and waste points)</p>	<p>GENERAL FLOW DIAGRAM(S) ATTACHED UNDER REF. NOS.)</p>
<p><b>14. Process description</b> (identifying sampling and key measurement points; MBAs; inventory locations)</p>	<p>FLWSHEET(S) FOR NORMAL OPERATION ATTACHED UNDER REF. NOS.)</p>
<p><b>15. Design capacity</b> (Throughput and energy consumption)</p>	<p>MTUSW/annum and MW</p>
<p><b>16. Anticipated throughput</b> (in the form of a forward program indicating proportion of various feeds and products)</p>	

**NUCLEAR MATERIAL DESCRIPTION AND FLOW**

17. Main material description	Feed	Product	Tails
i) Chemical and physical form			
ii) Throughput and enrichment ranges (for normal flowsheet operation indicating if blending and/or recycling takes place)			
iii) Batch size/flow rate and campaign period			
iv) Maximum capability as concentration of top product (nat. U feed)			
v) Storage inventory			
vi) Frequency of receipt or shipment			
<p><b>18. Waste material</b> i) Source and form (indicating major contributors; liquid or solid; range of constituents; enrichment range; include contaminated equipment)</p>			
ii) Storage inventory range, method and frequency of recovery/disposal			

## NUCLEAR MATERIAL DESCRIPTION AND FLOW

<b>19. Container and storage area descriptions</b>	<p>SEPARATE NOTE TO BE ATTACHED. Describing for feeds, products and wastes: the type and size of containers used (include operational capacity); method of storage: filling and emptying procedures (include time cycle); and any special identification features.</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
<b>20. Measured discards and retained waste As % of input</b>	<div style="border: 1px solid black; height: 30px; width: 100%;"></div>
<b>21. Inventory</b>  i) In-process (within plant and equipment during normal operation; indicate quantity, form and main and any significant change with time or throughput)	<div style="border: 1px solid black; height: 100px; width: 100%;"></div>

## PLANT MAINTENANCE

<b>22. Maintenance, decontamination, clean-out</b>  i) Normal plant maintenance	<p>SEPARATE NOTE TO BE ATTACHED. Describing plans and procedures and defining all sampling and key measurement points associated with:</p> <div style="border: 1px solid black; height: 30px; width: 100%;"></div>
ii) Plant and equipment decontamination and subsequent nuclear material recovery	<div style="border: 1px solid black; height: 30px; width: 100%;"></div>
iii) Plant and equipment clean-out including means of ensuring vessels are empty	<div style="border: 1px solid black; height: 30px; width: 100%;"></div>

## PROTECTION AND SAFETY MEASURES

<b>23. Basic measures for physical protection of nuclear material</b>	<div style="border: 1px solid black; height: 30px; width: 100%;"></div>
<b>24. Specific health and safety rules for inspector compliance</b> (if extensive, attach separately)	<div style="border: 1px solid black; height: 30px; width: 100%;"></div>

## NUCLEAR MATERIAL ACCOUNTANCY

<b>25. System description</b> Give a description of the nuclear material accounting system, the method of recording and reporting accountancy data and establishing material balances, procedures for account adjustment after plant inventory, mistakes, etc., under the following headings:  i) General	<p>SPECIMEN FORMS USED IN ALL PROCEDURES ATTACHED UNDER REF. NOs.</p> <div style="border: 1px solid black; height: 150px; width: 100%;"></div>
ii) Receipts (including method of dealing with shipper/receiver differences and subsequent account corrections)	<div style="border: 1px solid black; height: 50px; width: 100%;"></div>



## NUCLEAR MATERIAL ACCOUNTANCY

iii) Shipments (product and waste)	
iv) Physical inventory (Frequency, procedures, estimated distribution)	LIST OF MAJOR ITEMS OF EQUIPMENT REGARDED AS NUCLEAR MATERIAL CONTAINERS ATTACHED UNDER REF. NOS.
v) Measured discards	
vi) Operational records and accounts (including method of adjustment or correction and place of preservation, and language)	
<b>26. For each key measurement point identified under Qs. 14 and 22 Give the following:</b> For each measurement point fill in separate sheet. Number of measurement points: 1	
i) Identification	
ii) Chemical and physical form of material	
iii) Sampling procedure and equipment used	
iv) Measurement/analytical method and equipment used	
v) Source and level of random and systematic errors (weighing, volume, sampling, analytical)	
vi) Method of converting source data to batch data (standard calculative procedures, constants and empirical relationships)	
vii) Calculative and error propagation technique	
viii) Technique and frequency of calibration of equipment used	
ix) Program for the continuing appraisal of the accuracy of weight, volume, sampling techniques and measurement methods	
x) Program for statistical evaluation of data from (viii) and (ix)	



### NUCLEAR MATERIAL ACCOUNTANCY

**27. Features related to containment and surveillance measures**

(general description of applied or possible measures in reference to floor plan or plant layout)

i) S/R differences

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ii) Book inventory

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iii) Physical inventory

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iv) MUF

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### POST-OPERATION INFORMATION

**28. Decommissioning schedule dates**

End of operations (MM/DD/YYYY)

Decommissioned (MM/DD/YYYY)

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**29. Facility decommissioning plan**

PLAN(s) ATTACHED UNDER REF. NOS

i) Key events of the decommissioning plan

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ii) Removal and recovery of nuclear material

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iii) Removing or rendering inoperable essential equipment

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### OPTIONAL INFORMATION

**30. Optional information**

(that the operator considers relevant to safeguarding the facility)

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**Signature of Responsible Officer**

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