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APPROVED BY OMB: NO. 3150-0056 **EXPIRES: 08/31/2020**

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.

* Questions which are not applicable may be left unanswered.

IAEA USE ONLY

RESEARCH AND POWER REACTORS

GENERAL REACTOR DATA

13. FACILITY DESCRIPTION	GENERAL FLOW DIAGRAM(S) ATTACHED UNDER REF. NOS.
14. RATED THERMAL OUTPUT, ELECTRICITY OUTPUT (for power reactors)	
15. NUMBER OF UNITS (REACTORS) AND THEIR LAYOUT IN THE NUCLEAR POWER PLANT	
16. REACTOR TYPE	

17. TYPE OF REFUELING (on- or off-load)	
18. CORE ENRICHMENT RANGE AND PU CONCENTRATION (at equilibrium for on-load reactors, initial and final for off-load reactors)	
19. MODERATOR	
20. COOLANT	
21. BLANKET, REFLECTOR	
22. TYPES OF FRESH FUEL	
23. FRESH FUEL ENRICHMENT (U-235) AND/OR PU CONTENT (average enrichment per each type of assembly)	
24. NOMINAL WEIGHT OF FUEL IN ELEMENTS/ASSEMBLIES (with design tolerances)	
25. PHYSICAL AND CHEMICAL FORM OF FRESH FUEL (general description)	

26. REACTOR ASSEMBLIES* (indicate for each type) -- types of assemblies; -- number of fuel assemblies, control and shim assemblies, experimental assemblies in the core, in blanket zone(s); -- number and types of fuel rods/elements** -- average enrichment and/or Pu content per assembly; -- general structure; -- geometric form; -- dimensions; -- cladding material	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:
27. DESCRIPTION OF FRESH FUEL ELEMENTS (indicate for each type) -- physical and chemical form of fuel; -- nuclear material and fissionalbe material and its quantity (with design tolerances); -- enrichment and/or Pu content; -- geometric form; -- dimensions; -- number of slugs/pellets per element; -- composition of alloy; -- cladding material (thickness, composition of material, bonding)	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:

* Assembly is the combination of elements or handling units such as cluster or bundle.
** Element is the smallest contained fuel unit.

28. PROVISION FOR ELEMENT EXCHANGE IN ASSEMBLIES OF EACH TYPE (indicate whether this is foreseen to become a routine operation)	
29. BASIC OPERATIONAL ACCOUNTING UNIT(S) (fuel elements/assemblies, etc.)	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:
30. OTHER TYPES OF UNITS	
31. MEANS OF NUCLEAR MATERIAL/FUEL IDENTIFICATION	

NUCLEAR MATERIAL DESCRIPTION	
32. OTHER NUCLEAR MATERIAL IN THE FACILITY (each separately identified)	
NUCLEAR MATERIAL FLOW	
33. SCHEMATIC FLOW SHEET FOR NUCLEAR MATERIAL (identifying measurement points, accountability areas, inventory locations, etc.)	DIAGRAM(S) ATTACHED UNDER REFERENCE NUMBERS:

NUCLEAR MATERIAL FLOW	
34. INVENTORY STATE QUANTITY RANGE, NUMBER OF ITEMS, AND APPROXIMATE URANIUM ENRICHMENT AND PLUTONIUM CONTENT FOR (under normal operating conditions): i) Fresh Fuel Storage ii) Reactor Core iii) Spent Fuel Storage iv) Other Locations	
35. LOAD FACTOR (power reactor only)	
36. REACTOR CORE LOADING (number of elements/assemblies)	

NUCLEAR MATERIAL FLOW	
37. REFUELING REQUIREMENTS (quantity, time interval)	
38. BURN-UP (average/maximum)	
39. IS THE IRRADIATED FUEL TO BE REPROCESSED OR STORED? (if stored, indicate site)	
NUCLEAR MATERIAL HANDLING	
40. FRESH FUEL i) Packaging (description)	
ii) Layout, General Arrangements, and Storage Plan	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:

NUCLEAR MATERIAL HANDLING	
40. FRESH FUEL (Continued) iii) Capacity of Store	
(iv) Fuel Preparation and Assay Room, and Reactor Loading Area (description and indication of layout and general arrangement)	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:
41. FUEL TRANSFER EQUIPMENT (including refueling machines)	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:
42. ROUTES FOLLOWED BY NUCLEAR MATERIAL (fresh fuel, irradiated fuel, blanket, other material)	

NUCLEAR MATERIAL HANDLING	
43. REACTOR VESSEL (showing core location, access to vessel, vessel openings, fuel handling in vessel)	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:
44. REACTOR CORE DIAGRAM (showing general disposition, lattice, form, pitch, dimensions of core, reflector, blanket; location, shapes, and dimensions of: fuel elements/assemblies: control elements/assemblies; experimental elements/assemblies)	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:
45. NUMBER AND SIZE OF CHANNELS FOR FUEL ELEMENTS OR ASSEMBLIES AND FOR CONTROL ELEMENTS IN THE CORE	
46. AVERAGE MEAN NEUTRON FLUX IN THE CORE: Thermal: Fast:	

NUCLEAR MATERIAL HANDLING	
47. INSTRUMENTATION FOR MEASURING NEUTRON AND GAMMA FLUX	
48. IRRADIATED FUEL i) Layout, Spent Fuel Storage Plan, and General Arrangements (internal and external)	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:
ii) Method of Storage	
iii) Design Capacity of Storage	
iv) Minimum and Normal Cooling Period Prior to Shipment	

NUCLEAR MATERIAL HANDLING	
48. IRRADIATED FUEL (Continued) v) Description of Irradiated Fuel Transport Equipment and Shipping Cask (if no information on site, where is it held?)	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:
49. MAXIMUM ACTIVITY OF FUEL/BLANKET AFTER REFUELING (at the surface and at a distance of 1 metre)	
50. METHODS AND EQUIPMENT FOR HANDLING IRRADIATED FUEL (except for that already given under Qs. 41, 48.v)	

NUCLEAR MATERIAL HANDLING

51. NUCLEAR MATERIAL TESTING AREAS (except as already given under Q. 40) For each such area, briefly describe: i) Nature of Activities	
ii) Major Equipment Available (e.g., hot cell, fuel element decladding, and dissolution equipment)	
iii) Shipping Containers Used (main material, scrap, and waste)	
iv) Storage Areas for Both Unirradiated and Irradiated Materials	
v) Layout and General Arrangement	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:

COOLANT DATA	
52. FLOW DIAGRAM (indicating mass flow, temperature and pressure at major points, etc.)	DRAWING(S) ATTACHED UNDER REFERENCE NUMBERS:
PROTECTION AND SAFETY MEASURES	
53. BASIC MEASURES FOR PHYSICAL PROTECTION OF NUCLEAR MATERIAL	

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

NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL

55. SYSTEM DESCRIPTION
Give a description of the nuclear material accounting system, of the method of recording and reporting accountancy data, the procedures for account adjustments after inventory, and correction of mistakes, etc., using the following headings:

i) General
(This section should also state what general and subsidiary ledgers will be used, their form (hard copies, tapes, microfilms, etc.), as well as who has the responsibility and authority. Source data (e.g., shipping and receiving forms, the initial recording of measurements and measurement control sheets) should be identified. The procedures for making adjustments, the source data and records should be covered as well as how the adjustments are authorized and substantiated.)

SPECIMEN FORMS USED IN ALL PROCEDURES ATTACHED UNDER REFERENCE NUMBERS:

NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL

55. SYSTEM DESCRIPTION (Continued)

ii) Receipts

iii) Shipments

NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL

55. SYSTEM DESCRIPTION (Continued)

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

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

v) Nuclear loss and production (estimation of limits)

NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL	
55. SYSTEM DESCRIPTION (Continued) vi) Operational Records and Accounts (including method of adjustment or correction and place or preservation and language)	
56. FEATURES RELATED TO CONTAINMENT AND SURVEILLANCE MEASURES (general description)	

NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL	
57. FOR EACH MEASUREMENT POINT OF ACCOUNTABILITY AREAS, IDENTIFIED IN PARTICULAR UNDER QS. 13, 33, 34, GIVE THE FOLLOWING (IF APPLICABLE)*	IF NECESSARY, ATTACH DRAWING(S)
i) Description of Location, Type, Identification	
ii) Anticipated Types of Inventory Change and Possibilities to Use This Measurement Point for Physical Inventory Taking	
iii) Physical and Chemical Form of Nuclear Material (with cladding materials description)	

* For each measurement point, fill in separate sheet.

NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL	
57. FOR EACH MEASUREMENT POINT OF ACCOUNTABILITY AREAS, IDENTIFIED IN PARTICULAR UNDER QS. 13, 33, 34, GIVE THE FOLLOWING (IF APPLICABLE)* (Continued) iv) Nuclear Material Containers, Packaging	
v) Sampling Procedures and Equipment Use	
vi) Measurement Method(s) and Equipment Use (item counting, neutron flux, power level, nuclear burn-up and production, etc.)	

* For each measurement point, fill in separate sheet.

NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL	
57. FOR EACH MEASUREMENT POINT OF ACCOUNTABILITY AREAS, IDENTIFIED IN PARTICULAR UNDER QS. 13, 33, 34, GIVE THE FOLLOWING (IF APPLICABLE)* (Continued) vii) Source and Level of Accuracy	IF NECESSARY, ATTACH DRAWING(S)
viii) Technique and Frequency of Calibration of Equipment Used	
ix) Programme for the Counting Appraisal of the Accuracy of Methods and Techniques Used	

* For each measurement point, fill in separate sheet.

NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL	
57. FOR EACH MEASUREMENT POINT OF ACCOUNTABILITY AREAS, IDENTIFIED IN PARTICULAR UNDER QS. 13, 33, 34, GIVE THE FOLLOWING (IF APPLICABLE)* (Continued) x) Methods of Converting Source Data to Batch Data (standard calculative procedures, constants used, empirical relationships, etc.)	IF NECESSARY, ATTACH DRAWING(S)
xi) Anticipated Batch Flow Per Year	
xii) Anticipated Number of Items Per Flow and Inventory Batches	

* For each measurement point, fill in separate sheet.

NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL

57. FOR EACH MEASUREMENT POINT OF ACCOUNTABILITY AREAS, IDENTIFIED IN PARTICULAR UNDER QS. 13, 33, 34, GIVE THE FOLLOWING (IF APPLICABLE)* (Continued) xiii) Type, Composition and Quantity of Nuclear Material Per Batch (with indication of batch data, total weight of each element of nuclear material and, in the case of plutonium and uranium, the isotopic composition when appropriate, form of nuclear material)	IF NECESSARY, ATTACH DRAWING(S)
xiv) Access to Nuclear Material and its Location	
xv Features Related to Containment-Surveillance Measures	

* For each measurement point, fill in separate sheet.

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

Signature of Responsible Officer:

Date: