(19) Europäisches Patentamt
European Patent Office
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(11) **EP 4 325 522 A8**

(12) **CORRECTED EUROPEAN PATENT APPLICATION**

(15) Correction information:
Corrected version no 1 (W1 A2)
Corrections, see
Abstract

(48) Corrigendum issued on:
03.04.2024 Bulletin 2024/14

(43) Date of publication:
21.02.2024 Bulletin 2024/08

(21) Application number: **23214788.4**

(22) Date of filing: **13.09.2018**

(51) International Patent Classification (IPC):
G21C 17/108 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
G21C 17/108; G21C 23/00; G21G 1/02;
Y02E 30/30

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **11.10.2017 US 201715729745**

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
18870192.4 / 3 695 422

(71) Applicant: **Westinghouse Electric Company LLC**
Cranberry Township, PA 16066 (US)

(72) Inventors:
- **HEIBEL, Michael D.**
  Harrison City, PA 15636 (US)
- **CZERNIAK, Luke D.**
  Harrison City, PA 15636 (US)
- **HEAGY, Melissa M.**
  Butler, PA 16002 (US)
- **CARVAJAL, Jorge V.**
  Irwin, PA 15642 (US)
- **MCARDLE, Matthew D.**
  Murrysville, PA 15668 (US)
- **TAYLOR, Jeffrey J.**
  Pittsburgh, PA 15239 (US)
- **YANKEL, James L.**
  Trafford, PA 15085 (US)

(74) Representative: **Fleuchaus & Gallo Partnerschaft mbB**
Steinerstraße 15/A
81369 München (DE)

Remarks:
This application was filed on 07-12-2023 as a divisional application to the application mentioned under INID code 62.

(54) APPARATUS FOR PLANTING AND HARVESTING RADIOISOTOPES ON A MASS PRODUCTION BASIS

(57) A method of irradiating multiple specimens within a core (14) of a nuclear reactor (16) that has a moveable in-core, radiation detector flux mapping system, wherein the core comprises a plurality of fuel assemblies respectively having instrument thimbles into which a radiation detector (12) of the flux mapping system can be inserted and travel through. The method comprises inserting a first specimen holder (48) containing a first specimen (72) at a lead end of a first drive cable (36) driven by a first drive unit (34), into a first instrument thimble in the core (14); remotely detaching the first drive cable (36) from the first specimen holder (48) and fixing an axial position of the first specimen holder within the first instrument thimble; withdrawing the first drive cable (36) from the reactor (16); attaching a second specimen holder (48) containing a second specimen (72) to the lead end of the first drive cable (36) driven by the first drive unit (34); inserting the second specimen holder (48) containing the second specimen (72) into a second instrument thimble in the core (14); remotely detaching the first drive cable (36) from the second specimen holder (48) and fixing an axial position of the second specimen holder within the second instrument thimble; withdrawing the first drive cable (36) from the reactor (16); in between the withdrawing step and the second inserting step inserting a moveable incore radiation detector (12) from the moveable in-core detector radiation flux mapping system, attached to a second drive cable (50) driven by a second drive unit

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(24), into and through a third instrument thimble; and withdrawing the moveable in-core radiation detector (12) from the reactor (16) after performing a flux mapping exercise.

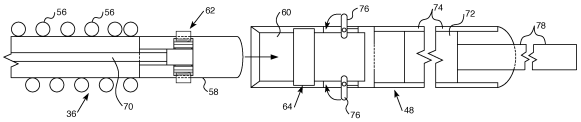

FIG. 3