

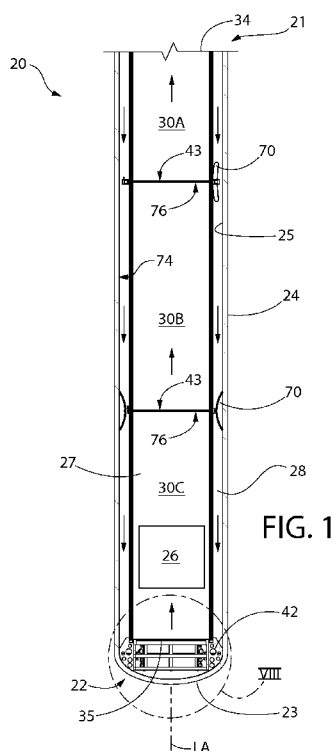


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 61/770,213 27 February 2013 (27.02.2013) US</p> <p>(71) Applicant: SMR INVENTEC, LLC [US/US]; One Holtec Drive, Marlton, NJ 08053 (US).</p> <p>(72) Inventors: SINGH, Krishna, P.; 202 Gomez Road, Hobe Sound, FL 33455 (US). RAMPALL, Indresh; 353 Tuvira Lane, Cherry Hill, NJ 08003 (US). RAJKUMAR, Joseph; 100 Conestoga Drive, Apt. #202, Marlton, NJ 08053 (US).</p> | <p>(74) Agent: BELLES, Brian, L.; The Belles Group, PC, 404 S. 16th Street, Philadelphia, PA 19146 (US).</p> <p>(81) Designated States <i>(unless otherwise indicated, for every kind of national protection available):</i> AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.</p> <p>(84) Designated States <i>(unless otherwise indicated, for every kind of regional protection available):</i> ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,</p> |
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[Continued on next page]

(54) Title: NUCLEAR REACTOR SHROUD



(57) Abstract: A nuclear reactor in one embodiment includes a cylindrical, body having an internal cavity, a nuclear fuel core, and a shroud disposed in the cavity. The shroud comprises an inner shell, an outer shell and a plurality of intermediate shells disposed between the inner and outer shells. Pluralities of annular cavities are formed between the inner and outer shells which are filled with primary coolant such as demineralized water. The coolant-filled annular cavities may be sealed at the top and bottom and provide an insulating effect to the shroud. In one embodiment, the shroud may comprise a plurality of vertically-stacked self-supported shroud segments which are coupled together.



TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G21C 3/06, G21C 11/08, G21C 13/02 (2014.01)

CPC - G21C 11/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): G21C 3/06, G21C 11/08, G21C 13/02 (2014.01)

CPC: G21C 11/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8): G21C 3/06, G21C 11/08, G21C 13/02 (2014.01)

CPC: G21C 3/06, 11/00, 11/08, 11/086, 13/02, 15/02; Y02E 30/40 (text search - see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase; PubWEST; Google

Search Terms Used: shells, layers, shroud, nuclear, downcomer, coolant, water, intermediate, baffle, barrel, cavities, fission, inner, outer, coaxial, wall, third, three, lug, segment, section

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — A	US 6,009,137 A (MATSUMOTO et al.) 28 December 1999 (28.12.1999), entire document especially, Fig 1; col 3, lns 1-19; col 1, lns 15-32; col 2, lns 4-20	34 ----- 20-33, 35-38
A	US 3,124,514 A (KOUTZ et al.) 10 March 1964 (10.03.1964), entire document especially Fig 1; col 2, lns 6-10; col 2, lns 29-31; col 2, lns 58-60; col 4, lns 16-38	1-33
A	US 4,039,377 A (ANDRIEU et al.) 02 August 1977 (02.08.1977), entire document especially Fig 1; col 4, lns 1-5; col 4, lns 29-35	1-19
A	US 4,163,470 A (JOHNSEN et al.) 07 August 1979 (07.08.1979), entire document especially Fig 1; col 4, lns 1-51	1-38
A	US 3,939,804 A (BARRATT et al.) 24 February 1976 (24.02.1976), entire document especially Fig 1; col 2, lns 19-25	1-38
A	US 5,443,802 A (FREEDMAN et al.) 22 August 1995 (22.08.1995), entire document especially Fig 1; col 2, lns 42-51	35-38

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"&" document member of the same patent family

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Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300

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