



US005759399A

United States Patent [19]

[11] Patent Number: **5,759,399**

Bilanin et al.

[45] Date of Patent: **Jun. 2, 1998**

[54] **HIGH CAPACITY, LOW HEAD LOSS, SUCTION STRAINER FOR NUCLEAR REACTORS**

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[21] Appl. No.: **780,582**

[22] Filed: **Jan. 8, 1997**

[51] Int. Cl.⁶ **G21C 19/307**; B01D 29/41; B01D 35/02; B01D 35/027

[52] U.S. Cl. **210/416.1**; 210/346; 210/461; 210/486; 376/313

[58] Field of Search 210/461, 486, 210/487, 488, 416.1, 346, 347, 460; 376/313

- 4,814,093 3/1989 Frykhult .
- 4,818,402 4/1989 Steiner et al. .
- 4,842,739 6/1989 Tang .
- 4,902,420 2/1990 Pall et al. .
- 5,055,192 10/1991 Artinyan et al. .
- 5,376,278 12/1994 Salem .
- 5,413,712 5/1995 Gewiss .
- 5,426,679 6/1995 Henriksson .
- 5,453,180 9/1995 Henriksson .
- 5,520,805 5/1996 Majola .
- 5,539,790 7/1996 Henriksson .
- 5,612,983 3/1997 Hendriksson .

OTHER PUBLICATIONS

"New ideas for cylindrical pipe intakes can help reduce fish and larvae kills" by R.T. Richards, Burns & Roe, Inc., Jun., 1980, edition of Power Magazine, pp. 64-67.

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[57] ABSTRACT

A suction strainer for straining water from the emergency suppression pool of a boiling water reactor includes a plurality of stacked, perforated disks having an internal core with a minimum internal radius $r(x)$ that decreases with increased distance from the intake of the strainer, so that the core has a tapered profile. Internal radius $r(x)$ may vary linearly or exponentially or a combination of both. The stacked, perforated disks each include a first surface that faces in the direction of the intake and a second surface, that faces away from the intake. A circumferential band may connect the first and second surfaces together.

19 Claims, 22 Drawing Sheets

[56] References Cited

U.S. PATENT DOCUMENTS

- 2,720,983 10/1955 Kracklauer .
- 2,978,108 4/1961 Strassheim .
- 4,376,091 3/1983 Netkowicz .
- 4,421,646 12/1983 Corrage et al. .
- 4,543,188 9/1985 Okouchi .
- 4,549,963 10/1985 Jensen et al. .
- 4,594,162 6/1986 Berger .
- 4,637,877 1/1987 Hartmann et al. .
- 4,726,900 2/1988 Keskinen et al. .
- 4,738,778 4/1988 Taki et al. .
- 4,783,262 11/1988 Ostreicher et al. .

