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United States Patent [19] Rumbut, Jr.

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- [54] **ENVIRONMENTALLY CONTROLLED CIRCUIT PACK AND CABINET**
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- [73] Assignee: **The United States of America as represented by the Secretary of the Navy, Washington, D.C.**
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5,210,680 5/1993 Scheibler 361/796
 5,245,508 9/1993 Mizzi 361/699

FOREIGN PATENT DOCUMENTS

0220954 11/1985 Japan 361/699
 3030399 2/1991 Japan 361/699

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[57] ABSTRACT

An apparatus for controlling the operating conditions of individual electronic circuit boards and a circuit board cabinet for holding one or more environmentally controlled circuit packs is provided. The enclosure provides both electronic ports and cooling ports. The cooling ports may be used to circulate liquid or gaseous coolant over the surface of the circuit board thereby dissipating built up heat. The electronic ports allow the board to be externally connected to other electronic components. Additionally, the enclosure provides an electrostatic buffer that protects the enclosed circuit board from electrostatic shock during operation or while the board is being externally handled and stored. Finally, the enclosure provides a barrier against foreign particles such as dust and moisture. The cabinet allows a plurality of circuit boards to be mounted in one cabinet and cooled by a single cooling source. It also provides coolant draining capabilities and a coolant distribution system.

[56] References Cited

U.S. PATENT DOCUMENTS

- 3,406,244 10/1968 Oktay .
- 3,648,113 3/1972 Rathjen .
- 4,493,010 1/1985 Morrison 361/698
- 4,514,746 4/1985 Lundqvist 361/698

6 Claims, 4 Drawing Sheets

