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RESEARCH AND DEVELOPMENT

Contract N00014-88-C-0571

"A Cryocooler for High Acceleration Applications"

1st Quarterly Report

for period

September 15, 1988 through December 14, 1988

Prepared for:

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1.0 WORK DONE DURING THE REPORT PERIOD

The work will be reported in the two current areas of effort.

1.1 Order Long Leadtime Materials and Equipment

All of the long leadtime equipment needed for the project has been ordered. The Cryofab CSM-35 Dewar and the Lakeshore Cryotronics DRC-91C temperature controller have already been received. The heat exchanger construction facility is in its later stage of completion. This facility consists of contractor-owned equipment to be used in construction of the heat exchangers. A 1000°C vacuum furnace, clean air bench, and metallurgical microscopes have been installed in the facility. A fume hood has been acquired for the control of echant vapors. An RF/DC sputtering system is now being purchased to complete the facility equipment.

Calculation of the necessary dimensions for the heat exchanger plate material are almost complete. An order for these materials should be placed within one week of the date of this report.

1.2 Design Test Facility

↙ The design of the gas handling and gas panel system are finished. Baseline designs for the dewar support mount top plate have been completed. A commercially manufactured Gifford-McMahan (GM) cryocooler owned by ACE, Inc. has been identified for use as a heat sink for the heat exchanger during initial performance tests. This cryocooler would take the place of the liquid

→ nitrogen vessel that was identified in the original proposal. Using the GM cryocooler for preliminary testing would simplify the experiments and improve reliability without adding any additional cost to the program. After preliminary testing is completed a separate unit containing the original cryostat design and the finalized Linde-Hampson cryocooler will be constructed. (TS) ←

2.0 WORK PLANNED FOR THE NEXT REPORT PERIOD

During the next reporting period, the rest of the long leadtime materials, such as the heat exchanger plate material, will be ordered. Also, construction of the heat exchanger test facility will begin.

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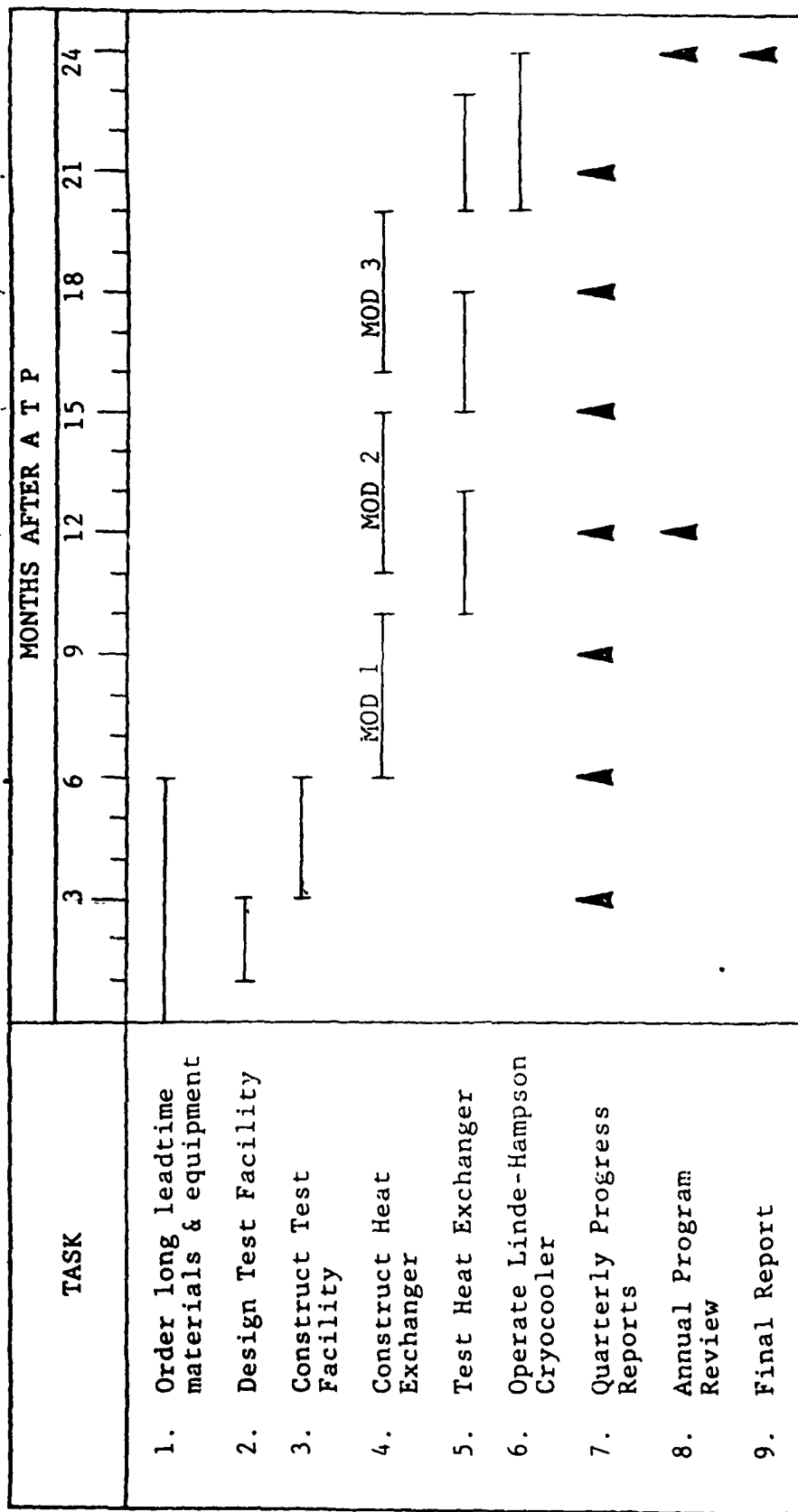


Fig. 4 Program Schedule