

sure shell seal must be capable of multiple opening and closing and carrying out extravehicular activities in flight. The approach we have adopted is shown in the chart and has the advantage of being applicable with minor modifications to the present structure of the spacecraft.

The redesigned hatch must be fully tested and qualified before manned flight.

We are also reviewing the launch complex to identify changes that will be necessary to mate with the redesigned hatch and to insure that the emergency egress route permits as rapid movement of the crew as possible.

Environmental Control System

The Environmental Control System is being reexamined with emphasis on materials, failure modes, choice of fluids, maintenance and servicing.

Particular attention is being devoted to improving fire resistance by careful selection of materials used and the types of plumbing connections with the aim of minimizing the potential of leakage or joint failure as well as improving the maintenance and servicing of the system (fig. 27, MC67-5967). Changes being

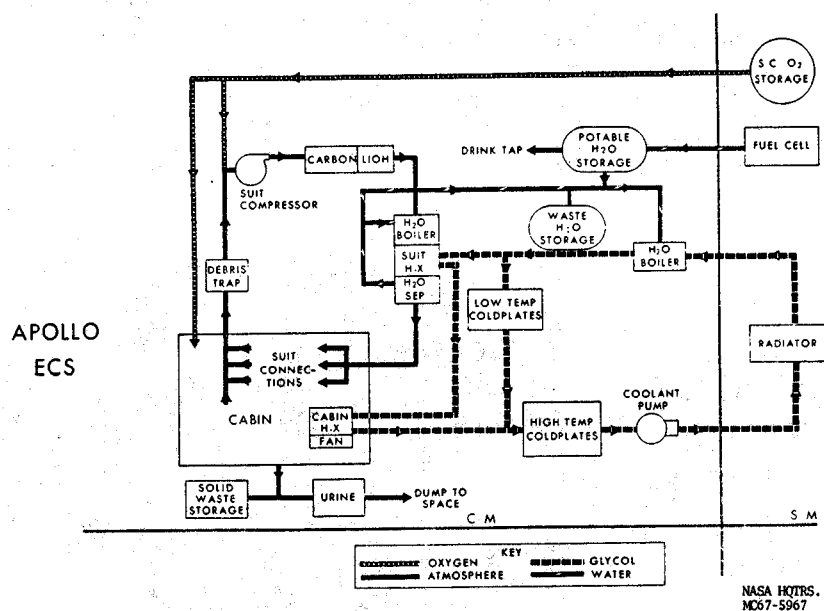


FIGURE 27

studied include the incorporation of improved mechanical or pressure joints, the relative merits of mechanical versus brazed joints, the feasibility of eliminating soldered joints, and the relative merits of steel versus aluminum tubing.

We are analyzing and conducting tradeoff studies to determine the feasibility of eliminating the present coolant fluid from the crew compartment. In this connection we are investigating other coolant fluids to determine if an alternate fluid with better fire resistance than water glycol could be used. Of all the fluids considered, approximately 46, four have been selected as potential candidates. None of the alternate fluids have thermal characteristics comparable to water glycol; however, three are considered non-combustible in air. Substitution of any of these coolant fluids will result in increased electrical power requirements, weight, increased water boiling during maximum heating, a new pump design and verification testing.