

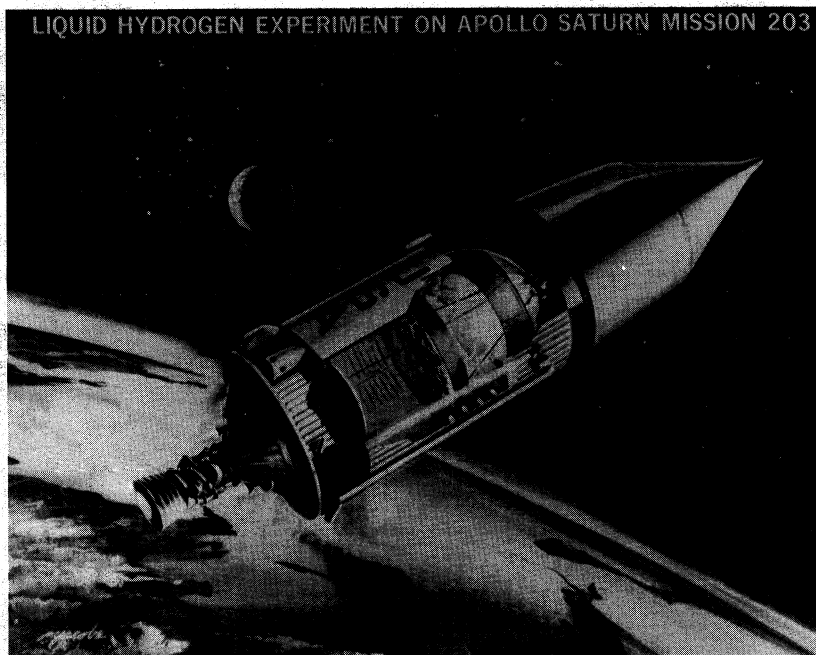


FIGURE 11

the question of what to do. A number of alternatives were considered including removal of the stage from the pad and replacing it with AS-202 first stage which would have caused a program delay; repair of the forward bulkhead at the Cape; return of the stage to Michoud for repair. To illustrate the working relationship and the ability of the team to respond to situations of this sort, we decided to take the one tank up over the top and out of the stack and replace it in the reverse manner with a tank flown down from Chrysler at Michoud (fig. 12). The importance of this is not that we changed the tank in 45 hours, but that we were able to do at the Cape a complex operation normally done in the factory, with the stage in a horizontal position, and with extremely precise tooling.

Prior to the AS-204 accident at the Cape, we were faced with a similar situation. Questionable equipment was found in one of our H-1 engines at the Cape and the engine had to be changed out (fig. 13). Again, this occurred after the launch vehicle had been erected on the launch pad. The importance of this was not just exchanging the engine but being able to acquire an engine from Rocketdyne, check it out with the other engines in the cluster with ground support equipment, particularly electronic support equipment, and maintain the launch schedule as required. This was done successfully.

Figure 14 is intended to convey the launch vehicle program flexibility which we have been trying to acquire to deal with contingencies and unexpected events. Flight AS-202 was scheduled to be launched in April 1966. In early 1966, problems plagued the spacecraft, and