quality-control representatives at major sources, and at other sources we have representatives that make periodic visits. In addition, we periodically audit the quality-control systems at all sources. We encourage the suppliers to have motivational programs, such as zero defects to attain quality products. We review their design using a preliminary design review and finally a critical design review using their final engineering. We have the suppliers qualify their parts to requirements we have specified under engineering and quality-control surveillance. We have almost 100 percent acceptance tests of hardware before delivery. There are Government personnel who conduct source surveillance at most of our suppliers' facilities to check our buy-off and the suppliers' systems. There is a retest upon arrival of parts at Michoud along with a careful receiving inspection. We select parts at random from our stores, and during assembly, we periodically do a teardown and inspection to see if the items are holding up. MSFC is also constantly providing us with information on problems other contractors are having with suppliers so we can hopefully identify potential problem areas and establish some corrective action before the problem can arise.

Still, we do get some real problems. For example, we are having problems with relays. Here in our Program Control Center where we are convened at the moment, you can see there is a wall panel that we devote to providing management with visibility to hardware problems that we are experiencing on the program. We have pictures of the problem parts posted on the panel. This is the relay under discussion (Fig. 15). We have encountered contamination in that relay, which obviously we can't have in a quality product.

Now, I would like to discuss our master schedule (Fig. 16). To explain the symbology used on the chart, I will describe the fifth flight stage schedule bar as an example. First, we buy material (denoted by the circle at the left of the bar), which has to start 17 months before we start to assemble a stage. After assembly, we test (identified as PMC on the chart) in that test building I told you about; we static fire or acceptance test (AT), refurbish (in which we replace certain test items with flight hardware), and run final poststatic testing; then we ship the stage to KSC. As you can see, we have started major assembly of the S–IC–10, and we have parts for the S–IC–11 through S–IC–15 already in the factory.

To summarize the S–IC program (Fig. 17), we are 5 weeks ahead of schedule. Of the total of three ground test stages and 15 flight stages, nine are now structurally complete; three flight stages have completed static firing and are in the various phases of being readied for shipment. The S–IC–1 is at the Cape, but has not yet been launched. Reflecting a bit on the status of this hardware, right now we have several stages already in being and more almost completed. Yet the first stage won't be flown until later this year. This means that if we have a problem, it will affect all of these other stages, and we are going to find that we have a problem eight or 10 times over.

To continue with our summary, the qualification test program is 96 percent complete; two parts for the first flight stage remain to be qualified. The structural test program is 90 percent complete with only one test remaining for the S–IC–1. The reliability test program, which is