

The 18,000-M.P.H.

May 14, 1973. Skylab, the United States' 2½-billion-dollar project to put a manned space station into orbit, was in trouble. One-and-one-half minutes after launch, a thermal shield had ripped off. When it came time to extend the solar panels which were to supply electric power, it looked as though one had torn away entirely and the other was prevented from opening by fragments of the damaged heat shield. Now, you may ask, what's a story like this doing in a magazine like SAIL? O.K., we're getting to that right now.

On earth, the engineering team of the Johnson Spacecraft Center was working on ideas to save the mission. This team was headed by Dr. Max Faget, a noted sailor, who, before he switched to the hot little spinnakerless Windmill in which he was the 1972 District Champion, was one of the best spinnaker men on the Gulf Coast.

Max called me the night after the Skylab launch about some sailing business and we naturally slipped into conversation about Skylab. "We're gonna use a boat hook and a spinnaker," he said. The plan was to send up the crew with a "boat hook" long enough to reach from their Command Module spaceship to the Skylab. Using a number of different tools attached to the boat

hook, the astronauts would try to hook and pry the solar panels loose.

The second plan was to have the astronauts raise a spinnaker over Skylab. As the huge space station raced along at 18,000 mph, the rays of the sun were causing it to overheat. In the crew quarters, the temperature was over 200°. Any southern sailor knows what it's like below decks on a hot day. Hopefully, the spinnaker would protect Skylab from the unshielded rays of the sun.

"It's going to go up just like a spinnaker," Max said, "out of a bag, hoisted on a halyard, with stops and everything."

What Max hadn't mentioned was that when Pete Conrad, Paul Weitz and Joe Kerwin tried to raise this spinnaker, Weitz would be standing up in the hatch of their Apollo spacecraft . . . tantamount to rigging the mast and running up the spinnaker while standing on the deck of another boat.—Fortunately, in the vacuum of space, the winds are light and the seas smooth.

Now the sailing community really got into the act. Across the street from JSC, General Electric opened its sail loft with seamstresses and engineers cutting and sewing their versions of the sail. On the West Coast, TRW Systems subcontracted their sailmaking to Built-Rite Sails.

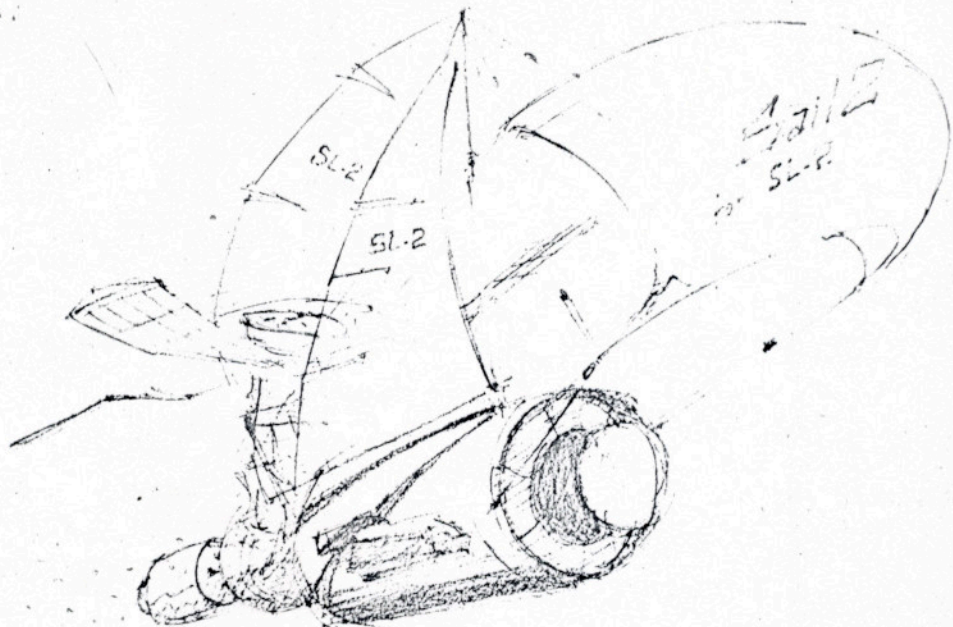
In Houston, NASA engineers raided By Baldrige's Southwest Nautical Supply, grabbing yards of line, blocks, snap shackles and other sailing hardware. On the campus of the Johnson Space Center, engineers at Tech Services worked around the clock getting ready the boat hook and special tools.

It was decided that three different versions of the spinnaker would be taken along into orbit: one, the sail previously described; two, a sail to go up using two spinnaker poles; three, a spinnaker raised like an umbrella.

In space as on the sea, each sailmaker has his own cut. All three sails were packed with tender loving care while a jet plane stood by to take them to Cape Kennedy. If ever a skipper couldn't afford an hour-glassed spinnaker, it would be now.

On May 25, just 10 days after Skylab's lift-off, Cap Comm Dick Truly wished the crew, "Good luck, good launch and good sailing." At 8:00 AM, the spaceship lifted off. From here on, it was up to the crew.

And a yare crew it was. Paul Weitz would stand in the spacecraft hatch and use the boat hook in an attempt to free the solar panel. Weitz, dour appearing and stocky, looked more like a Navy chief than he did an officer and ace jet pilot.



Spinnaker

by Don Wiseman

Dr. Joe Kerwin would hold onto Weitz and make sure he did not float away while working with the hook. Kerwin was a Navy M.D. and jet pilot.

The spacecraft commander was Pete Conrad, a Navy captain, who could be found in the few off-hours available to an astronaut at the helm of his Cal 34 on Galveston Bay. Conrad would maneuver the Command Module to within a few feet of Skylab and hold it steady while Weitz and Kerwin thrashed about trying to fix the solar panel.

Seven-and-a-half hours after lift-off, the crew of Skylab were sitting next to their space station. They examined the situation, then took time out to eat before getting to work.

As they struggled to free the solar panel, everyone was too busy to take photographs. Weitz hung out of the spacecraft while Kerwin held on to one leg to keep him from drifting away.

Conrad sat at the controls trying to keep the Command Module from pitching and rolling because of their efforts. The language they used is familiar to any sailor who has had a halyard jam at sea.

Conrad: "Is there a black piece that's curled up to the lip next to the green?"

Weitz: "I don't understand what you're talkin' about."

Conrad: "Hell, I can't see it. The bleeping hatch is in the way."

Weitz: "They aren't maneuverin' this bleep, are they?"

Weitz: "Have you got hold of my foot down there?"

Kerwin: "I can't hold the foot but I can hold the knee."

Weitz: "Wait a minute — hold it — don't go in any farther. I gotta get my bleeping tool out."

At each outburst of profanity, Houston would try and remind them that they were on the air, but the flight controller had difficulty in reaching the crew. When they finally did, the profanity cleared up. But somehow, it wasn't quite natural.

Despite their efforts, the boat hook didn't work and the solar panel stayed jammed, held by a one-half-inch strap of aluminum bent around the assembly.

Next, Conrad docked the Command Module with Skylab and he and Weitz went inside to try to deploy the spinnaker. The first one they would try would be the "umbrella-like" spinnaker. Conrad and Weitz made their way through the 125° heat into the workshop area. Here, there was a small hole or airlock. First, they unpacked the 528-square-foot sail, and placed it, still

folded, onto a section of aluminum mast.

Next, they poked the sail through the airlock into space, then added section after section of mast and pushed the sail farther away from the skin of Skylab.

Once the sail was far enough out not to catch on the space station, Conrad and Weitz released the springs and the world's first space spinnaker was deployed. But, as on earth, a spinnaker deployment doesn't always go perfectly.

Conrad: "My guess is that we've got only about 12'-14' at the back end with perhaps 18'-20' at the front end. And I don't even know the dimensions of the sail."

Houston: "O.K., the dimensions are supposed to be 22' by 24'."

The spinnaker was up, but not full and driving. The solution was simple. Put it on the pole. Then the solar wind, heating the nylon and Mylar, would fill the sail.

In space, three sailors in Skylab sailed on under full spinnaker . . . a spinnaker which had saved a 2½-billion-dollar program. On earth, another sailor, Max Faget, turned his attention to a more immediate problem. The Windmill National Championships were only three weeks away. He had to get his boat ready.