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A Wider View: Fetching Explosions on the Sun!

My goal was to redesign an instrument payload from a prior experiment for a rocket on a parabolic journey to capture images of the sun's surface. Most spectrograph pictures of the sun are taken through a narrow slit which then is moved incrementally across the surface of the sun as the images are taken. The issue with this approach is that over time, the surface of the sun is changing as the slit moves. Therefore, the beginning, middle and end of an event on the surface may all be captured in different areas of the event as the slit moves. To solve this, MOSES experiment takes a broader approach, capturing a spectrograph picture of the entire surface of the sun at once, thus eliminating the need for incremental movement altogether. Since this experiment's previous voyage, some new accommodations needed to be made. The baffles, which block excess light entering the end of the payload, needed redesigning in order to accommodate the new liquid nitrogen layout. Also, the harnessing cables and the electronics needed rearranging to fit in the new layout, mirrored to its previously occupied side of the I-beam payload, which is now home to an instrument for a different experiment. This required a fresh design of the liquid nitrogen cooling to all the systems and new housings, in order to protect the fragile optical equipment from the sun's rays.