Mike's Easy Refrigerator Improvement
Catalina 350 # 149 "Nautilus"

You have heard many stories about the Catalina 350 Mark I refrigerator issues so I will not bore you with my version. I have been reading all the "fixes" on the Catalina350 website and Mainsheet magazine over the past 5 years and have implemented my version of the collected knowledge. I chose a "medium impact" solution which could be completed in one weekend. My method is to use closed cell foam cut and fit to the freezer and refrigerator compartments and a solid foam panel added to the refrig door. This is combined with the Catalina upgrade which installed larger top hatch fillers (in 2004) and the recommended silicon sealing and insulating foam spray under the counter edges and around the hatches (in 2006).

Figure 1 is a view of the refrigerator half way through my upgrade, this shows one layer of .5 inch closed cell foam cut to fit and installed. To finish the refrigerator I added a second layer for 1 inch closed cell foam all together – back, side, front, floor and around the top hatch. This was 21 pieces which were cut from two closed cell foam sleeping bag pads from Wal Mart at $6.88 each. As noted below the first layer was attached with high strength Velcro against the fiberglass and the second layer attached to the first with spray on adhesive (sticking the second pad to the first). This method lets me pull out all the pieces and re-insert relatively easily to clean the ice box at the end of each season.


Figure 1

To cut each of the main sections I used strips of newspaper and started in each corner and taped them together with blue tape to make a template. This method came from the KAI LANI refrigerator article and works great. After you cut and fit each first layer, reposition the template and note how the shape changes (generally .5 inch smaller where there is a previous layer of foam) then cut the second layer. I had unscrewed the thermostat before I started and reattached with longer screws when complete. I added a small additional white plastic tab on the port side to mount the new shelf as the old tabs were flush with the new foam. This tab I cut from the old white plastic shelves. For the new shelf I bought and cut to fit a white wire bookshelf from Home Depot ($12.00) to encourage better air circulation over the original white plastic shelves (this is how the Cat350 Mark II does refrigerator shelves). Note that I covered the refrigerator drain hole to block that warm air source but it is still usable if any liquid collects in the bottom corner of the refrigerator.

Now for the freezer, I removed both the thermostat and the condenser from the freezer. In removing the condenser be careful not to "fold" the copper tubes, you can "wiggle" it out after removing the 4 screws holding it in. In figure 2 (these are not good pictures taken with my shaky cell phone) you can see the condenser on the counter and 2 layers of foam cut and fitted using the same methods described for the refrigerator. There are 19 pieces in here, about 1.5 more backpacking pads. As with the refrigerator, I made newspaper templates for the big pieces (starboard, aft, forward, top and port), all the other little pieces I cut freehand as I was getting pretty good at it by now.


Figure 2

They were attached the same way as the refrig, first layer by Velcro, second layer spray adhesive to the bottom layer. All are removable except the port side piece has a screw through it holding the condenser in. Note you need several razor knife blades as they get dull cutting all the foam. A good two foot straight edge is a big help too, do all the cutting on the dining table with a scrap plywood piece as a cutting board to make it go quickly.

Which brings me to remounting the condenser: obviously the freezer and refrigerator have gotten smaller (about 1.5 cu ft smaller all together). The condenser is now a tight fit and has to move aft about 1.5 inches and up about 1.0 inch and be mounted on the original plastic spacers cut in half (about 5/8 inch standoffs now). I made a newspaper template of the mounting side of the condenser and placed it in the freezer so that there was enough room for the base (which is 6 inches wide) then marked and drilled the mounting holes. I only used 3 screws to reattach it leaving the inside bottom one out. Drilling these holes (2 in the freezer/refrig divider, one in the foam) was pretty easy and "wiggling" the condenser back in was pretty easy too (surprisingly).

I don't have a picture of the extra insulation added to the refrigerator door but it was simple. Carefully mark the outline of the refrigerator opening onto the refrigerator door before removal of the door (you need all three doors off to do this project) and cut a 1.5 inch piece of solid foam (used for basement insulation) to the opening size, stick it on with a good dose of spray adhesive. You can spray paint this piece white if you want (I did) and remount the door "condiment" shelve with longer screws (which I did not).

Total project time 16 hours (Saturday and Sunday in one spring weekend), total cost (Closed Cell Foam, Solid Insulating Foam, Velcro, adhesive, white wire shelf) $60. Total improvement was very significant; previously 100% compressor operating time on a normal Lake Ontario summer day is now down to 50%. Temperature wise I was previously able to keep the freezer (measured by a remote temperature probe in the aft corner, away from the condenser) at 35 DEGF and the Refrigerator at 45 DEGF (remote temperature probe on the shelf away from the freezer) if neither were opened too much. Now I can do 25 DEGF in the freezer and maintain 45 DEGF in the refrigerator. The temperature settings changed from freezer at "3", refrigerator at "4" to freezer at "1", refrigerator at "4". This project yields a significant improvement without too much pain and suffering. I don't know how long it will last but cutting new pieces with these old pieces as templates would be easy.

As a final comment, I hope the new Catalina Mark II refrigeration system works better than the Mark I system does so those owners don't have to go through this. I also want to say I am very happy with other aspects of Nautilus, now in its sixth season.