

Based on the practical experience of the S.S. Manhattan and Kigoriak trials, marine proponents are upgrading the design of the arctic tanker to withstand the severe arctic conditions. Design features will increase maneuverability, reduce hull friction and improve early detection of surface objects.

*The whole keynote of new technology will be reliability, to the point of being fail-safe. We simply cannot make errors; we cannot have accidents in our environment. (Mr. A.E. Pallister, CanOcean, Issue 27:30, 1-6-1982)*

A tanker will be operated first without cargo under endurance conditions; nevertheless, it is still not possible to predict the tanker's performance under all circumstances. This is where a "fail-safe" operation becomes essential so that no one system alone is expected to meet an exigency. The proponents' design philosophy must be that no single mistake — in design, operation, navigation or mechanics — will lead to disaster either in itself or because that failure propagates through the system leading to other failures.

One of the key components in a safe operation is the recruitment and training of the crew of 45 both in operation of the vessel and in emergency response. Icebreaking operations skills and training programs are being emphasized. Nevertheless, standards of professionalism at sea must keep pace with those of advancing technology and arctic operators should consequently have to satisfy some form of ice-endorsement as part of their certificate of competency.

Good environmental prediction, ice and hazard detection, and navigation systems are vital to safely carry out all activities. Sophisticated navigation and ice reconnaissance programs will be required to select favourable routings and avoid areas of high ice density. All such support systems must be in place to ensure that year-round shipping can proceed safely. The marine proponents are developing these concepts; however, the Committee has some concerns in view of the work that still is required.

A good predictive capability also depends on valuable ice research programs. More must be learned about the arctic ice regime to gain a greater understanding of seasonal and annual variations and their effects on ship movements. The proponents claim that any changes in the ice regime as a result of ship movements in the landfast or transition zones would be indistinguishable from characteristic annual variations.

*These icebreakers make lanes or channels. How long do these channels last? (Senator Yuzyk)*

*The channels are created only when there is ice around. There are basically two kinds of ice, land-fast ice, or ice that does not move very much, and offshore ice, transition zone ice, which tends to move a fair bit. If an icebreaker were driven through land-fast ice in, say, the month of October, early in the season, the track where the ship went through would be there all winter . . . you have something less than a standard first-year type of ridge. In transition zone ice, because of the constant movement of the ice, the track would be obliterated. (Mr. R. Hoos, Dome, Issue 21:93, 31-3-1982)*