



CASE STUDY: DOME PETROLEUM

25M SMALL TETHERED AEROSTAT RELOCATABLE SYSTEM c1980
TETHERED AEROSTAT OPERATIONS in ARCTIC WEATHER



THE CHALLENGE

Dome Petroleum based in Canada approached TCOM to ask if a STARS system could be equipped with a marine radar to search for large ice floes which were a threat to Dome oil drilling operations in the Beaufort Sea near the Arctic Circle. The new and very challenging twist to this mission requirement was that this aerostat and radar needed to be installed on a Dome 125 foot resupply vessel (named the Canmar Teal) to get near the ice floes and drilling operations in the Beaufort Sea.

QUICK FACTS:

- ▶ In the late 1970's, TCOM decided to develop, design and build a small aerostat system called the Small Tethered Aerostat Relocatable System or STARS as a company-funded project
- ▶ The system consisted of a 25M aerostat, fiber optic powered tether and mobile mooring system which was then attached to a resupply vessel near the Beaufort Sea
- ▶ TCOM helped Dome Petroleum detect, track and avoid large ice floes so that at-sea drilling operations no longer had to be suspended

THE SOLUTION

TCOM accepted this demanding project which was named Project Penguin and successfully deployed its first sea-based aerostat system equipped with a DECCA marine radar in the fall of 1981. Phase I - TCOM investigation included a review of TCOM winter flight experiences and problems in order to evolve better techniques for combatting snow and ice conditions. Phase II involved the flying of a 25,000 cubic foot aerostat in the winter months which successfully flew through several snow storms and icing conditions

THE RESULT

The Beaufort Sea project was quite successful. The aerostat was inflated under a net in a snow storm with 20+ knots of wind on a barge in Tuktoyaktuk Harbor in early September and transferred to the Canmar Teal. The Canmar Teal made four rounds of the drilling area. The aerostat would be launched as the ship left port and recovered upon return to port. On occasion the aerostat would be recovered briefly at sea for adjustments or ice removal and relaunched. About 415 hours of flight time were accumulated during these operations. Future modifications were contracted to TCOM to survey and assist with the ice accretion, particularly rime ice, that seemed to be a problem during extreme cold weather operations.

Dome Petroleum was able to detect, track and avoid large ice floes and safely continue at-sea oil drilling operations when these threatening ice floes would normally have forced them to be suspended.