

RADAR MONITORING OF OIL POLLUTION

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ABSTRACT

Radar is currently used by the Naval Research Laboratory for detecting and monitoring oil slicks on the sea surface. The four-frequency radar system is used to acquire synthetic aperture imagery of the sea surface on which the oil slicks appear as a nonreflecting area on the surface surrounded by the usual sea return. The value of this technique was demonstrated at Chedabucto Bay, Nova Scotia, in February 1970, when the four-frequency radar system was used to image the oil spill of the tanker Arrow which had wrecked on Cerberus Rock in the bay. Imagery was acquired on both linear polarization (horizontal, vertical) for frequencies of 428, 1228, and 8910 megahertz. Vertical returns strongly indicated the presence of oil while horizontal returns failed to detect the slicks. Such a result is characteristic of the return from the sea and cannot presently be interpreted as characteristic of oil spills. Because an airborne imaging radar is capable of providing a wide-swath coverage under almost all weather conditions, it offers promise in the development of a pollution-monitoring system that can provide a coastal watch for oil slicks.