

Thermal Dispersion Modeling in Support of the Central ACG Central Azeri Project



CLIENT:

Azerbaijan International Operating Company (AIOC)

PROJECT #:

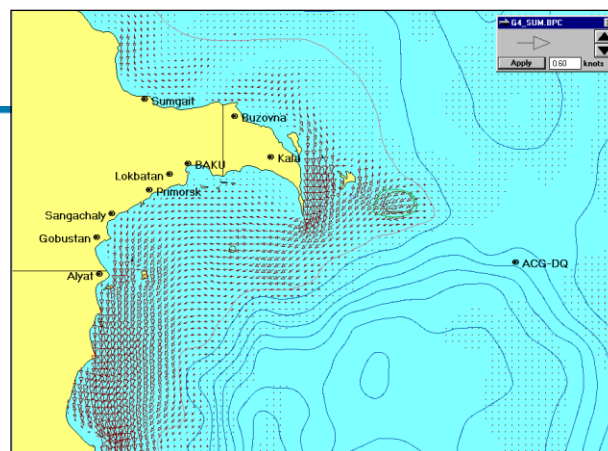
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PROJECT ELEMENTS:

- Thermal dispersion modeling
- CORMIX model
- ASA's Caspian Sea hydrodynamic model

PROBLEM. PURPOSE.

Azerbaijan International Operating Company (AIOC) contracted with ASA to provide environmental modeling in support of the ACG Central Azeri Project located in the Caspian Sea. The primary purpose of the environmental modeling was to simulate cooling water discharged from a platform located at the SPS yard prior to float out and investigate if the discharge meets the International Finance Corporation's (IFC) environmental, health and safety guidelines for cooling water discharges. These guidelines state that for cooling water the effluent should result in a temperature increase of no more than 3 °C at the edge of the zone where initial mixing and dilution take place. Where the zone is not defined, as is the case for this study, a 100 m distance from the point of discharge is to be used.



SCIENCE. SERVICES. SOLUTIONS.

The thermal dispersion simulations were conducted for two discharge configurations using the CORMIX near field dispersion modeling system in conjunction with ASA's Caspian Sea hydrodynamic model, which was used to determine the maximum and 50% percentile predicted currents for the region. The stagnant or no background current condition was used to provide a worst-case description of the dilution of heat from the effluent, as the presence of a current typically enhances dilution. The presence of a steady current was studied to provide an estimate of the likely region of influence since a current will tend to move the effluent further downstream which may cause a violation of the IFC guidelines.

Each discharge configuration utilizes intake sea water at ambient conditions from a depth of 7 m and discharges the thermal effluent at a depth of 1.5 m. The ambient water temperature for each discharge configuration was specified as 19.4 and 15.0 °C, with effluent discharge temperatures specified as 25.7 and 25.8 °C, respectively. Each discharge configuration under each current condition achieved the IFC thermal discharge guideline of an increase in the ambient temperature of 3°C within four meters of the discharge location.

PRODUCTS. RESULTS.

The analysis concluded that no significant thermal effects would be created and was provided to the Azerbaijan International Operating Company (AIOC).