

Real Sea Experiment of Ocean Nutrient Enhancer “TAKUMI” Upwelling Deep Ocean Water

Dr. Kazuyuki Ouchi

President, Ouchi Ocean Consultant, Inc.
ouchi@athena.ocn.ne.jp 81-267-44-6080

Mr. Alan John Murphy

Doctoral Student, Southampton University
alan@ship.soton.ac.uk 023 8032 6479

Abstract: The five years project of increasing a primary production and making a new fishing ground by upwelling Deep Ocean Water (DOW) which is very rich in nutrient salt such as Nitrogen, Phosphorus, etc. was commenced in the year of 2000, sponsored by the Fisheries Agency of Japanese Government and Marino-Forum 21.

In the open ocean, now, there are no successful means to upwell DOW artificially and to make a fishing ground. Therefore, the focus of the project is a creation and proposition of the concept of Ocean Nutrient Enhancer (ONE) to contribute for increasing primary productions and fish productions, furthermore, conducting the experiment in actual sea to confirm the effect of the ONE.

The requisite technologies for the ONE such as a density current diffusion, a spar type floating structure, a steel riser pipe, a set-up way of upending, etc. is discussed and integrated to create proto-type of ONE, whose specifications are the DOW upwelling capacity of 100,000m³/day, the displacement of about 1,700tons, Diesel engine of 100KW. The ONE will be set-up with the single point mooring system at the centre of rotational flow in Sagami Bay in the depth of about 1,000m, in May 2003. In this paper, the outline of the prototype of ONE which is named “TAKUMI” is introduced.