ABSTRACT SUBMISSION –– SOUMISSION DE RESUME

**Topic No.: / Sujet n° : 7 -------------- or / ou**

**proposed topic / sujet proposé: A Study on the characteristics of plastic and steel buoys by Maritime test**

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ABSTRACT / RESUME:

**A plastic buoy may be defined as a floating aid with at least the hull being constructed of a plastic material. Plastic buoys have been in production since the 1980s. They are produced mainly from polyethylene materials in different designs. river markers, to large offshore buoys. It is suggested that plastic buoys have several advantages over conventional steel buoys including; light weight handling, corrosion resistance, low maintenance, and in some cases, lower costs. However, these apparent advantages need careful evaluation. 13 countries (Portugal, China, Sweden, Australia, Netherlands, Estonia, England, Oman, Canada, Germany, Korea, France and Finland) have participated in the questionnaire process, representing a total amount of more than 58,000 buoys. More than 64% (37,449 buoys) of all these buoys are made of plastic, and 100% of plastic buoys are manufactured from PE. The experience with plastic buoys varies from 1 to 35 years. Buoys are installed in all types of conditions of conditions (inshore, offshore, exposed, sheltered, breaking waves, dries at low tide, severe UV exposure and sub zero temperature). The main defects experienced are surface colour retention and cracks and there are only few countries with experience in plastic repair.**

**In order to analyze the advantages and disadvantages of the plastic (PE, PU) and steel buoys, and derive improvement, Ministry of Oceans and Fisheries (PYEONGTAEK Regional Office of Oceans and Fisheries) and KAAN have been jointly test. Also in order to analyze stability of the light buoys, two-axis tilt angle meters (X, Y-axis measurement of the dynamic angle of tilt in two directions) were installed in the upper steel tower of the light buoys. The daily maximum tilt angles of BangdoTest A (JET-7000), BangdoTest D (PB-26) and BangdoTest E (LL-26M) were respectively measured at 38.6 °, 38.5 ° and 38.8 °.**

**The daily maximum tilt angle of the BangdoTest A (JET-7000), BangdoTest E (LL-26M) is significantly changing the slope, but BangdoTest D (PB-26) is gradually changed.**

**The cause for the maximum inclination angle of the measuring buoy is unknown. It is necessary to check the stability analysis of the maximum inclination angle from the data measured for about two years.**

**In the inspection (after 4 months of installation), there is a difference in the attachment of marine organisms depending on whether the antifouling paint is painted.**

**In the inspection (after 9 months of installation), marine organisms adhered regardless of the antifouling paint (there is a difference in the degree of adhesion).**

**In the case of Plastic buoys, generally marine organisms attached to the bottom of plastic buoy body severly. However, the degree of marine organism adherence on the tail pipe was rather low, and it is possible to remove marine organism manually because of characteristic of plastic.**

**In the case of a Steel buoy, the degree of marine organism adherence on the body and tail pipe were generally low, and the distribution of marine organisms on the steel pipe among the four buoys were the lowest.**

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