ABSTRACT

A steel gravity substructure (SGS) - the Wheatstone Platform (WP) is to be located within Wheatstone and Iago field, offshore North-western Australia. The water depth at WP is approximately 70.8m and WP will utilize a steel gravity substructure similar in form to a semi-submersible. This type of steel gravity substructure is the first attempt of its kind in the West Australia. The SGS will be supported on four square pods. In order to achieve the required foundation stability under all design and operating conditions, it will be necessary to ensure that each of the four foundation pods make full contact with the seabed. The seabed at the WP location comprises an old submerged reef structure whose surface is not completely flat and is sometimes denuded of any surficial sediment cover. This will mean that some form of foundation preparation will need to be undertaken to allow good contact between SGS foundation pod and seabed.

Daewoo Shipbuilding & Marine Engineering (DSME) was selected for the EPCI Contract of WP project, which includes detail engineering, fabrication and installation of WP platform. The Wheatstone development comprises the Wheatstone and WA-16R/17R (Iago) offshore gas fields, including the 3rd party gas from the WA-356-P field, located on the Northwest Shelf of Australia. Production from these fields will be transported to a Central Processing Platform (WP) where the gas and condensate will be dehydrated and dewatered respectively and transported via an export pipeline to the onshore LNG plant south of Onslow, on the Pilbara coast of mainland Western Australia.

In this paper, we describe and present an introduction of foundation design selection of WP in West Australia as follows;

- Possible foundation options
  - Pre-laid rock blanket
  - Under-base grouting
  - Template

- Technical Feasibility; the foundation options shall be qualitatively ranked for technical risks, opportunities and uncertainties and will consider:
  - Ability of the method to achieve stability during installation
  - Ability to limit structural deflections in the SGS structure after ballasting and topside installation
  - Achievement of long term foundation integrity

- Constructability: Proven techniques to achieve objective
- Cost

KEY WORDS: Steel Gravity Structure; Foundation; Rock Blanket; Under-base Grouting; Template.