Unique challenges are faced when attempting to access the deep water hydrocarbon reserves in North West Australia (NWA). These include extreme metocean conditions, unique geotechnical conditions, long distances to infrastructure and LNG plants, as well as high reliability/availability of supply. This presentation will address important technical, commercial and regulatory factors that drive the field development planning, particularly the selection of suitable production facilities for these deep water hydrocarbon developments off NWA.

While all-subsea developments have been an inspiration for offshore engineers for a few decades, subsea gas compression, dehydration, power supply and control are still technically and commercially demanding, especially for long distance tie-backs. Subsea well intervention and facility maintenance requirements also favour the application of dedicated floating platforms. Therefore, a wet or dry-tree floating production platform will be required in most cases. Whereas Semisubmersible, TLP, Spar, FPSO and FLNG (or LNG FPSO) designs all have the attributes to be a host gas production facility or a part of a production system, only oil FPSOs have been installed in this region to date.

Linkages between key reservoir and fluid characteristics and surface facility functionalities will be discussed in this presentation. Advantages and disadvantages of various platform designs will be compared. A focus will be on the influence of regional drivers and site characteristics, in particular, metocean and geotechnical conditions and remoteness of the NWA fields. The differentiation between oil and gas developments will be addressed.

About the speaker

Educated as a Naval Architect with over 25 years’ experience, Dr Jinzhu Xia is currently the Head Marine Consultant, Granherne, Australia.

His work concerns concept selection, FEED, installation and operation of offshore oil and gas facilities, in particular floating production facilities of various types for deep water developments. He has worked in significant roles in major offshore oil and gas projects in different parts of the world, including Australasia, the Gulf of Mexico and the North Sea.