

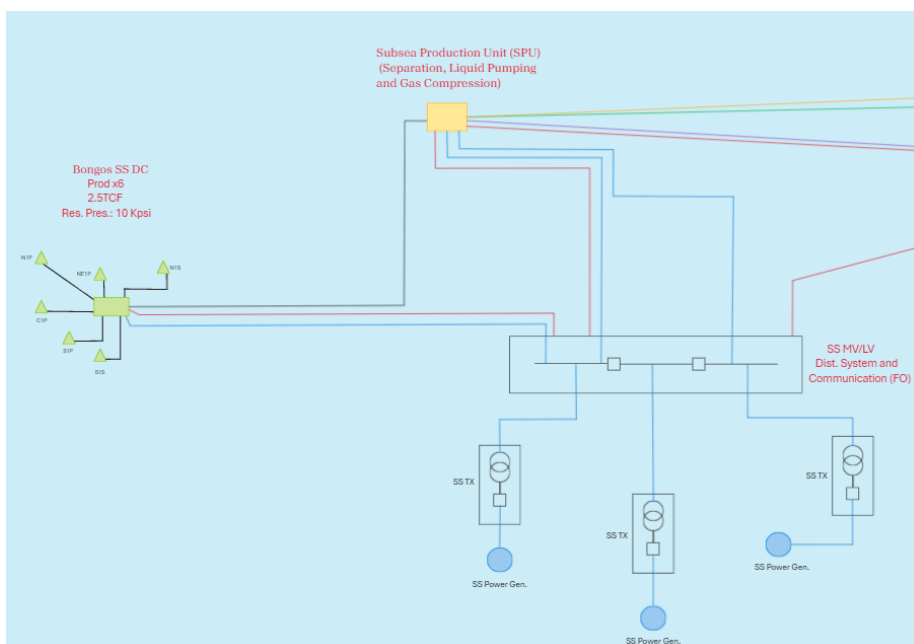


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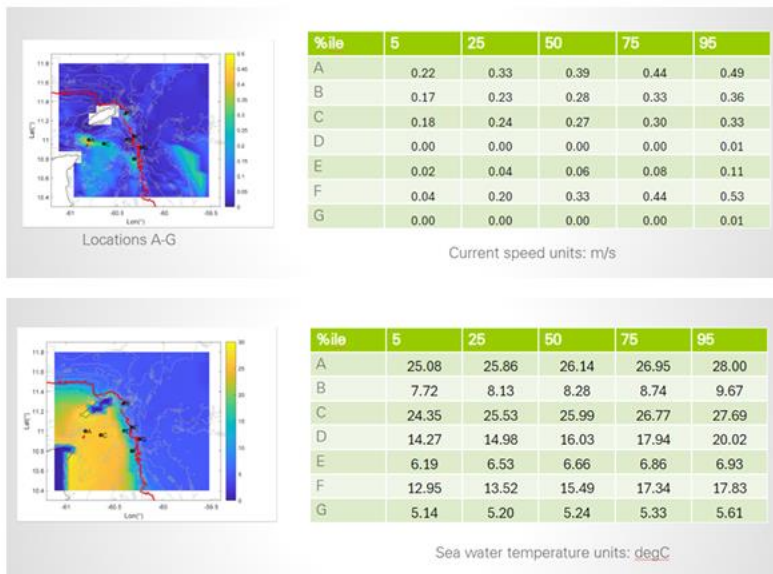
Subsea Power Supply – Scoping document

In alignment with bp's NetZero vision, this project is looking to develop an **oil & gas field with minimal emissions and impact to the environment**. One of the potential options under evaluation is a fully subsea design including separation, process, pumping, gas compression, well controls and power generation with oil & gas production, chemical and hydrate control process tie-back to existing SWP facility (refer to figure below). Subsea power demand associated to processing, pumping, gas compression, wells control system and other requirements could reach up to 3.5 MW (mega-watts) / 3,500 KW (Kilowatts).

Field is located at the Atlantic Ocean, 2.5 Tcf. potential gas production and associated boe, plan for 20 wet wells, operating pressure ~10,000 PSI, water depth ~400mts/1,312ft.



Metocean information available shown below.



Data above comes from a global model covering a period of only one year. Information should not be used for any design purposes. More modelled data shall be collected to verify the model and used for engineering design. HYCOM modelled currents (near the seabed) with measured data under-estimates the near bed current by between 10 and 30% base Gulf of Mexico experience.

Energy Vectors we are interested in

Calibration factor to the percentiles of current speed provided should be applied. Given the persistent amplitude and direction of the near-bed current at this location (there is very little tidal reversal), this seems like a suitable candidate site for tidal devices. While tidal power looks like strong candidate for this initiative, we are also extremely interested in wave technologies, as well as any other sustainable technologies that will help us drastically reduce the level of emissions produced during electricity generation.

Solutions Requirements

Power generation service must be continual, with minimal service interruption, high reliability (>99.9999%) and flexibility for maintenance and repair activities. Design must include redundancy on power generation equipment. Voltage levels must meet American standards requirements and subsea equipment selection. Power generation system must be located within ~75kms/46miles range from drilling center to avoid power cables (AC) capacitance issues and simplify size selection/fabrication/transport and installation activities. Power conversion AC-DC-AC solutions could be explored but is not desired, intention is to keep design as simple as possible. Other constraints shall be taken in consideration for engineering solution of the proposed solutions.