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2019 DEEPWATER TECHNOLOGIES & SOLUTIONS FOR CONCEPT SELECTION

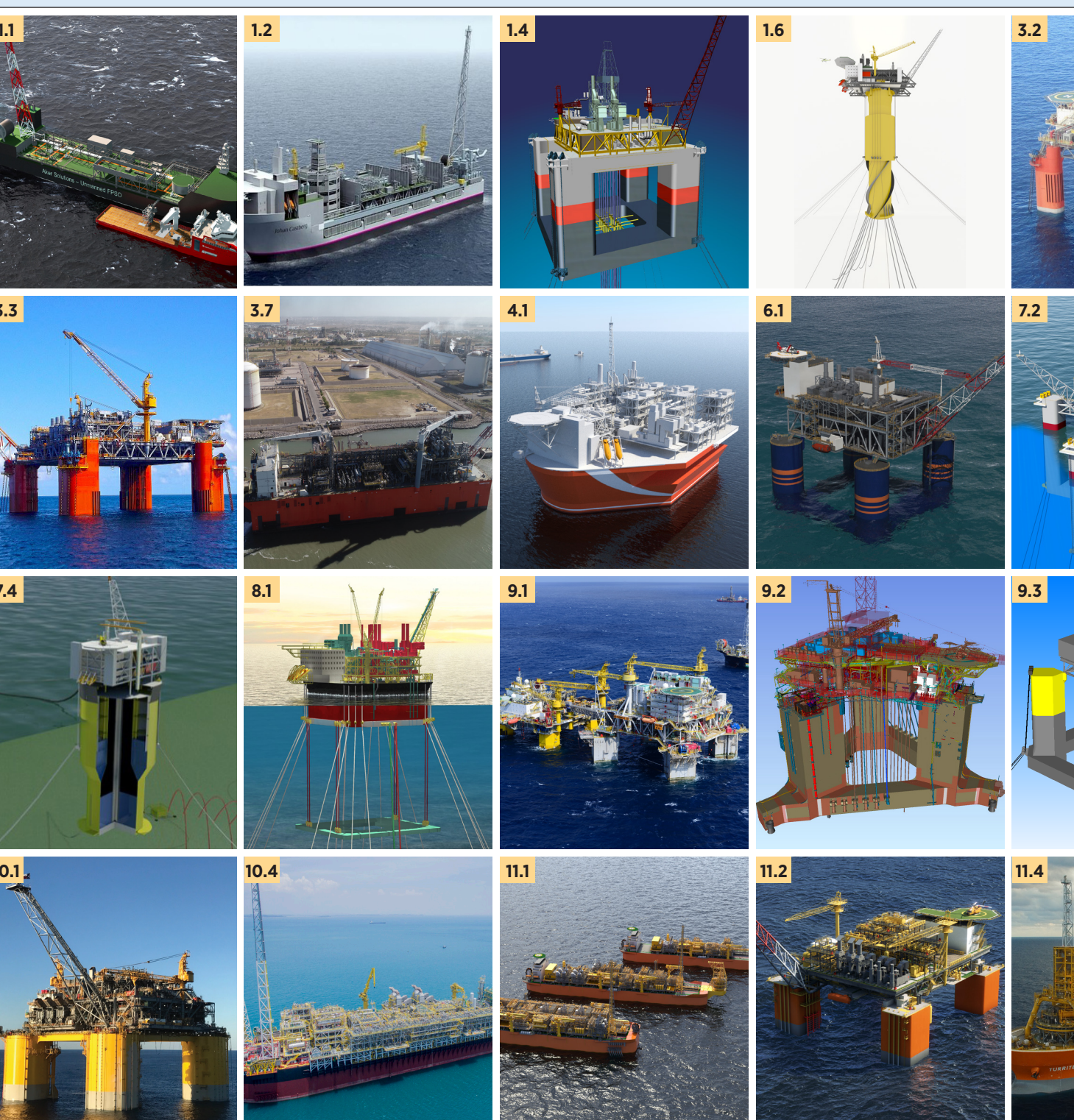
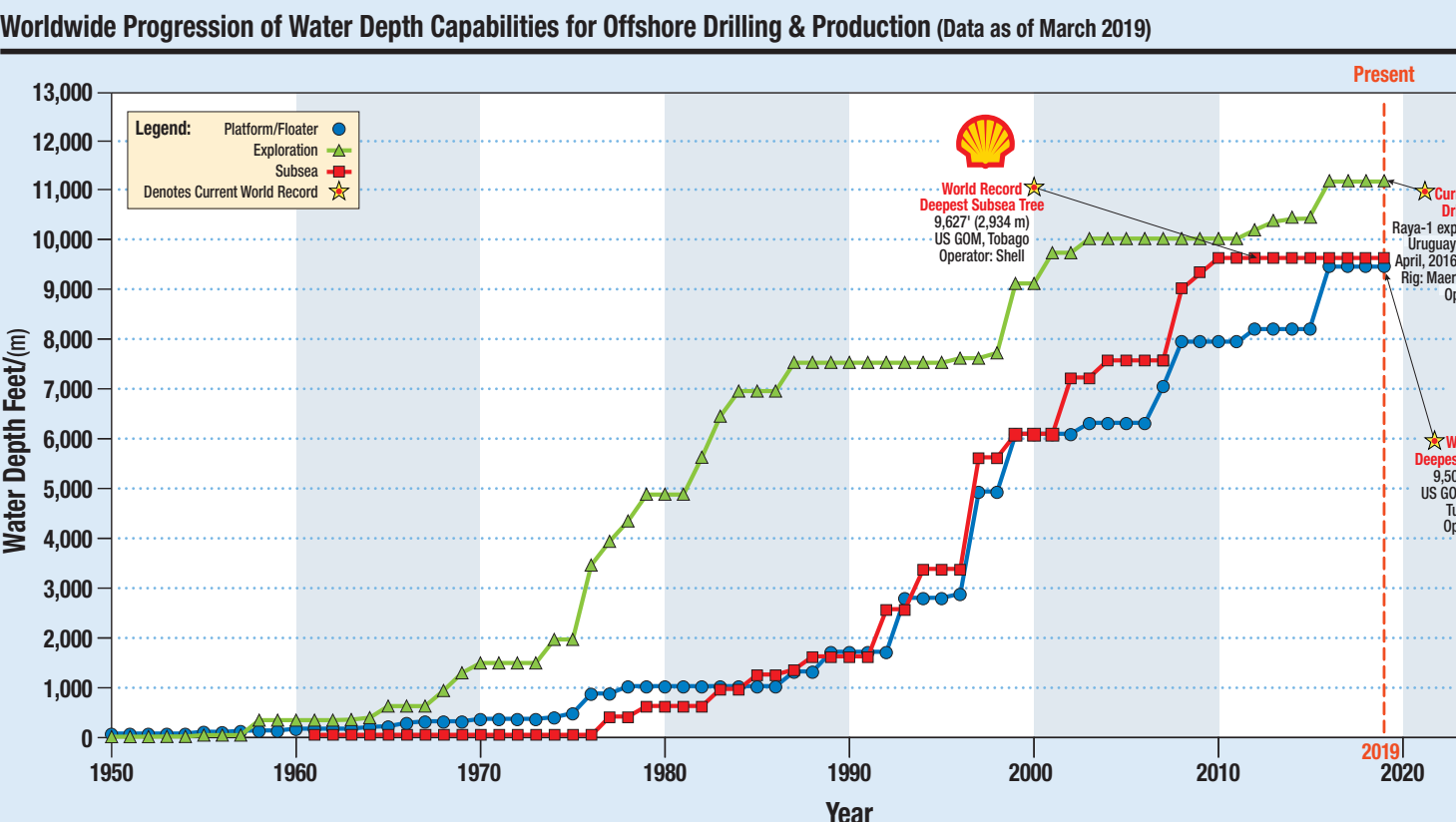
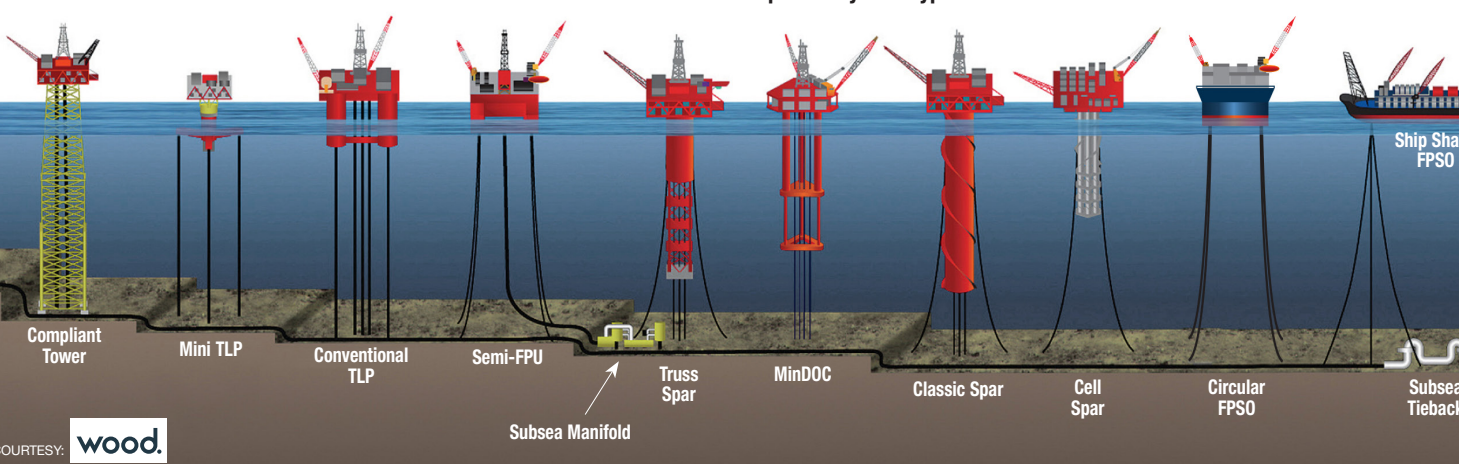
Enabling Technologies for Deepwater Production — May 2019

Prepared by: Christopher Barton, SVP Business Development at Wood; E. Kurt Albaugh, P.E., Consultant; and David Davis of Offshore Magazine. Graphics by: Chris Jones of Xenon Group, Inc. & Graphic Support by: Jon Kirkland of Wood. Special Thanks to: Richard D'Souza, Consultant, Jack Christianson, University of Houston, and Grantner for supplying graphs. For videos on Deepwater Projects please go to: www.offshore-mag.com/maps-posters.html For PDF copies of Posters please go to: <http://www.offshore-mag.com/maps-posters.html>

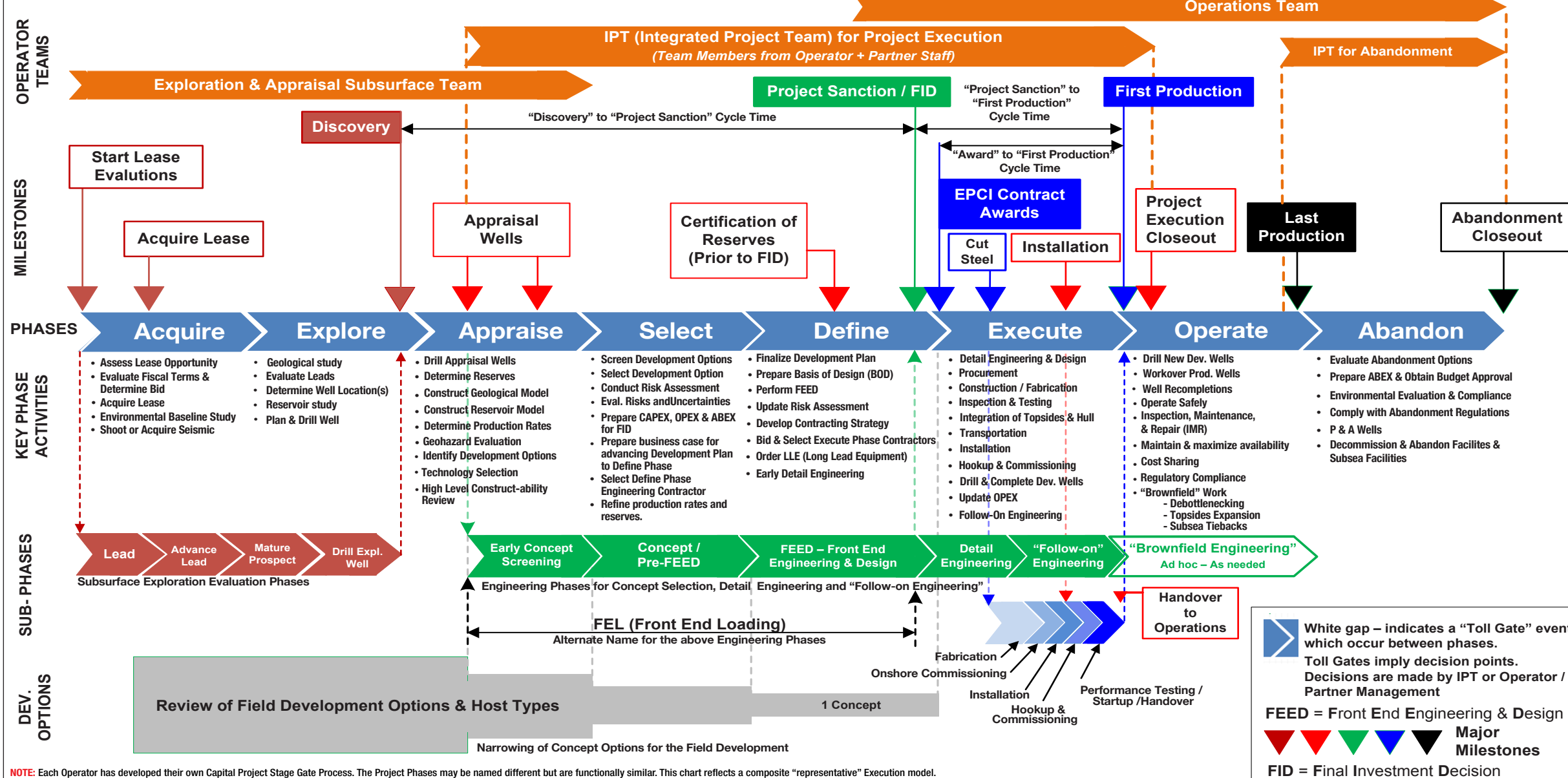


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Notes: Through references throughout the poster, the terms TLP and Spar are used to describe deepwater production facilities. However, the terms TLP and Spar are not used to describe deepwater production facilities that are not TLP or Spar. The terms TLP and Spar are used to describe deepwater production facilities that are not TLP or Spar. The terms TLP and Spar are used to describe deepwater production facilities that are not TLP or Spar.



Typical Deepwater Oil & Gas Field Life-Cycle Phases

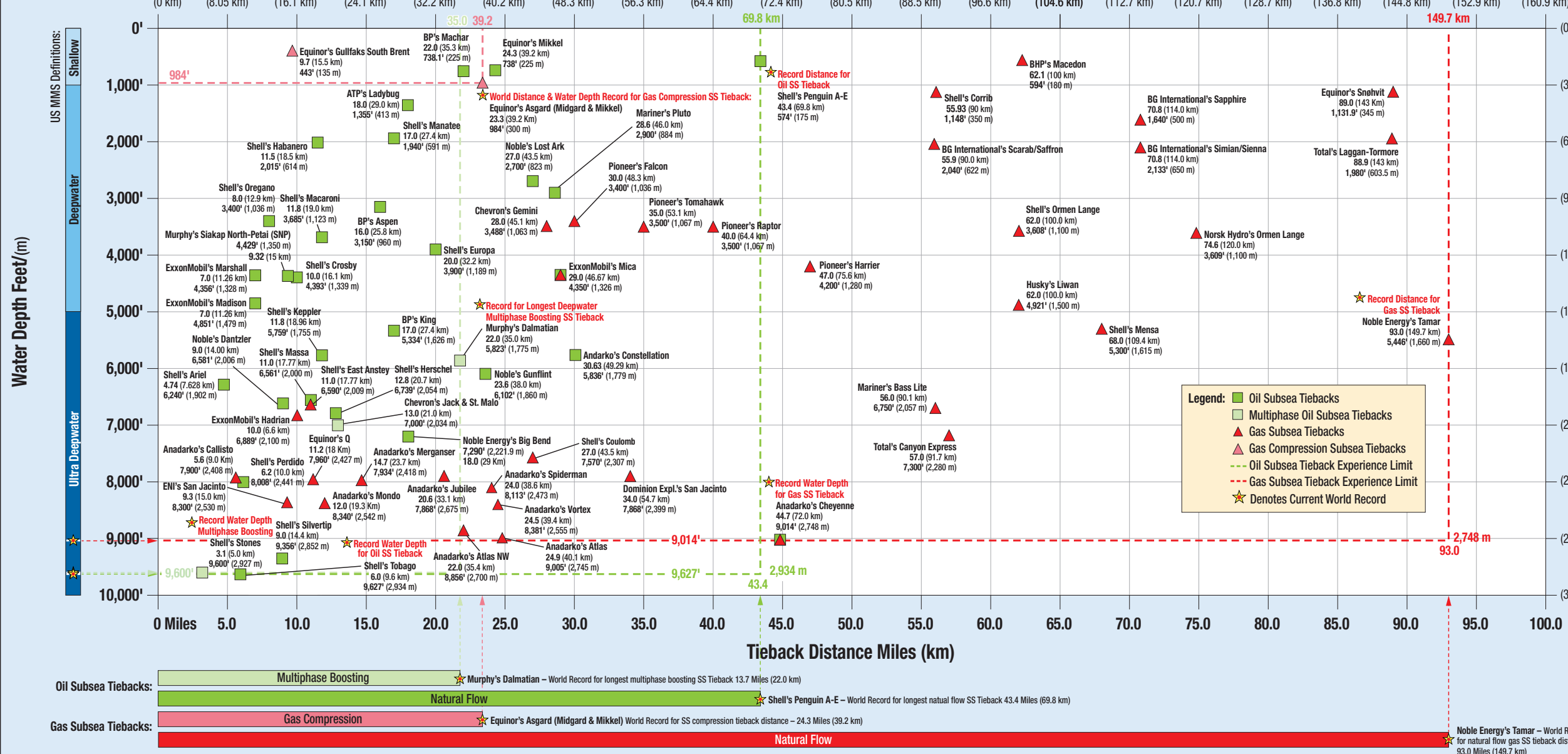


NOTE: Each operator has developed their own typical Project Stage Gate Process. The Project Phases may be named differently but are functionally similar. This chart reflects a composite "representative" Execution model.

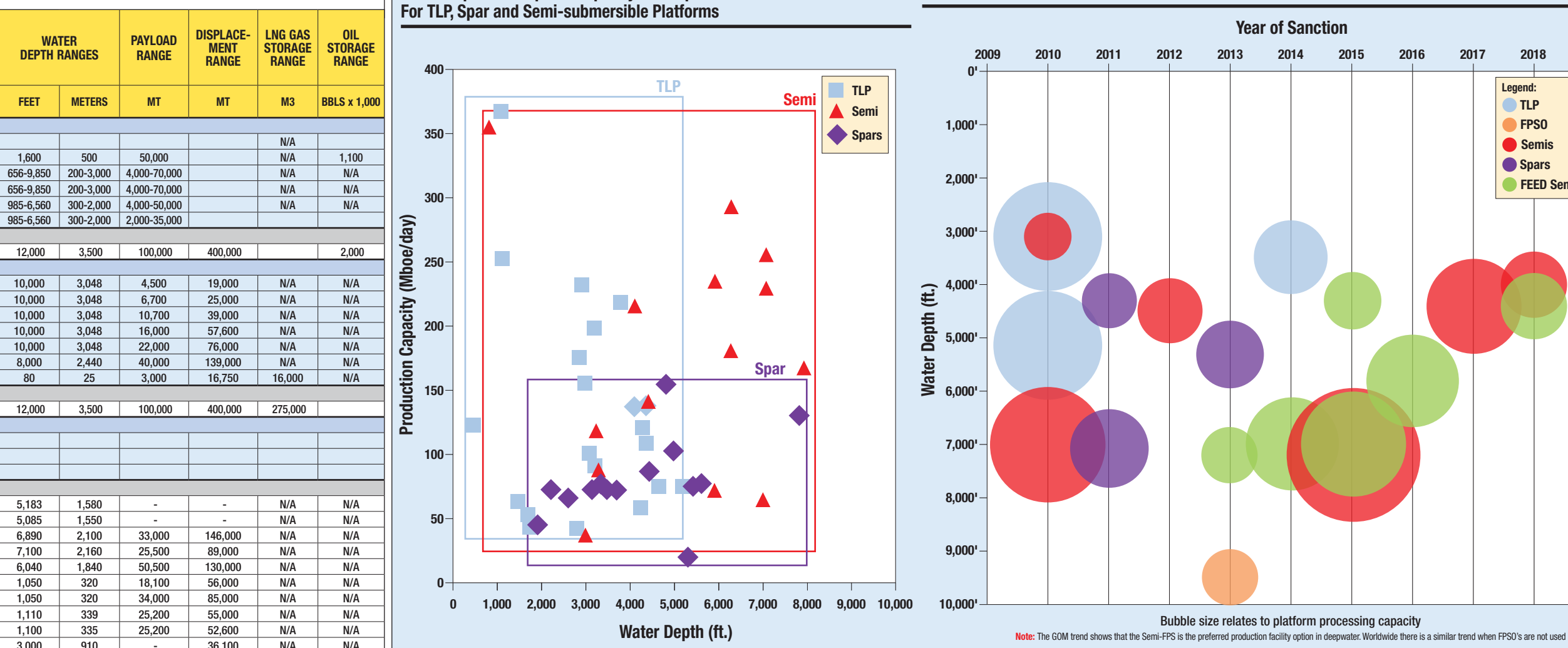
Conceptual & Proven Floating Production Facilities Designs (as of April 2019)

EMERSON CATEGORY	DESIGN NAME	TYPE	DESIGN / CLASS APPROVAL AGENCY	MATURITY CATEGORIES	FIELD PROVEN EXAMPLES
1.1	ANKER SOLUTIONS	Conceptual	Conceptual	1. Conceptual	Conceptual
1.2	ANKER SOLUTIONS	Conceptual	Conceptual	1. Conceptual	Conceptual
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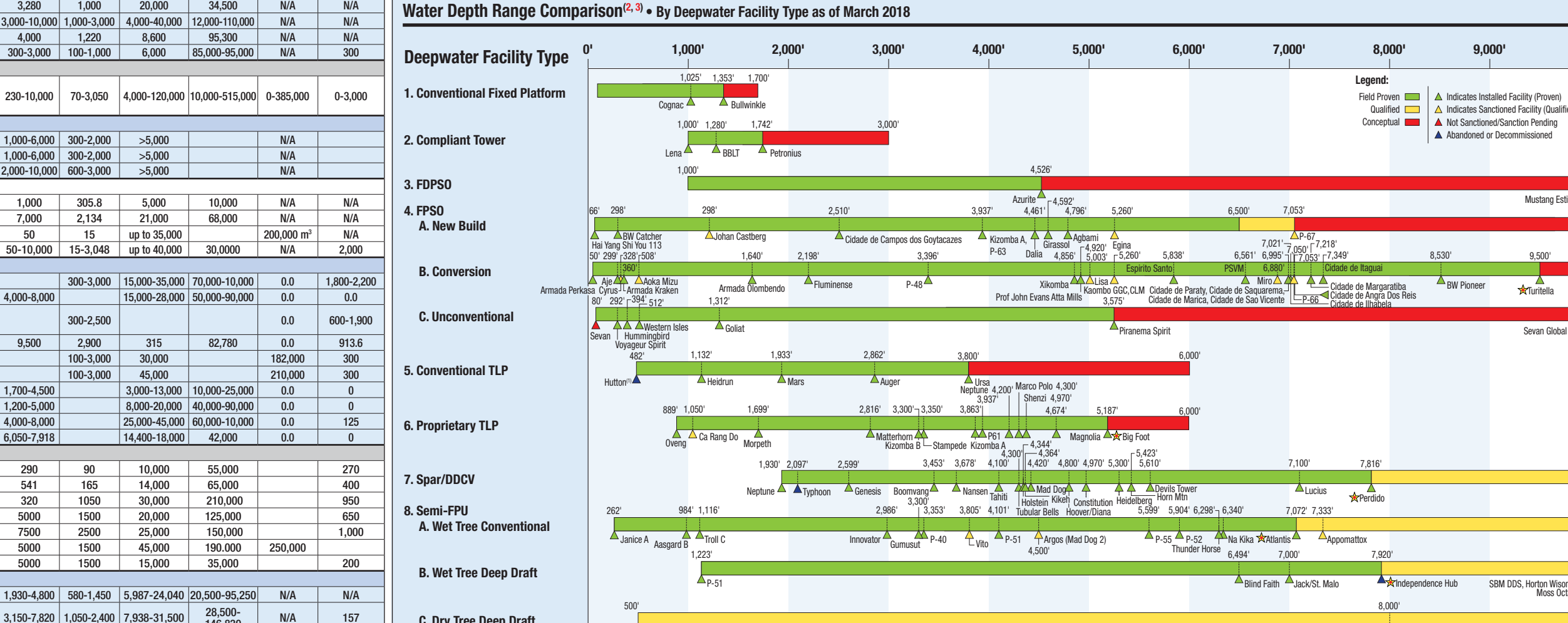
World Record Subsea Tiebacks • Sanctioned, Installed, Operating or Future Tiebacks (Water Depth vs. Tieback Distance) • As of March 2019



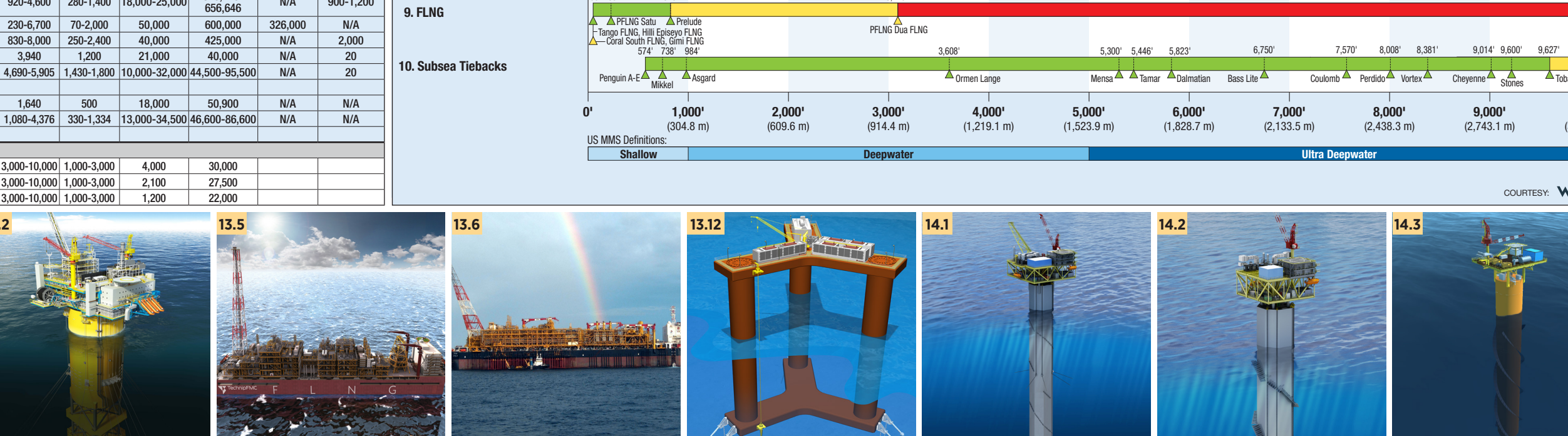
Water Depth and Topsides Capacity Envelopes For TLP, Spar and Semi-submersible Platforms



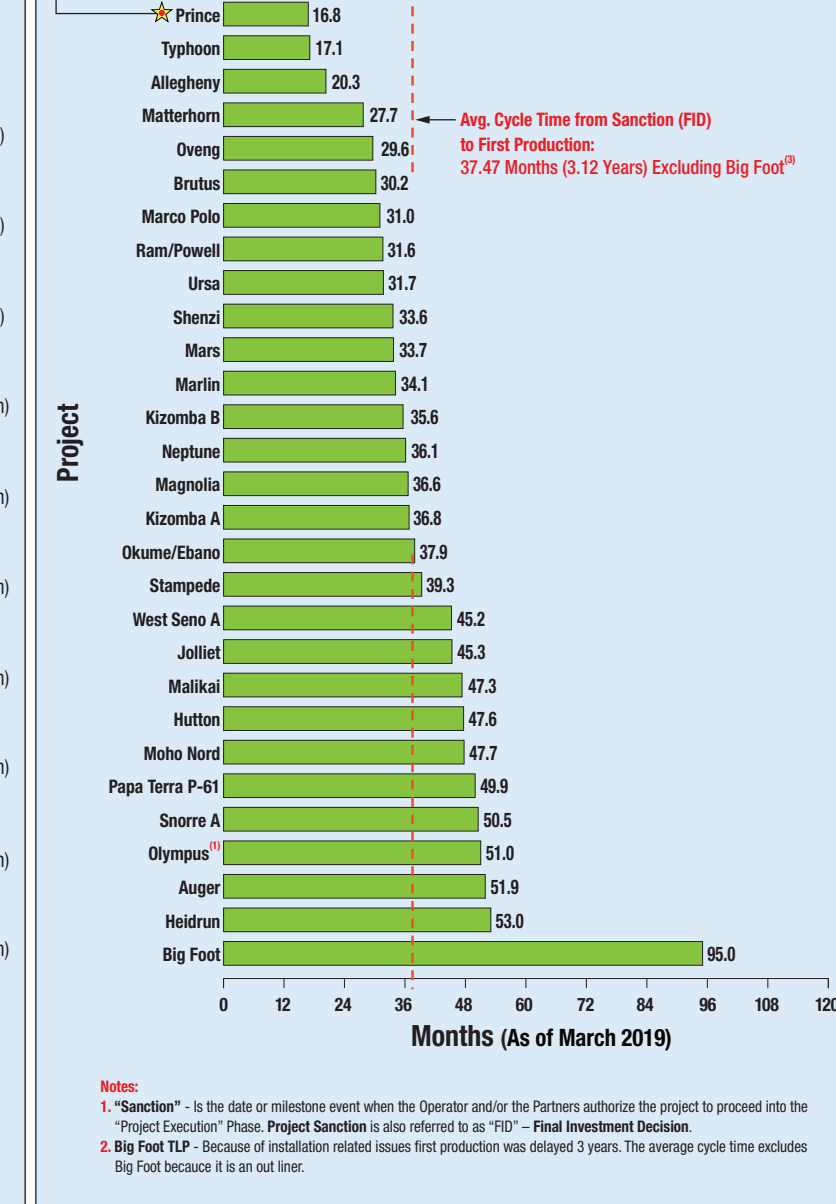
US GOM Host Platform Trends



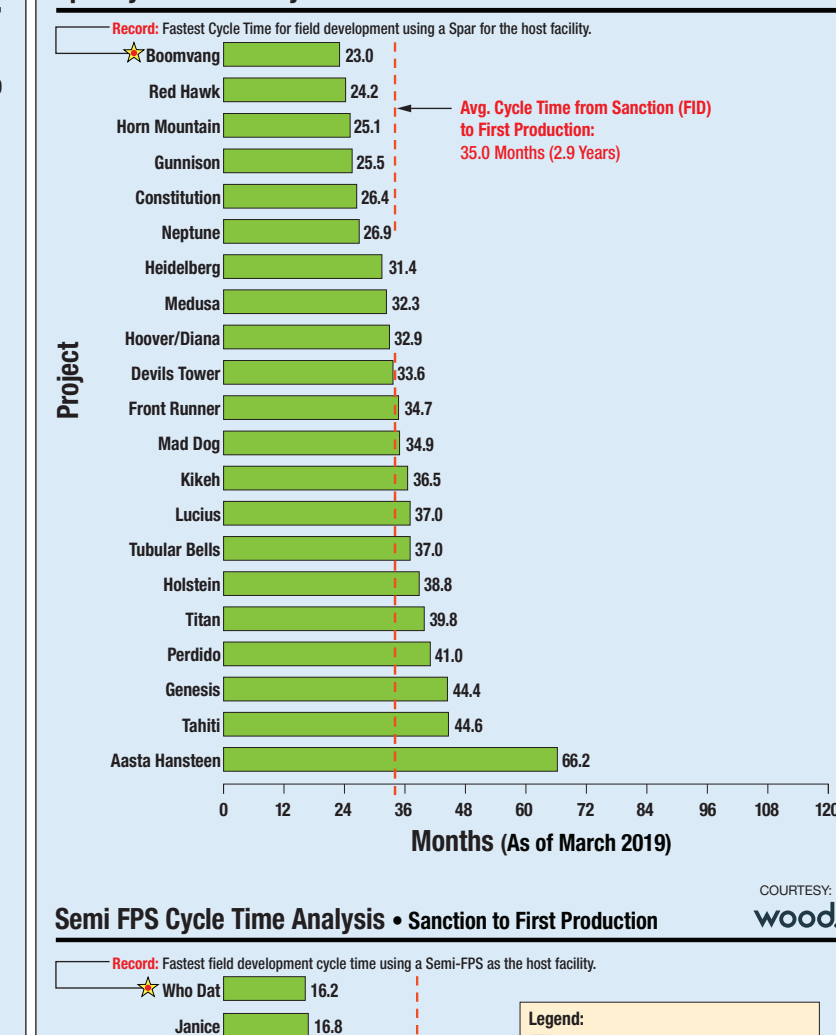
Water Depth Range Comparison • By Deepwater Facility Type as of March 2018



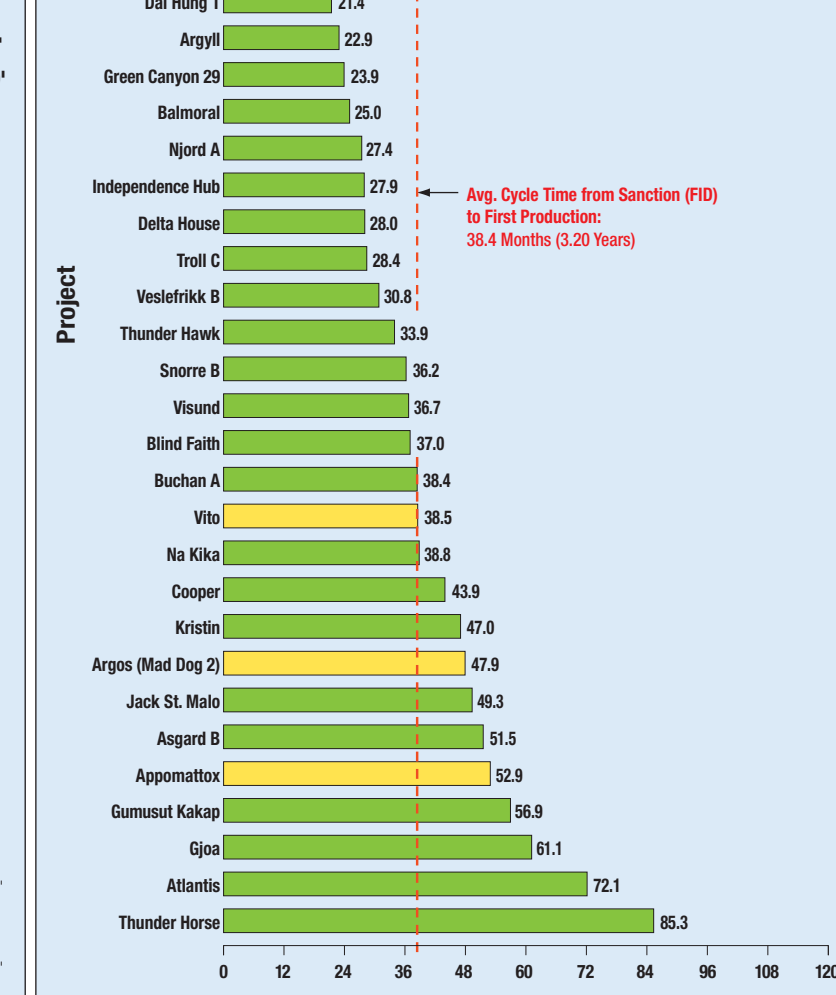
TLP Cycle Time Analysis • Sanction to First Production



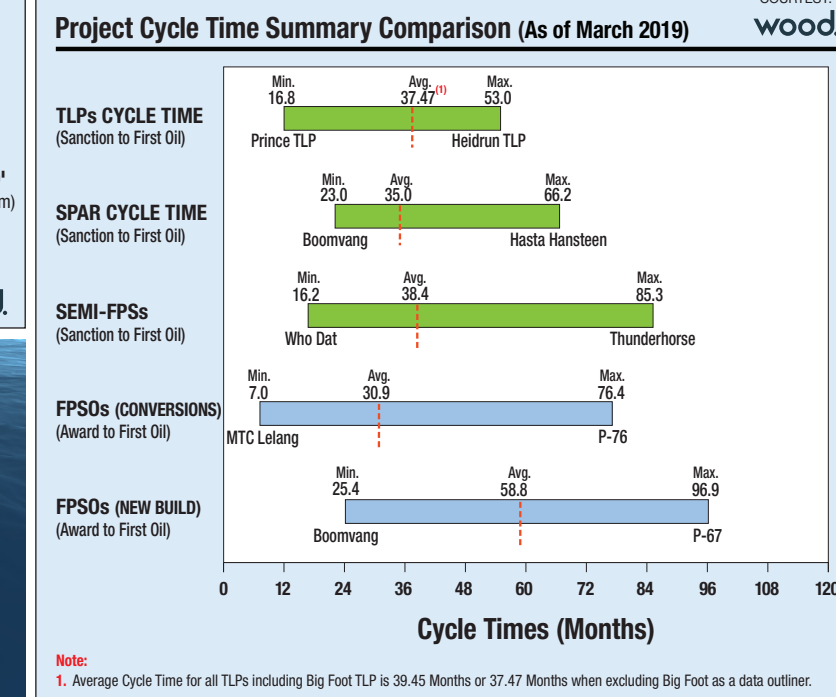
Spar FPS Cycle Time Analysis • Sanction to First Production



Semi FPS Cycle Time Analysis • Sanction to First Production



Project Cycle Time Summary Comparison (As of March 2019)



Concept to Delivery - TLP, Semi, and Spar

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