PRELUDE TO THE FUTURE – THE NEXUS OF FLNG AND MARITIME LAW

Paul Mullen

The Shell Prelude is the world's largest floating offshore facility. This article will explain that Prelude, and floating liquified natural gas ('FLNG') structures of her brood, are not just facilities, but are almost always vessels as a matter of law. As such, it will analyse what the potential liabilities for such novel ships could be, both in the sovereign waters of coastal States, and offshore expanses beyond national jurisdiction. Additionally, this article will compare and contrast FLNG vessels with: drilling ships, floating storage facilities, and other related vessels and structures.*

1. Introduction

The *Prelude* floating liquified natural gas ('FLNG') facility is a vessel under nearly any legal description. This idea is supported by Australian, English, and American jurisprudence, as well as myriad international court decisions and international conventions. This article will use the aforementioned materials to sap the validity of potential arguments to the contrary, and intends to put *Prelude* and vessels like her on par with the likes of jack-up rigs, drilling ships, and other substantial seagoing craft.

Entering the era of FLNG, it is important to dispense with questions regarding *Prelude*'s vessel status early on. Eventually, as this technology proliferates (as of 2016 there were seventeen FLNG / similar projects under construction),[1] it is practically inevitable that a collision, spill, or accident of some kind may occur. When this happens, an unclear picture of the classification of FLNG projects would cost untold years and millions to litigate. Were the status of *Prelude* unclear (or, even worse, were there attempts to create an entire new legal / liability scheme for FLNG facilities), there would be only disorder in future cases. A critical portion of this article will be dedicated to showing how settled law treats craft similar to *Prelude* as vessels.

Because *Prelude* will frequently be a vessel, a new legal framework for questions of liability is unnecessary. This article will show how various potential incidences with FLNG facilities could be dealt with in State waters, in transit, or in areas beyond national jurisdiction.

Having clear-cut legal regimes does not mean that an FLNG incident would necessarily be easy to deal with – these are indeed unique vessels, encapsulating novel technology, and operating in unique ways. *Prelude* and vessels like her have the potential pitfalls of a ship, an oil rig, a tanker, a deep-sea drilling ship, and a refinery. No other vessel floats at such a mechanically complex crossroads. This article will analyse different situations in which *Prelude* may be involved, and will clearly show that existing legal regimes are capable of handling any potential event.

This article will begin with a general introduction to FLNG technology. Part 2 of this article will give a general explanation about *Prelude* and her purpose. Part 3 will use myriad legal definitions of 'ship' and 'vessel', and will apply those definitions to the *Prelude* craft. That application will show the reader that *Prelude* and similar FLNG facilities are nearly always vessels as a matter of law. The latter half of that part will be dedicated to potential problems (that is, when *Prelude* may not be a vessel). Part 4 will examine other analogous craft similar to *Prelude* that are generally considered vessels as a matter of law.

Part 5 of this article will discuss how incidents involving *Prelude* would be handled in various maritime zones, and modes of operation. By the end of this article, the reader is invited to conclude that: (1) *Prelude* and other FLNG craft are nearly always vessels as a matter of law; and (2) that existing (and pending) legal regimes are sufficient to handle any FLNG incident, in any maritime zone, and no new conventions are needed to deal with this novel technology.

---

* *Shell*, 'Major Construction Begins on The Prelude FLNG Project - The World's Biggest Offshore Floating Facility' (Web Page, 2012) <https://www.shell.com/media/news-and-media-releases/2012/prelude-flng-construction-begins-18102012.html>.

[1] Brian Songhurst, 'Floating LNG Update - Liquefaction and Import Terminals' (2019) NG149 *The Oxford Institute for Energy Studies*, 19.

2. What is *Prelude*, what is her purpose, and why is she in Australian Waters?

FLNG craft like *Prelude* are a one-stop shop – a single floating facility built for the extraction, condensation, and production of liquified natural gas. It is worth looking at FLNG from the *Prelude*'s proprietors' own words:

> *Natural gas is produced from underwater fields then processed and chilled to -162° Celsius (-260° Fahrenheit). This shrinks its volume by 600 times to create LNG. The advanced design of an FLNG facility packs a typical land- based LNG plant into a fraction of its normal size.*[2]

These facilities merit analysation because their increased proliferation is likely in the near future. As Shell engineer Willem Keij stated, '[o]ne-third of the world's gas resources are in remote areas. With this floating liquefied natural gas technology, we can now tap into those fields'.[3] FLNG technology brings remote gas fields into the reach of innovative producers, and it is worth studying the potential implications of that leap. As one columnist described the technology, '[t]he theory behind FLNG technology is that remote and relatively small offshore gas fields might never be developed using a conventional offshore platform and pipeline to an onshore processing plant'.[4] *Prelude* ceased production in February 2020 due to a 'power trip', and resumed normal operations in January 2021.[5]

The Browse Basin off the Australian coast is a perfect gas field for a craft like *Prelude*. The reserves are rich, but quite deep, and this particular facility is best suited to successfully exploit them.[6] This type of specialized exploration is somewhat novel, and, as such, requires exceptional technology to utilize:

> Reservoirs are identified at depths of between 4000 and 5000m, or between 3000 and 3500m on the basin margins, where stratigraphic play concepts may be valuable. Several structures and potential stratigraphic plays remain undrilled in the basin. *The logistics of operating in such a remote area and within deep water are major hindrances to economic discoveries. As such, the Browse Basin is considered both a high-risk and high-reward area.*[7]

Estimates on the amount of minerals in the Browse basin are massive. Figures given by one paper are '36 Tcf [trillion cubic feet] EUR (Estimated Ultimate Recovery) of gas and 1148 MMbbl [million barrels of petroleum liquid] of condensate'.[8] That paper went on to state '[the Browse Basin] is poised to become Australia's next major conventional liquefied natural gas (LNG) province'. Operations are only scratching the surface of the field's potential, and the Shell *Prelude* is at the forefront of this venture.

This paper will compare FLNG facilities with other similar craft, and analyse their status in maritime law. Analysis herein will venture through many jurisdictions, but will mainly be focused on (1) international conventions, (2) Australian statutory law, (3) New Zealand statutory law, (4) English common law and statutes, and (5) American common law and statutes.

The analysis in this article is necessary because of the novel nature the Shell *Prelude* facility and other FLNG craft. That being said, '[t]he definition of "vessel" cannot be static because changing technology regularly calls for newly focused (and sometimes entirely new) criteria.'[9] As the reader will see, when craft differ from the strictest traditional definitions of 'ship' or 'vessel', there is an inevitable fight over their classification. Varying definitions in common and statutory law mean that different craft may have different statuses in different situations. This article is not so much aimed at universal definitions and reconciliation – rather, it will show from a macro perspective why *Prelude* and other FLNG craft are generally vessels. It will use the aforementioned legal

---

[2] *Shell,* 'Floating LNG' (Web Page, 2020) <https://www.shell.com/energy-and-innovation/natural-gas/floating-lng.html>.
[3] *Shell*, 'Next Stop Australia: Prelude Sets Sail' (Web Page, 2020) <https://www.shell.com/inside-energy/prelude-sail-away.html>.
[4] Tim Treadgold, 'Shell's $12 Billion LNG Experiment Becomes A Big Headache', *Forbes*, (Web Page, 2020) <https://www.forbes.com/sites/timtreadgold/2020/06/23/shells-12-billion-lng-experiment-becomes-a-big-headache/#7b9454071107>.
[5] Kelvin Sam, 'Shell resumes production at Prelude FLNG Connect Upstream Insight', *Connect Upstream Insight*, (Web Page, 2021) <https://connect.ihsmarkit.com/upstream-insight/article/phoenix/3865729/shell-resumes-production-at-prelude-flng>.
[6] Government of Western Australia Department of Mines, Industry Regulation and Safety, 'Browse Basin' (Web Page, 2021) <https://www.dmp.wa.gov.au/Petroleum/Browse-Basin-10988.aspx> states that '[t]he Browse Basin covers an area of approximately 140,000 km^2 and lies entirely offshore, north of Broome. The basin is bounded by the Leveque Shelf in the south, the Kimberley Block to the east, and the Ashmore Platform and Scott Plateau in the north, and grades into the offshore Canning Basin to the southwest. The area can be serviced from Broome and Derby, which have port and air facilities.'
[7] Ibid (emphasis added).
[8] Emmanuelle Grosjean et al., 'The Source Of Oil And Gas Accumulations In The Browse Basin, North West Shelf Of Australia: A Geochemical Assessment' (2015) *International Conference and Exhibition* (Melbourne, 13-16 September 2015), Abstract.
[9] David Robertson and Michael Sturley, 'Vessel Status in Maritime Law: Does *Lozman* Set A New Course?' (2013) 44 *Journal of Maritime Law and Commerce* 393, 395.

sources, as well as comparison with similar craft to accomplish that goal. This article will also illustrate that, because *Prelude* is sufficiently similar to existing vessels, existing legal doctrines are sufficient to regulate her.

3. Is *Prelude* a 'vessel' at law?

What makes a floating structure a 'ship' or 'vessel' can vary greatly in maritime law. When this article refers to these terms, it generally uses them interchangeably, or uses 'vessel' as a catchall term. This is because, although a convention may use 'ship' in its terms, the substantive issue is a distinction in the *status* of the craft. When we define a craft in these terms, we are referring to her elevated position as something more than a mere structure. The importance of that distinction can impact everything from the remedies of an injured worker,[10] to jurisdictional issues governing a civil suit,[11] to the taxability of a seafarer's income[12].

3.1 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea

Looking ahead, which is exactly what an article on new technology is about, the most relevant convention to *Prelude* and other FLNG craft is likely to be the *Hazardous and Noxious Substances Convention* ('HNS Convention' or 'HNS'), 2010. That instrument gives a compensation framework for incidents involving, inter alia, liquified gasses such as LNG.[13] This convention is non-binding at present, as states have yet to ratify it.[14] Although *Prelude* easily meets the HNS Convention's expansive definition of 'ship' ('any seagoing vessel and seaborne craft, of any type whatsoever'[15]), incidents with *Prelude* would presently need to be dealt with under existing laws. The HNS Convention is mentioned here as a harbinger of things to come.

3.2 Definitions of 'Vessel' and 'Ship'

3.2.1 Dictionary meaning

The Cambridge Dictionary defines 'vessel' as 'a large boat or a ship'.[16] That same resource defines 'ship' as 'a large boat for travelling on water, especially across the sea'.[17] These terms become dizzyingly cyclical, and it is little wonder why the law generally draws no great distinction between them. As previously mentioned, this paper will frequently use 'vessel' as the catchall term.

3.2.2 At national law

Under Australian law

Australian law has a distinction in vessel status that should be made at the outset - vessel status in Australian law should not be confused with 'Public Vessel Status' or 'PVS'. PVS relates to, inter alia, marine scientific research (MSR) under the *United Nations Convention on the Law of the Sea* ('UNCLOS')[18] (discussed later). The law on PVS states '[a] grant of PVS may … be made to foreign vessels wishing to make a visit/port call/s either as part of undertaking MSR or independently … *Public vessels are regarded in Australia as those vessels owned, chartered, temporarily employed, contracted or commissioned by any foreign State, when such vessels are not engaged in any commercial activity*.'[19]

The two foundational statutes in Australian maritime law are the *Admiralty Act 1998* (Cth) ('Admiralty Act') and the *Navigation Act 2012* (Cth) ('Navigation Act'). Both Acts define 'ship' or 'vessel' outright, but more

[10] The status of American maritime workers as 'seamen' depends on being 'in the service of a vessel': *Chandris, Inc. v Latsis* 515 U.S. 347, 371 (1995). Thus, vessel status will help determine whether they merit the special remedies of the Jones Act.
[11] See *Merchant Shipping Act 1995* (UK).
[12] See generally *Perks v Clark Same v MacLeod Newrick and Another v Guild* [2001] EWCA Civ 1228.
[13] *International Convention on Liability and Compensation for Damage in Connection with The Carriage of Hazardous and Noxious Substances by Sea,* 1996 (not yet in force) article 1(5)(v) ('HNS').
[14] *International Maritime Organization*, 'The HNS Convention' (Web Page, 2010) <http://www.imo.org/en/MediaCentre/HotTopics/Pages/HNS-2010.aspx>.
[15] HNS (n 13) at article 1(1).
[16] Cambridge Dictionary, 'Definition of "Vessel"', (Web Page, 2020) <https://dictionary.cambridge.org/dictionary/english/vessel>.
[17] Cambridge Dictionary, 'Definition of "Ship"', (Web Page, 2020) <https://dictionary.cambridge.org/dictionary/english/ship>.
[18] *United Nations Convention of the Law of the Sea*, 1982, 1833 UNTS 3 ('UNCLOS').
[19] Australian Government Department of Foreign Affairs and Trade, 'Marine Scientific Research - A Guide To Public Vessel Status (PVS) Requests' (Web Page, 2021) <https://www.dfat.gov.au/international-relations/themes/environment-sea-law/marine-scientific-research/Pages/a-guide-to-public-vessel-status-pvs-requests#What_is_PVS> (emphasis in original).

importantly they work in conjunction to paint a clear picture. As referenced in the introduction to this chapter, the terms 'vessel' and 'ship' are often used interchangeably. The difference is largely semantic, but the most important distinction is to set these craft apart from other maritime structures that are often fixed to the seabed, or not navigable in the traditional sense.

The Admiralty Act defines 'ship,' and the Navigation Act names a few different types of vessels under Australian law. The former states, 'ship means a vessel of any kind used or constructed for use in navigation by water, *however it is propelled* or moved, and includes: a barge, lighter or other floating vessel; a hovercraft; an *off-shore industry mobile unit*; and a vessel that has sunk or is stranded and the remains of such a vessel'.[20] As discussed later in this article, these distinctions are especially salient for *Prelude*, as she could easily end up in an Australian action. The statute addresses propulsion – as mentioned later, *Prelude* is towed into place by tugs. Here, the statutory language of 'however it is propelled' means that this alone will not lose *Prelude* her status as a ship. The Act states point blank that mobile off-shore industrial facilities are 'ships' as a matter of law. *Prelude* is a wholly novel creation, but she has analogues in maritime craft. She is most similar to drilling ships and 'jack-up' rigs. Such are nearly always considered ships or vessels. Here, *Prelude*, literally an 'off-shore industry mobile unit', would easily meet the Admiralty Act's definition of 'ship.'

The Navigation Act defines 'vessel' nearly as broadly as the Admiralty Act defines 'ship': 'vessel means any kind of vessel used in navigation by water, however propelled or moved, and includes the following: a barge, lighter or other floating craft; an air-cushion vehicle, or other similar craft, used wholly or primarily in navigation by water'.[21] This definition is nearly identical to that given in the Admiralty Act, but the Navigation Act goes a sight further. That Act lists several different types of vessel, including: customs vessel, domestic commercial vessel, foreign vessel, government vessel, seafarer's vessel, special purpose vessel, regulated Australian vessel, and recreational vessel.[22] A recreational vessel is specifically excluded from statutory (and effectively commercial) vessel status by s 15.

What the Navigation Act lists is not so important as what it *does* – the Navigation Act, twenty-four years the junior of the Admiralty Act, serves to refine and interpret much of the foundational statutory law of the Admiralty Act. Taken in a vacuum, the Navigation Act's nuance could just be interpreted as 'common meaning' vessel tests, as most its listed provisions are typical craft, but this would only be half of the proper analysis. The Navigation Act builds on the Admiralty Act – were a craft fail to achieve vessel status under the latter, she could not attain such under the former. Here (as outlined above), *Prelude* would likely make vessel status under the Admiralty Act. Nothing under the Navigation Act would cause her to lose that status.[23]

Under New Zealand law

Although *Prelude* is currently focused on Australian gas reserves in the Browse Basin, she could conceivably be moved to explore and exploit New Zealand's offshore gas deposits. That country has producing offshore gas reserves in the Canterbury and Great South Basins,[24] as well as the Pohokura Gas Field.[25] If *Prelude* were operating in New Zealand's gas fields, her status could be relevant to claims arising from her work. As such, her status could be analysed under the Maritime Transport Act of 1994. That Act has a simplified definition of 'vessel' common to many conventions – 'any ship or craft, or any structure capable of navigation'.[26] At the outset, this broad language seems to easily encompass a craft like *Prelude*. As mentioned throughout this article, however, some conventions exclude craft engaged drilling and extraction. Such is the Maritime Transport Act. Article 4 curtails article 1 in this case stating, '[t]his Convention shall not apply to fixed or floating platforms or to mobile offshore drilling units *when such platforms or units are on location engaged in the exploration, exploitation or production of sea-bed mineral sources*.'[27] In light of this statutory caveat, *Prelude* would likely only be a vessel

[20] *Admiralty Act 1988* (Cth) s 3 (definition of 'ship') ('Admiralty Act').
[21] *Navigation Act 2012* (Cth) s 14 (definition of 'vessel') ('Navigation Act').
[22] Ibid ss 14, 15, 18.
[23] But see ibid (n 20) at s 240(2): for the purposes of maritime salvage, the Navigation Act will 'not apply to fixed or floating platforms or to mobile offshore drilling units *when such platforms or units are on location engaged in the exploration, exploitation or production* of mineral resources of the seabed or its subsoil'. See also *International Convention on Salvage,* 1989, 1953 UNTS 165 ('Salvage Convention); *Nairobi International Convention on the removal of wrecks*, 2007, 46 ILM 697 ('Wreck Removal Convention'). Those conventions, analysed below, provide that craft which are otherwise vessels lose that status when engaged in drilling or extraction operation.
[24] *New Zealand Oil & Gas,* 'Where We're Active' (Web Page, 2021) <https://www.nzog.com/projects/new-zealand/#geographical-area>.
[25] *Offshore Technology,* 'The Pohokura Gas Field, New Zealand - Offshore Technology' (Web Page, 2021) <https://www.offshore-technology.com/projects/pohokurafieldnewzeal/>.
[26] *Maritime Transport Act 1994* (NZ) s 1(a).
[27] Ibid at s 4, emphasis added.

for the purposes of New Zealand statutory law while in tow or transit. If 'engaged in the exploration, exploitation, or production' of LNG, she would likely be treated as a fixed platform or other non-vessel.

Under United States law

The issue of vessel status in US maritime law is arguably more significant than in other countries. This is due to the United States Constitution, and the sovereignty of the several states. There are certain matters to which the Constitution grants original jurisdiction to the federal courts, and Admiralty issues are counted among them. That document announces that '[t]he judicial Power shall extend to all Cases, in Law and Equity, arising under this Constitution, the Laws of the United States, and Treaties made, or which shall be made, under their Authority ... to all Cases of admiralty and maritime Jurisdiction'.[28] Because suits in Admiralty can easily be removed to federal court, vessel status can have a huge impact on American civil litigation. As one scholar wrote, '[w]hether an apparatus or structure is properly characterized as a vessel is recurrently determinative of the boundary between the respective spheres of federal and state authority in the realm of maritime affairs.'[29] If a structure is not a vessel, a claim regarding an incident can be litigated in state courts (which often allow twelve person juries and generous punitive damage awards). If, on the other hand, the structure is ruled a vessel, defence counsel will often seek prompt removal to the federal court system. In the United States, literal fortunes can depend on vessel status.

The definition of a 'vessel' is given statutorily as including 'every description of watercraft or other artificial contrivance used or capable of being used, as a means of transportation on water.'[30] The United States Supreme Court granted certiorari (appellate review) in *Lozman v City of Riviera Beach, Florida* to clarify the word 'capable' in the statute.[31] In that case, the City of Riviera Beach, on behalf of its marina, sued the petitioner in admiralty for fees and trespass damages associated with the petitioner's floating home.[32] In the District Court, the petitioner challenged the suit on the grounds that his home was not a vessel and thus, the court lacked admiralty jurisdiction.[33] The Supreme Court ultimately decided that the home was not a vessel,[34] and admiralty jurisdiction was thus inappropriate.

The result of the *Lozman* court's ruling was the addition of an objective component to the statutory vessel test. The opinion stated, 'in our view a structure does not fall within the scope of this statutory phrase unless a reasonable observer, looking to the [structure's] physical characteristics and activities, would consider it designed to a practical degree for carrying people or things over water.'[35] The Court listed several attributes as relevant stating, '[the structure] had no steering mechanism, had an unraked hull and rectangular bottom 10 inches below the water, and had no capacity to generate or store electricity. It also lacked self-propulsion, differing significantly from an ordinary houseboat.'[36]

In post-*Lozman* era litigation in the United States, the vessel test can be summed up in two parts; one part consisting of the statutory definition given in Title 1 of the US Code, and the other consisting of the 'reasonable observer' subjective component defined by *Lozman*. The current US vessel test can be stated as:

1) '[E]very description of watercraft or other artificial contrivance used or capable of being used, as a means of transportation on water[;]'[37] and
2) '[A] reasonable observer, looking to the [structure's] physical characteristics and activities, would consider it designed to a practical degree for carrying people or things over water.'[38]

If the analysis of a structure or craft satisfies both prongs of this test, it will likely be considered a vessel under American maritime law (at least for The *Jones Act* purposes). Some traditional examples of vessels include, 'but are not limited to: ships, barges, fishing boats, work boats, cruise liners, and floating oil drilling rigs (i.e., mobile

[28] *Constitution of the United States* article III(2).
[29] Robertson and Sturley (n 9) at 394.
[30] *Rules of Construction,* 1 USC § 3 (Legal Information Institute, 1947).
[31] *Lozman v City of Riviera Beach, Fla.* (2013) 568 U.S. 115, 119.
[32] Ibid at 118-19.
[33] Ibid.
[34] Ibid at 118.
[35] Ibid at 121.
[36] Ibid, but cf *Stewart v Dutra Const. Co* (2015) 543 U.S. 481, 497, holding that a dredging barge was a vessel for Jones Act purposes even though it 'could only be navigated by manipulating anchors or cables, or by being towed'.
[37] *Rules of Construction*, § 3 (n 30).
[38] *Lozman* (n 31) at 121.

offshore drilling units).'[39] A *fixed platform* is not a vessel, and 'an oil worker on a rig firmly planted on the floor of the Gulf of Mexico is not a seaman, not on a vessel, and not entitled to the benefits of the Jones Act.'[40]

Were an FLNG facility (or even *Prelude* herself) to end up at the centre of an American lawsuit, there would likely not be much dispute about her status. *Prelude* is a 'watercraft or other artificial contrivance used or capable of being used, as a means of transportation on water,'[41] and any reasonable person would almost certainly 'consider it designed to a practical degree for carrying people or things over water.'[42] Looking at the two-prong test above, composed of binding statutory and common law authority, an FLNG structure like *Prelude* would almost certainly be considered a vessel under US maritime law.

Under English law

Much of English maritime law (and international conventions absorbed therein) is found in the *Merchant Shipping Act 1995* (UK). Arguably the simplest (and thus endlessly litigable) definition of ship is found in that Act: ''ship' includes every description of vessel used in navigation'.[43] Regarding the MSA's definition one scholar wrote, '[the definition] is a problematic one which can trace its origin to preceding and now largely defunct Merchant Shipping statutes.'[44]

The MSA seemingly makes 'vessel' a broader term than 'ship', at least insofar as navigability is concerned. The broad language may imply that there are 'vessels' not used in navigation that are thus insufficient to be considered 'ships'. At any rate, and as is discussed later in this paper, *Prelude* and other true FLNG craft are, when operating as intended, nearly always 'in navigation'. For the purposes of the MSA 1995, and due in no small part to its roomy and inclusive definition, it is likely that *Prelude* and similar FLNG would always be 'ships' and 'vessels' for that statute.

3.2.3 Under Conventions

The Civil Liability Conventions of 1969 and 1992

The Civil Liability Convention (CLC) of 1969[45] places strict liability for oil pollution on shipowners and 'was adopted to ensure that adequate compensation is available to persons who suffer oil pollution damage resulting from maritime casualties involving oil-carrying ships'.[46] The original convention was promulgated in 1969, and was replaced by the modern protocol in 1992.

Although modern jurisprudence looks to the 1992 text, it takes a departure in the definition of 'ship' from the earlier draft. Article 1 of the CLC 1969 purported to cover 'ships' defined as 'any sea-going vessel and any seaborn craft of any type whatsoever, *actually carrying* oil in bulk as cargo.' On the other hand, the updated 1992 protocol currently in force states '[s]hip means any sea-going vessel and sea-borne craft of any type whatsoever *constructed or adapted for the carriage oil in bulk as cargo*', and states that said craft will 'be regarded as a ship *only when it is actually carrying oil in bulk as cargo* and during any voyage following such carriage.'[47] As *Prelude* and other FLNG facilities never carry bulk oil, they will not be ships for CLC purposes. These conventions are included in this article to show that even different versions of the same statue can have disparities in vessel status.

International Regulations for Preventing Collisions at Sea

The *Convention on the International Regulations for Preventing Collisions at Sea* ('COLREGs'), as the name suggests, are a set of collision regulations promulgated by the International Maritime Organization ('IMO'). The present iteration is notable for, inter alia, the introduction of traffic separation schemes for seagoing vessels.[48]

---

[39] United States Occupational Health and Safety Administration, *Field Operations Manual* (2020), Chapter 10, Part III(B)(1)(a).
[40] *Offshore Co v Robison* (1959) 266 F.2d 769, 771.
[41] *Rules of Construction*, § 3 (30).
[42] *Lozman* (n 31) at 121.
[43] *Merchant Shipping Act 1995* (UK) ('MSA'), s 313(1)(c) 'definitions.'
[44] Gotthard Gauci, 'Is It A Vessel, A Ship or A Boat, Is It Just A Craft, Or Is It Merely A Contrivance?' (2016) 47 Journal of Maritime Law and Commerce, 481-482.
[45] *International Convention on Civil Liability for Oil Pollution Damage*, 1969, 973 UNTS 3 ('CLC').
[46] 'About IMO: List of Conventions, International Convention on Civil Liability for Oil Pollution Damage (CLC)' (*Imo.org*) <https://www.imo.org/en/About/Conventions/Pages/International-Convention-on-Civil-Liability-for-Oil-Pollution-Damage-(CLC).aspx>
[47] *Protocol of 1992 to amend the International Convention on Civil Liability for Oil Pollution Damage of 29 November 1969,* 1992, 1956 UNTS 255.
[48] *Convention on the International Regulations for Preventing Collisions at Sea*, 1972, 1050 UNTS 16 ('COLREGs').

Rule 1 of COLREGs states that '[t]hese Rules shall apply to all vessels upon the high seas and in all waters connected therewith navigable by seagoing vessels.'[49] The 'General Definitions' section of COLREGs defines 'vessel' as 'every description of water craft, including non-displacement craft, WIG craft and seaplanes, used or capable of being used as a means of transportation on water.'[50] This is an expansive an roomy definition akin to the broad and inclusive meanings articulated in the MSA 1995 and US Code Title 1. Were there a collision incident with *Prelude*, the basic qualifiers of 'water craft' and 'used or capable of being used as a means of transportation on water' would have her easily meet the COLREGS vessel status threshold.

International Convention on Salvage

The *International Convention on Salvage* ('Salvage Convention') is another IMO publication aimed at codifying 'uniform international rules regarding salvage operations.'[51] The Convention was brought into English law via the MSA 1995, and represents a comprehensive update of the *Convention for the Unification of Certain Rules of Law relating to Assistance and Salvage at Sea*.[52] The Salvage Convention states that '[s]alvage operation means any act or activity undertaken to assist a vessel or any other property in danger in navigable waters or in any other waters whatsoever,' and defines 'vessel' as 'any ship or craft, or any structure capable of navigation.'[53] It is likely that *Prelude* would be a vessel for Salvage Convention purposes while in transit or tow, but that is not the whole story. *Prelude*'s characteristics change while she is engaged in extraction of subsea natural gas, and so too does her status for this convention; this will be discussed in the 'potential problems' section below.

International Convention of the Removal of Wrecks

The Nairobi International Convention of the Removal of Wrecks 2007 (hereafter 'Nairobi Convention' or 'Wreck Removal Convention') is a 2007 IMO convention aimed at 'adopt[ing] uniform international rules and procedures to ensure the prompt and effective removal of wrecks and payment of compensation for the costs therein involved'.[54] That convention states ''[s]hip' means a seagoing vessel of any type whatsoever and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and floating platforms,' but adds the caveat, discussed in greater detail in 3.3.2 below, that floating platforms are not covered 'when such platforms are on location engaged in the exploration, exploitation or production of seabed mineral resources.'[55] On its face, the Nairobi convention covers *Prelude* in nearly any circumstance, but, as the reader can ascertain from her nature as an extraction vessel, that is not the end of the analysis. This will be explored further in 3.3.2.

Convention for the Suppression of Unlawful Acts of Violence Against the Safety of Maritime Navigation

An interesting departure from the oft-quoted conventions herein is the *Convention for the Suppression of Unlawful Acts of Violence Against the Safety of Maritime Navigation* ('SUA)'. That convention seeks to address 'the world-wide escalation of acts of terrorism in all its forms',[56] and provides a similar take to Article 1 of the Salvage Convention. Article 1 of SUA states that '[f]or the purposes of this Convention, 'ship' means a vessel of any type whatsoever *not permanently attached to the sea-bed*, including dynamically supported craft, submersibles, or any other floating craft.'[57] The substance of this definition is also instructive as it once again shows the cyclical nature of using 'ship' and 'vessel' to define each other. Although an FLNG facility may be a 'ship' for article 1 purposes while in tow or transit, SUA, like the Salvage Convention, draws some interesting lines in its definition. These will be discussed in turn in the section below.

A Note on the Characteristics of an FLNG Spill

The above conventions are listed in this article to illustrate the lack of specific consensus regarding vessel status – they show deviations in what makes a ship a ship, even, as in the CLCs, when conventions have the same stated goal. That particular regime does bring up an interesting point – what if *Prelude* had an LNG spill on open water?

[49] Ibid at Rule 1.
[50] Ibid at Rule 3.
[51] Salvage Convention (n 23), introduction.
[52] Ibid.
[53] Ibid at article 1(a)-(b).
[54] Wreck Removal Convention (n 23), introduction.
[55] Ibid at article 1(2).
[56] *Convention for The Suppression of Unlawful Acts of Violence Against the Safety of Maritime Navigation*, 1992, 1678 UNTS 201' at introduction ('SUA').
[57] Ibid at article 1 (emphasis added).

This is actually a fascinating illustration of physics and chemistry, and the reader can quickly see why even a large LNG spill would not likely require application of a limitation doctrine (insofar as LNG pollution is concerned). Put simply, '[i]n contrast to an oil spill, no traditional clean-up of pollution damage would be necessary in the aftermath of a substantial LNG spill.'[58] This is due to LNG's density being substantially less than water; 'if LNG spills over water it will float on top and rapidly vaporise.'[59]

3.2.4 Status of *Prelude*

For the reasons set out above, it is likely that the *Prelude* FLNG facility, and others like her, are often 'vessels' as a matter of law. This status may apply while anchored and working, or sailing, even when under tow and not their own power. Myriad legal regimes, both national and international support this proposition. This conclusion is qualified by certain caveats to *Prelude*'s characteristics as a vessel capable of actual exploration and extraction of minerals, and this facet will be discussed in the section below.

3.3 Can the *Prelude* be a 'vessel' when engaged in exploration and exploitation?

Taking the Salvage Convention's first article, the first half of the Nairobi Convention's article 1(2), the Merchant Shipping Act, the United States Code, and COLREGS together, there is a clear emphasis on inclusivity in defining 'vessel'. This is understandable considering that there is a general legal interest in uniformity of laws. Especially salient in international conventions, an inclusive definition gives vessel owners (and their insurers) the gift of predictability. As the title of this subsection suggests, not all conventions view the problem in the same light. Here, the article examines some circumstances where *Prelude* and other FLNG structures might not be considered vessels.

3.3.1 International Convention on Salvage

Article 1 of the Salvage Convention seemingly makes a *prima facie* case that FLNG are vessels. The problem, however, lies in article 3. That provision states, '[t]his Convention shall not apply to fixed or floating platforms or to mobile offshore drilling units *when such platforms or units are on location engaged in the exploration, exploitation or production of sea-bed mineral resources.*'[60] As discussed below, FLNG vessels are highly analogous to mobile drilling ships and jack-up rigs – structures *not* considered to be vessels in article 3 situations. It is therefore likely that *Prelude* and other FLNG facilities do not, for the purposes of the Salvage Convention, enjoy vessel status while engaged in exploration and exploitation operations.

3.3.2 Wreck Removal Convention

The problems with the Wreck Removal Convention appear even quicker than those in the Salvage Convention. As discussed above in 3.2.3 , the Wreck Removal Convention's very definition of ship excludes extraction platforms 'when such platforms are on location engaged in the exploration, exploitation or production of seabed mineral resources.'[61] A creative litigant could present an argument that *Prelude* is more akin to a drilling ship and thus not a 'platform' for article 1 purposes – that is, that 'platform' might mean a permanent floating platform like those that use giant spars – but the fact that the Convention in question deals exclusively with 'maritime casualties' and 'wrecks' that implicitly exclude permanent installations, that argument would likely fail. *Prelude* floats and extracts minerals, and if an incident with *Prelude* or similar FLNG craft occurred while engaged in exploration and exploitation operations, such a structure would not likely be covered by the Wreck Removal Convention.

3.3.3 Convention for the Suppression of Unlawful Acts of Violence Against the Safety of Maritime Navigation

If the reader thinks that the waters can't get murkier, the reader is incorrect. The Salvage Convention drew a bright line – if a facility similar to *Prelude* is in operation on site, she is not a vessel. SUA makes things considerably more complicated. Leaving aside the 'not permanently attached' language of article 1, article 4 of SUA states that

[58] Jingjing Xu, David Testa and Proshanto Mukherjee, 'The Use of LNG As A Marine Fuel: Civil Liability Considerations from An International Perspective' (2017) 29 *Journal of Environmental Law* 129, 130.
[59] Ibid.
[60] Salvage Convention (n 23) at article 3 (emphasis added).
[61] Wreck Removal Convention (n 23) at article 1(2).

the structure is only a vessel 'if the ship is navigating or is scheduled to navigate'.[62] Such superb ambiguity is truly baffling considering this convention was promulgated by the same IMO that published the Salvage Convention *merely one year later*! At least one scholar assumes an identical approach to the Salvage Convention will be taken with SUA. Dr Mikhail Kashubsky stated that the language of SUA article 4 suggests that convention 'will not apply to mobile offshore installations when they are on location engaged in offshore operation'.[63] Dr Kashubsky, in assuming that while in operation such vessels are not navigating or scheduled to navigate for article 4, stated 'it can be argued that [SUA] adopts the 'dual status approach' to mobile offshore installations'.[64] It is likely that, for SUA purposes, an incident with *Prelude* would be treated in kind – a vessel while in tow, and not a vessel while extracting and producing.

3.3.4 Limitation of Liability Convention

The *Limitation of Liability Convention* 1976, as amended by the 1996 Protocol ('LLMC 1996'), extends the ability to limit liability exposure to the 'owner, charterer, manager and operator of a seagoing ship',[65] but expressly forbids statutory limitation to structures similar to *Prelude*. That convention specifically forbids limitation of 'floating platforms constructed for the purpose of exploring or exploiting the natural resources of the sea-bed or the subsoil thereof'.[66]

This brings us in to the legal grey area typical of such novel technologies. The LLMC 1996 doesn't expressly exclude limitation on floating *storage* facilities, but excludes those (like drilling ships) that 'explore or exploit' the seabed. *Prelude* is in limbo because it encapsulates both technologies.

Here, it is likely that FLNG vessels in transit would need to seek protection under a different scheme – the LLMC 1996 expressly forbids drilling vessels from limiting, and the *Prelude*, though much more, is still built for 'exploration and exploitation'. This convergence of different types of floating structures seems, at first, to muddy the waters of what facilities can be counted as vessels. The opposite is actually true, and the vessel designation of various craft, having been enshrined in law in various jurisdictions, can help decipher how to classify *Prelude* and other FLNGs. This will be addressed in the next chapter.

3.4 Conclusions on Part 3

The previous section represents the bulk of the reasons that this article is forced to qualify that *Prelude* and FLNG are vessels *most*, rather than all, of the time. The limitations, generally pertaining to *Prelude*'s status while involved in exploration and exploitation activities, prevent her from having full-time vessel status in the Salvage Convention, the Wreck Removal Convention, SUA, and the LLMC 1996.

4. Analogous Unconventional Vessels

This chapter will give examples of various vessels analogous to *Prelude* in form or function. This is a critical aspect of this article for one primary reason – it shows that settled law treats craft similar to *Prelude* as vessels. This reinforces this paper's position that *Prelude* does not require a novel set of rules to govern potential FLNG incidents.

4.1 Drilling Ships

It is not a matter of much debate that *fixed* offshore drilling platforms are not vessels,[67] but drilling ships must be considered independently. In English jurisprudence, drilling ships, drilling barges, and jack-up rigs (see below)

[62] SUA (n 56) at article 4(1).
[63] Mikhail Kashubsky, *Offshore Oil and Gas Installations Security: An International Perspective* (Routledge 2015) at internal note 79.
[64] Ibid at internal notes 80-81.
[65] *Convention on Limitation of Liability for Maritime Claims*, 1976, 1456 UNTS 221, as amended by the 1996 Protocol ('LLMC'), article 1(2): '*Persons Entitled to Limit Liability*.'
[66] Ibid at article 15(5)(b).
[67] See e.g., *Rodrigue v Aetna Casualty & Surety Co* (1969) 395 US 352, holding that an 'artificial island' type fixed drilling platform was not a 'vessel' as it related to the Outer Continental Shelf Lands Act; *see also Offshore Co. v Robison* (n 40).

'must be ships' as a matter of law.[68] Likewise, there is no significant argument in American jurisprudence about the vessel status of drilling ships.[69]

Drilling ships are exactly what they sound like: large, self-propelled vessels that have a massive drilling assembly affixed to the superstructure of the ship. Drilling ships are used to drill for petrochemicals, and 'can also be used as [an] analytical vessel to carry out sub-water researching operations in the high seas'.[70] Drilling ships were created to be versatile, manoeuvrable, and to deal with the unpredictable conditions of offshore exploration and production of oil and gas.[71]

The main functional difference between *Prelude* and some traditional drilling ships is that *Prelude* and similar FLNG facilities lack self-propulsion. As alluded to throughout this paper, that alone is insufficient to cost *Prelude* her qualification as a vessel. It is worth noting that *Prelude* has *positioning thrusters* that total 6,700 horsepower.[72]

4.2 Jack-Up Rigs

The jack-up rig is, to outsiders generally, an anomaly. At first glance, it appears to be a labyrinth of pipes, machines, housing, and ancillary structures, all thrust skyward on giant insectoid legs. In American and English law, for example, jack-ups are nearly always vessels.[73] These production facilities may or may not operate under their own power, but they are treated the same as normal craft under the law.

An instructive case from the English Court of Appeals ('EWCA') is *Perks v Clark*. Though largely about the tax status of marine workers, the *Perks* case gives myriad descriptors on why a jack-up is a vessel.[74] That case focused on the rig *Santa Fe Magellan* and analysed many of the same factors as the American vessel test mentioned above, such as navigation and propulsion. These and similar factors are considered in many different jurisdictions, and help form a lens through which we can examine FLNG technology.

4.3 'Navigation' and 'Seagoing'

Regarding navigation (and relevant to *Prelude*'s operational status), the *Perks* court stated 'so long as 'navigation' is a significant part of the function of the structure in question, the mere fact that it is incidental to some more specialized function, such as dredging or the provision of accommodation, does not take it outside the definition'.[75] In the present context, this logic would have *Prelude* and vessels like her 'in navigation' as a matter of law, even while engaged in extraction and refining operations.

The U.S. Supreme court takes a similar stance on the issue, and makes clear that *navigation* need not mean *locomotion*. The Supreme Court held in *Chandris v Latsis* that although the vessel in question was dry-docked in Germany for a period, it had not necessarily been removed from navigation.[76] Quoting a US appeals court case, the Supreme Court in the *Chandris* court wrote: 'it is generally accepted that 'a vessel does not cease to be a vessel when she is not voyaging, but is at anchor, berthed, or at dockside'.[77] The Court qualified its ruling, stating, '[a]t some point, however, repairs become sufficiently significant that the vessel can no longer be considered in navigation',[78] and that 'in such cases, "the focus should be upon the status of the ship, the pattern of the repairs, and the extensive nature of the work contracted to be done"'.[79]

---

[68] See *Perks v Clark* (n 12) at 441.
[69] But see, *McKinley v All Alaskan Seafoods, Inc.* (1992) 980 F.2d 567 (9th Circ) where a drilling ship *in the process of being converted to a fishing trawler* was not 'in navigation' for Jones Act purposes.
[70] *Marine Insight*, 'What Is A Drill Ship?' (Web Page, 2017) <https://www.marineinsight.com/types-of-ships/what-is-a-drill-ship/>.
[71] Ibid.
[72] *Max Groups Marine*, 'Here's All You Need to Know About Shell Prelude FLNG: Facts' (Web Page, 2016) <https://max-groups.com/shell-prelude-flng-facts/>.
[73] See e.g., *Davis v Sedco Forex* (1987) 660 F Supp 85; *Offshore Co. v Robison* (n 40) at 775. But see: *Fredieu v Rowan Cos* (1984) 738 F2d 651 (5th Cir.), where a jack-up *under construction* was not considered a vessel. See generally, John Wagner Jr., 'Applicability Of Jones Act (46 U.S.C.A. Appx. § 688) To Workers Connected with Operation of Dredges, Drilling Platforms, Derricks, Or Similar Special-Purpose Equipment' (1989) 92 *American Law Reports*.
[74] See *Perks v Clark* (n 12).
[75] Ibid at 439. See also *Gianfala v Texas Co.* (1955) 350 US 879, 'the vessels involved were not conventional vessels but special-purpose structures, the court concluded that under the Jones Act a vessel may mean something more than a means of transport on water.'
[76] *Chandris, Inc.* (n 10) at 372. But see *West v United States* (1959) 361 U.S. 118 (denying Jones Act recovery for unseaworthiness to a worker overhauling a dry-docked vessel to make it seaworthy).
[77] Ibid at 373 (quoting *DiGiovanni v Traylor Bros., Inc.* (1992) 959 F.2d 1119, 1121 (1st Cir).
[78] Ibid at 374.
[79] Ibid (quoting *United N.Y. and N.J. Sandy Hook Pilots Assn. v Halecki* (1959) 358 U.S. 613).

We are not, at present, concerned with a dry-docked FLNG vessel, but the logic is worth examining. It is not insignificant that a high court still referred to a vessel *removed from the sea entirely* as 'in navigation', and an English court stated that a stationary vessel engaged in dredging (or similar) is still 'in navigation'. It stands to reason that a facility like *Prelude* FLNG should be considered 'in navigation' while engaged in drilling operations.

An interesting ancillary issue to navigation occasionally relevant in modern jurisprudence is the legal distinction drawn between a 'seagoing' vessel and a vessel 'in navigation'. The Queen's Bench in *The Sea Eagle* held 'seagoing is intended to convey something more than … "used in navigation" … [W]hen considering whether she is a "seagoing" ship, *it is necessary to consider the actual use to which the vessel in question is being put* in the context of the claim being brought against her'.[80] There is no definitive answer here for *Prelude* – she is well offshore, but is stationary while operating. The 'seagoing' requirement places a higher threshold in English law than mere navigation, and could potentially lead to a dispute if *Prelude* were moored, even offshore, rather than in tow.

The HNS, COLREGS, and the LLMC 1996 all incorporate the 'seagoing' language into their definitions, but it is arguable that those conventions use this term in its plain meaning – what other parties may call simply 'navigation' or 'at sea'. If, however, there were a dispute in an English court, *The Sea Eagle* would give enough persuasive precedent to fight over – one could make the argument that, under English law, *Prelude* is not 'seagoing' while moored and drilling. Being as she is hundreds of miles offshore, this is still not a very credible position to take; *Prelude* is likely 'in navigation' and 'seagoing' by most conceivable metrics, even while engaged in extraction operations.

4.4 Propulsion

A corollary to a barge lacking in self-propulsion is a newly-launched vessel – one whose construction will be finished after the hull is afloat. This is similar to drilling barges and FLNG technology in the sense that a new launch is basically a motor-less floating hulk. Such may still be considered a vessel in navigation even though she is obviously not operating in any traditional sense of the word. In short, even an unfinished hull 'cannot [be denied] the character of a vessel merely because she was not capable of self-propulsion, or because she was incapable of self-direction, on the assumption that she had no rudder'.[81]

Propulsion, as mentioned above, is an oft-considered factor in disputes about vessel status. On the jack-up *Santa Fe Magellan*, the rig's lack of independent propulsion did not remove its status as a vessel. That court, in upholding jack-up vessel status, stated 'the jack-up rig *Santa Fe Magellan* has no propulsive thrusters or engines of its own'.[82] That particular rig 'was moved by being towed by at least two tugs. A tow master controlled the towing operation, particularly as to the speed and direction of the tugs, giving instructions to the tugs from the bridge of the jack-up rig'.[83] This case tells us that, at least for a jack-up rig, courts will not even require self-propulsion to uphold vessel status. Similarly, in *The Mudlark*, a 'sea-going hopper barge' with 'no means of propulsion' was held by the Admiralty Division to be a vessel.[84] This is relevant to our analysis of *Prelude* in that she too has to be towed from location to location, and does not operate under her own propulsion.[85] In point of fact, *Prelude* was called 'the world's biggest tow'[86] by her captain. She was towed to the Browse Basin 'by three tugs, each more than 75m long', with '[a] fourth tug [acting] as an escort.'[87] Lack of self-propulsion is an unlikely challenge to *Prelude*'s vessel status, as the law is generally settled on that issue. Statutory definitions seldom (if ever) list self-propulsion, and common law in England and the United States does not hold that factor as a valid qualifier.

4.5 Floating Storage Units and Floating Production Storage and Offloading Vessels

Floating Storage Units ('FSUs' – also called FSOs) and Floating Production Storage and Offloading Vessels ('FPSOs') are some of the most analogous craft to FLNG facilities. FSUs are vessels that 'take the form of a large

[80] [2012] 2 Lloyd's Rep. 37 [31] emphasis added).
[81] *The St Machar* (1939) 65 Lloyd's Law Reports 119, quoted in *Gauci* (n 44) at 488. But see, *Virtu Fast Ferries Ltd. v The Ship 'Cape Leveque'* [2015] FCAFC 58, where a patrol boat hull under construction (but not launched) was denied vessel status for the purpose of ship arrest.
[82] *Perks v Clark* (n 12) at 433.
[83] Ibid.
[84] *The Mudlark* [1911] P 116, 117.
[85] *Shell*, 'Prelude FLNG Begins Its Journey to Australia' (Web Page, 2020) <https://www.shell.com/media/news-and-media-releases/2017/prelude-flng-begins-its-journey-to-australia.html>.
[86] *Shell* (n 3), quoting Capt. Alan Stockwell.
[87] Ibid.

barge ... [and] are used to store oil and gas in large silos placed on top of the vessel'.[88] Because FSUs are not directly involved in extraction and production, they are legally vessels by most given metrics. An interesting caveat to this is noted by the Scholar Gotthard Gauci: '[t]here are various types of FSOs, in particular some with their own motive power and some without. FSOs without motive power can only be regarded as ships [for CLC 1992 purposes] 'if they are or about to be under tow.' If they are under tow, they should be considered as vessels as tug and tow should be considered as one unit'.[89] This is an apt analogy for *Prelude* and FLNG technology because, as discussed in the 'Salvage Convention' section of this paper (section 3.3.1), FLNG craft have similar restrictions under that convention.

FPSOs differ from FSUs, but are on the whole similar to those craft as well as FLNG facilities like *Prelude*. '[A]n FPSO is a floating vessel that acts as a mobile offshore production and storage facility … The vessels themselves are equipped with processing equipment for the separation, storage and offloading of oil and gas that comes from sub-sea oil wells or platforms'.[90] One might assume that the 'P' in FPSO means the craft is actually involved in extraction, but that is not exactly correct. Here, '[t]he "P" in FPSO is what separates these vessels from FSOs. Production refers to the *processing* of oil and gas'.[91] This is significant because, as we saw in some of the conventions listed in this article, actual extraction operations can remove a craft from legal status as a vessel.

FPSO and FSU technology (along with jack-ups and drilling ships) are some of the most similar craft to *Prelude*. All these technologies are legally vessels in most instances. The only thing that removes them from legal vessel status in certain conventions is when they are involved in extraction operations, or, in the case of FSUs, are not powered *and* not under tow.

4.6 Conclusions on Part 4

As shown in Part 3, *Prelude* and FLNG vessels like her are sufficiently similar to existing vessels so as to be both factually and legally analogous. None of the analogous vessels discussed in this section are subject to their own novel legal regimes. This is significant in the context of this article because it is illustrative of the idea that *Prelude* is not so unique as to require special consideration, and that she easily fits into established legal frameworks. *Prelude*'s lack of long-distance propulsion systems has no bearing on her vessel status, as evidenced in statutory and common law. Similarly, her status as a sea-going or vessel 'in navigation' is indisputable under nearly every existing metric.

5. Can *Prelude* be governed by the existing legal framework?

5.1 Variable Coverage and Maritime Zones

Prelude is mobile by her very nature. This means that, although stationary for production, she could end up in multiple locales and multiple modes of functional operation. Put another way, 'the FLNG vessel can be re-used once moved to new gas fields as only ones dry up'.[92]

This section will examine what law or convention would apply to her or another FLNG craft, depending on the applicable circumstance. After a cursory look at the different maritime zones, This article will analyse (1) *Prelude* engaged in drilling and refining operations in State waters; (2) *Prelude* in motion / innocent passage through State waters; and (3) *Prelude* in motion on the High Seas.

Very simply put, UNCLOS provides an international maritime legal framework for its member states. That Convention, inter alia, delineates maritime zones, measured from the baselines of coastal States. For the sake of brevity, this section will be confined to: internal waters, the territorial sea, and the Exclusive Economic Zone

[88] *Oil & Gas IQ,* 'Glossary - Floating Storage Units (FSU)' (Web Page, 2020) <https://www.oilandgasiq.com/glossary/floating-storage-units-fsu>.
[89] Gauci (n 44) at 491, quoting IOPC Funds documentation: IOPC/OCT11/4/4 (14th September 2011, Annex 1, paragraph 120).
[90] *Oil & Gas IQ,* 'Guide to FPSO (Floating Production Storage and Offloading)' (Web Page, 2020) <https://www.oilandgasiq.com/fpso-flng/articles/guide-to-floating-production-storage-and-offloading-fpso>.
[91] Ibid (emphasis added).
[92] Treadgold (n 4).

('EEZ'). Everything beyond these zones shall be considered the High Seas[93], and subject primarily to flag-State[94] and/or universal jurisdiction[95].

Internal waters encompass 'waters on the landward side of the baseline of the territorial sea.'[96] Some examples of internal waters include ports, harbours and estuaries.[97] Coastal States have absolute legal authority in their internal waters; in other words, they enjoy 'the same sovereign jurisdiction over internal waters as they do over other territory'.[98] Additionally, '[t]here is no right of innocent passage through internal waters'.[99] Using the theoretical example of an oil spill, '[w]hen the problems of pollution are confined to [internal waters], each State may take whatever regulatory measures it deems fit, at its own discretion'.[100]

From the baseline to twelve nautical miles out lies the territorial sea.[101] As the name suggests, Coastal States enjoy territorial sovereignty in this zone, though, contra internal waters, ships 'enjoy the right of innocent passage through the territorial sea'.[102] This right 'is based on the freedom of navigation as an essential means to accomplish freedom of trade'.[103]

The EEZ is exactly what it sounds like – an area where the coastal state maintains economic sovereignty. 'The exclusive economic zone is an area beyond and adjacent to the territorial sea',[104] and '[t]he exclusive economic zone shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured'.[105]

All of the aforementioned maritime zones (save the high seas) would subject ships located therein (especially those engaged in economic activity) to the laws of the respective coastal States. The exception would be innocent passage through those waters, but a pollution incident would still mean the vessel would be accountable to the coastal State where the incident occurred. Because the *Prelude* is currently operating in an economic capacity within the EEZ of Australia (see below), that vessel is subject to the laws of that state. The next set of analyses will examine her legal position in different situations.

5.1.1 Operating in the waters of an Australian state

As mentioned in the introduction to this article, the Shell *Prelude* is currently operating in the Browse Basin off Western Australia.[106] The vessel is currently in the EEZ / continental shelf of that state. Using this as an example, we can look at FLNG technology as it relates to operation in State waters. A substantive analysis of Australian and New Zealand law was made in Part 3 of this article, but the subject merits significant viewing through an international lens. Australia is a party to UNCLOS. This means that a vessel operating in Australian waters will be subjected to that State's application of the convention. As seen below, however, UNCLOS also allows for coastal States to hold polluters accountable for damage done in their sovereign territory.[107] Additionally, were *Prelude* operating in the waters of a non-member State, she would be subject to the laws of that State.

5.1.2 Moving through Australian state waters

Transit and innocent passage are, as the terms suggest, the movement of a vessel through the waters of a coastal State while moving from one body of water to another. The term transit passage 'applies to straits which are used for international navigation between one part of the high seas or an exclusive economic zone and another part of the high seas or an exclusive economic zone.'[108] To give an example in the present context, were *Prelude* moving in 'continuous and expeditious transit'[109] from the open ocean, through the territorial sea of Malaysia, en route to

[93] See generally, UNCLOS (n 18) at Part VII.
[94] See M*/V 'SAIGA' (No. 2) (Saint Vincent and the Grenadines v Guinea) (Judgment)* [1999] ITLOS Rep. 10, 48.
[95] See UNCLOS (n 18) at article 110.
[96] Ibid at article 8(1).
[97] Yoshifumi Tanaka, *The International Law of the Sea* (Cambridge University Press, 2019), 95.
[98] The Fletcher School, 'Chapter 2: Maritime Zones' in *Law of the Sea: A Policy Primer* (2020).
[99] Ibid.
[100] Yoram Dinstein, 'Oil Pollution by Ships and Freedom of the High Seas' (1972) 3 *Journal of Maritime Law and Commerce* 363.
[101] UNCLOS (n 18) at article 3.
[102] Ibid at article 17.
[103] *Tanaka* (n 97) at 104.
[104] UNCLOS (n 18) at article 55.
[105] Ibid at article 57.
[106] *Shell*, 'Prelude FLNG' (Web Page, 2020) <https://www.shell.com/about-us/major-projects/prelude-flng.html>.
[107]See generally, UNCLOS (n 18) at article 220.
[108] Ibid at article 37.
[109] ibid at article 38(2).

the EEZ of India, she would be engaged in transit passage. UNCLOS permits her to engage in such navigation, but, were an incident to occur in the Malay territorial sea, *Prelude* would still be accountable to that State. article 220 of UNCLOS provides measures for coastal States to hold vessels that pollute in State waters accountable. These can include filing suit, and even physical detention of the polluting vessel.[110] Under some circumstances, the affected State 'may undertake physical inspection of the vessel for matters relating to the violation'.[111]

According to UNCLOS, 'ships of all States, whether coastal or land-locked, enjoy the right of innocent passage through the territorial sea.'[112] In context, 'passage' means 'continuous and expeditious'[113] movement through the territorial sea (with allowances for anchorage in cases of *force majeure*).[114] Additionally, '[p]assage is innocent so long as it is not prejudicial to the peace, good order or security of the coastal State.'[115] Like transit passage above, *Prelude* enjoys all rights of innocent passage, but an incident in the territorial sea of a coastal State would still render her accountable to that State.

5.1.3 Moving on the High Seas

Without going too in depth, the High Seas, for the purposes of international law, means 'all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or in the internal waters of a State'.[116] This is perhaps the most compelling body of water for topic discussed in this article. Here, *Prelude* could be involved with a pollution incident involving either a cargo spill, or a spill of other shipboard chemicals. As discussed earlier, a cargo spill would not be as environmentally catastrophic as a crude spill, but huge amounts of LNG carry myriad risks of their own. Xu, Testa and Mukherjee wrote the following on the subject:

> By way of example, cryogenic damage could result from direct contact; pressure waves may result from a rapid phase transition that may occur when there is a mixing of LNG and water; and pool fires may occur and if the spreading pool of LNG on water does not immediately ignite, a vapour cloud forms and a flash fire may occur in the presence of an ignition source. Moreover, if the LNG vapour cloud is in a confined area, a gas explosion can occur.[117]

Whereas an incident in internal waters, the territorial sea, or a State's EEZ all generally fall to the regulation and/or enforcement of that State, a high seas incident can pose unique regulatory challenges. Attempts to regulate 'maritime pollution collide head-on with one of the most basic tenets of modern international law, namely, the principle of freedom of the high seas'.[118] Two basic principles are likely to dictate any high seas incident with *Prelude* or similar FLNG facilities. The first is enforcement by the flag State of the craft in question, and the second is enforcement by any affected coastal State.

The most persuasive position regarding flag State jurisdiction for an FLNG incident on the high seas comes from UNCLOS. Article 217 of that treaty states unequivocally:

> States shall ensure compliance by vessels flying their flag or of their registry with applicable international rules and standards, established through the competent international organization or general diplomatic conference, and with their laws and regulations adopted in accordance with this Convention for the prevention, reduction and control of pollution of the marine environment from vessels and shall accordingly adopt laws and regulations and take other measures necessary for their implementation. Flag States shall provide for the effective enforcement of such rules, standards, laws and regulations, *irrespective of where a violation occurs*.[119]

UNCLOS goes on to state that '[s]hips shall sail under the flag of one State only and, save in exceptional cases expressly provided for in international treaties or in this Convention, shall be subject to its exclusive jurisdiction

[110] UNCLOS (n 18) at article 220(1)-(2).
[111] Ibid at article 220(5).
[112] Ibid at article 17.
[113] Ibid at article 18(2).
[114] Ibid.
[115] Ibid at article 19(1).
[116] Ibid at article 86.
[117] Xu, Testa and Mukherjee (n 58) at 131.
[118] Dinstein (n 100) at 364.
[119] UNCLOS (n 18) at article 217 (1) (emphasis added).

on the high seas'.[120] The principle of exclusive flag State jurisdiction over vessels on the high seas is codified in UNCLOS, but is enshrined in customary international law. Flag State jurisdiction encompasses 'both legislative and enforcement jurisdiction over its ships on the high seas'.[121] In practice, the first line of accountability for a high seas incident with an FLNG vessel would be with the flag State. *Prelude* is flagged in Australia[122], so that State's enforcement procedures would be used to hold the shipowners accountable for clean-up efforts, establishment of applicable compensation funds, etc.

The high seas cover the majority of the world's oceans – basically everything beyond the EEZ or continental shelf claims of coastal States – and spills or pollution incidents in remote waters may never make landfall. In the event that a high seas incident effects a coastal State, that State, notwithstanding that the vessel is flagged elsewhere, has enforcement rights against the polluting vessel. Matters on the high seas get complicated because, other than the aforementioned flag State jurisdiction, and the limited exceptions of universal jurisdiction,[123] there is no general enforcing body. UNCLOS article 221, *Measures to avoid pollution arising from maritime casualties*, declares that '[n]othing in this Part shall prejudice the right of States … to take and enforce measures *beyond the territorial sea* proportionate to the actual or threatened damage to protect their coastline or related interests … from pollution or threat of pollution following upon a maritime casualty or acts relating to such a casualty, which may reasonably be expected to result in major harmful consequences'.[124] Were *Prelude* to be involved in a high seas pollution incident that affected a coastal State, that State could pursue actions against her citing article 221 of UNCLOS.

5.1.4 Conclusions on Part 5

Although the analysis of a potential incident with an FLNG vessel like *Prelude* may change in different maritime zones, she is no different in this respect than any other vessel. The fact that her cargo is drastically different (and arguably less harmful) than bulk crude only serves to simplify this analysis, particularly as it pertains to a high seas incident. The quickly dissipating nature of LNG over crude makes it nigh on impossible that any spilled cargo would reach the shores of a coastal state.

Overall Conclusion

Taking all the information given in this article in the aggregate, the *form* of the law begins to take shape. *Prelude* is registered as a barge,[125] but this classification doesn't do justice to her truly novel and complex nature. It is obvious that there is no singular answer to the question, 'when are *Prelude* and FLNG craft like her "vessels?"' Viewed from a macro perspective, the basic answer is 'most of the time'. That is about the best resolution as can be hoped for to such a broad legal question. That being said, even from the micro perspective *Prelude* is nearly always a vessel. The main exception to that would be when she is actively engaged in extraction operations. In that instance, *Prelude* and similar FLNG would not be vessels for the purposes of the Maritime Transport Act of 1994 (New Zealand), the Salvage Convention, the Nairobi Wreck Removal Convention, the LLMC 1996, and the Unlawful Acts of Violence Against the Safety of Maritime Navigation (SUA). Additionally, the CLC and subsequent IOPC fund conventions promulgated by the IMO will not apply to *Prelude* and other FLNG craft because those specific conventions pertain to bulk oil.

Prelude and other FLNG technology will not require a novel limitation and compensation regime. The first and second chapters of this article illustrated that *Prelude* is sufficiently analogous to enough existing craft that, whether a convention calls her a vessel or not, there will be a legal framework to meet any potential need. If an incident with *Prelude* occurs in the future, the (as of yet unratified) Hazardous and Noxious Substances convention would likely be her most apt remedial scheme. The third chapter of this article demonstrated that, no matter what maritime zone *Prelude* may find herself in, there is a method to deal with an incident. In any waters subject to coastal State sovereignty, she will be accountable to those states. If a high seas incident were to occur, *Prelude* would be accountable to her flag State, and any Coastal State affected by the incident.

---

[120] UNCLOS (n 18) at article 92.
[121] *Tanaka* (n 97) at 189.
[122] *Australian Maritime Safety Authority*, 'Australian Ship Register - Prelude' (Web Page, 2020) <https://www.amsa.gov.au/vessels-operators/ship-registration/list-registered-ships/prelude>. *Prelude*'s IMO number is 9648714.
[123] UNCLOS (n 18) at article 110; Universal jurisdiction (also known as 'right of visit') empowers the vessel of any State to visit a vessel on the high seas under limited circumstances. Stateless vessels, vessels involved in the slave trade, and vessels involved in piracy are all potentially subject to universal jurisdiction.
[124] Ibid at article 221 (1) (emphasis added).
[125] Australian Ship Register (n 122).

The analysis in this article characterizes the growing pains that follow all new maritime technologies. Nearly 150 years ago, a US court had to grapple with the newest technological marvel replacing wind-borne maritime commerce – steam:

> The application of steam to navigation has upset many of the old theories upon which admiralty jurisdiction was based, and materially modified others. Before this event, commerce upon the water depended almost exclusively upon the utilization of the wind, by means of masts and sails. When steam power made its advent upon the water, it was as a stranger thrust in upon the maritime family, and the admiralty courts looked at it askant, and hardly knew where to place it, or whether to recognize it at all.[126]

Prelude is new, but her growing pains are as old as the Lex Rhodia.[127] That which is new tends to overwhelm, and that which is novel always defies traditional classification. What maritime craft are capable of continues to stretch the boundaries of the imagination – so too must the law stretch its definition of which of those craft may qualify as vessels.

[126] *The General Cass* [1871] 10 F.Cas. 170 (U.S. District Court, E.D. Michigan), 170 (as quoted in Robertson and Sturley (n 9) at 397).
[127] The 'Lex Rhodia' or Rhodian Sea Law is a codification of Byzantine maritime law dating back to the 7th Century.