

THE INTERNATIONAL REGULATION OF OCEAN FLOATING ENERGY PLATFORMS

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The ocean is an important potential location for energy generation. This is due largely to ocean floating platform technology. Ocean floating platforms have been designed which can support any human activity which presently takes place on land.¹ An ocean floating platform could support the generation of many forms of energy: nuclear energy,² coal or oil fired energy,³ wind energy (McGowan and Heronemus, 1975, p. 629; Wade, 1974, p. 1055; Putting the wind to work, 1968, p. 760; Merriam and Anderson, 1966, p. 41; Claude, 1930, p. 1039), or wave energy (Wick and Schmitt, 1977, p. 16).

An ocean floating energy platform (hereafter "OFEP") may be positioned close to shore and feed power directly into municipal power grids.⁴ Other OFEP's may roam some distance from the coast, transforming their energy into products such as ammonia which they can sell to coastal states.⁵ OFEP's could also provide power for manganese nodule mining, mariculture, or other activities on the high seas.⁶

Assuming that OFEP's come into existence, how will they be regulated by current and proposed provisions of the law of the sea? Initially, attempts may be made to regulate OFEP's by applying the traditional definitions of vessels, ships, structures, artificial islands, or independent states recognized under international law (Keith, 1977, p. 190). However, an OFEP could fit into more than one of these traditional categories at the same time, or could change categories from time to time as its position or function changes. Appropriate international regulation is thus likely to require a new definition, perhaps one established by treaty. This paper will examine the traditional definitions, and then recommend a functional approach for an interim regulatory scheme.

Ocean Floating Energy Platforms as Ships or Vessels

Definition

OFEP's would qualify as vessels under U.S. law if they moved in transportation on water. The word "vessel" has been defined by United States statute to include "every description of water craft or other artificial contrivance used, or capable of being used, as a means of transportation on water."⁷ The phrase "every description of water craft or other artificial contrivance" is broad enough to include the unusual design features and functions of an OFEP. OFEP's would be capable of being used as a means of transportation on water; some OFEP's may in fact roam offshore, producing ammonia or some other product and selling it to coastal states.

"Vessel" has been held by United States courts to include, among other things, barges, bathhouses, floating boarding houses or restaurants, houseboats, and pleasure barges.⁸ In *Offshore Co. v. Robison*,⁹ the court held that a jack-up oil rig qualified as a vessel under the Jones Act.¹⁰ The drilling rig had only a top deck and lower hull. It had no engines and was moved from location to location by tug. Once in position, hydraulic jacks lifted the platform 40-50 feet above water level. The court reviewed cases involving a submersible drilling barge, a lighter, a floating derrick, and dredges, and concluded that "under the Jones Act a vessel may mean something more than a means of transport on water."¹¹ If a platform which stands on legs on the ocean floor qualifies as a vessel even when it is stationary and resembles a tower, it is likely that floating energy platforms will also qualify. For purpose of the Jones Act, then, OFEP's are likely to be deemed vessels.

The word "vessel" includes the word "ship," and the two words are often used interchangeably in U.S. case law.¹² Thus, the specific attributes of a ship, as opposed to a vessel, are difficult to identify. In *Pollock v. Cleveland Shipbuilding Co.*¹³ the shipbuilding company floated ships in front of Pollock's land while repairing them. The court had to define "ship" in order to establish whether the repair work involved a maritime contract. The court began by noting the definition provided from a treatise on admiralty: "'A ship' says Mr. Benedict in his work on admiralty (Section 215) 'is a locomotive machine adapted to transportation over rivers, seas, and oceans.'"¹⁴ The court accepted this definition, but then broadened it to cover the case at hand. "In this sense," it said, "vessels moored by defendant, awaiting engines and boilers, were ships. They were machines upon the water, would float, and were capable of being moved and propelled on the water, and

were so floating on the water, and intended as aid to commerce.”¹⁵ Benedict’s definition¹⁶ required a “locomotive machine,” and this implies the power of a vessel to propel itself, a feature which would clearly distinguish a ship from a vessel such as a barge which must be towed. The court’s definition, however, required only a machine “capable of being moved and propelled on the water,” a definition which seems broad enough to include vessels which are towed as well as those which are self-propelled. By this standard, ocean floating energy platforms would qualify as ships.

The moment of birth and death of an OFEP ship may be difficult to determine under traditional definitions. When does an OFEP become a ship? Ships are generally launched into the water after christening, and are “born” when they touch water. As the Supreme Court said in *Tucker v. Alexandroff*:¹⁷

A ship is born when she is launched, and she lives so long as her identity is preserved. Prior to her launching she is a mere congeries of wood and iron— an ordinary piece of personal property— as distinctly a land structure as a house, and subject only to mechanic’s liens created by state law and enforceable in the state courts. In the baptism of launching she receives her name, and from the moment her keel touches the water she is transformed, and becomes a subject of admiralty jurisdiction. She acquires a personality of her own; becomes competent to contract, and is individually liable for her obligations, upon which she may sue in her name... She is capable too, of committing a tort, and is responsible in damages therefor.

Although the component parts of OFEP ships may be built on land, it is possible that the pontoons, columns, and buildings will actually be assembled in the water (Craven and Hanson, 1972, p. 33). A platform, then, may have no clear launching to indicate when it has become a ship.

The Supreme Court suggested a resolution to this issue in *Thames Towboat Co. v. The Francis McDonald*¹⁸ which involved a ship which was launched as a hull by one company and towed to two other shipyards before being completed. The second shipyard sued under a maritime lien to recover for supplies furnished and repairs made while the ship was being completed. The court said that the settled rule was that a contract for the complete construction of a ship was nonmaritime, and not within the court’s admiralty jurisdiction. The court distinguished *Tucker* by saying that it involved the detention of a foreign seaman, not a contract for ship construction. The court said:

[T]he doctrine is now firmly established that contracts to construct entirely new ships are nonmaritime because not nearly enough related to any rights and duties pertaining to commerce and navigation.¹⁹

Benedict (1974) refers to *Tucker* as “the classic pronouncement as to the moment when a ship comes into being.” However, Benedict (1974, p. 10-6) cites *Thames Towboat* in saying:

The fact that a structure is a vessel... does not necessarily attract admiralty jurisdiction in all cases having reference to her, for the law may, in respect of particular transactions, require other conditions to be fulfilled. For example, in matters of contract to furnish materials, work, and labor for the completion of a vessel, admiralty has no jurisdiction even after a vessel is launched while she is not yet sufficiently advanced to discharge the functions for which she was designed... In a case where a ship is launched but not completed, it is not that jurisdiction is barred in all cases of contract relating to her, but only in respect of a contract for the supply of materials, labor and work for completion of the vessel.

Under traditional definitions, then, a ship may be born for some purposes but not for others. For this reason, the most appropriate event for determining the birth of ocean floating platform ships may be neither the time of launching nor the time of completion. Instead, it may be the time of registration of the OFEP as a ship.

The moment of death of an OFEP ship may be even harder to determine than its birth. A “dead ship” is a ship which is no longer in commerce and navigation. For example, in *Hanna v. The Meteor*,²⁰ the court found that the Meteor was completely withdrawn from navigation and commerce, was not used by the owners in the business of carrying cargo or passengers, had no crew, no machinery in operation, and no light, heat, or power; the boilers were opened up and dry, the generators had been taken apart and preserved in grease; and it would have required a great deal of work to put the engineering part of the ship back into operation. The court therefore concluded that the Meteor was a dead ship.

Ocean floating platforms may provide a new twist to the “dead ship” definition. For example, the Hawaii floating city design (Craven and Hanson, 1972, p. 9) envisions pie-wedge shaped platforms which can join and disassemble as modules. One module might support a housing section, one might be a power

plant, and one might be an office complex. Different ships could thus be linked together and then disassembled at will, depending on how many units of what kind were desired at what time. A registered ship with ten linked units which move and operate together could, over time, change all of its units and be an entirely different ship. In such a case the new ship may retain the original registration, or the original ship may be declared dead and new registration required. A result such as this might be avoided if each unit of the floating city registered individually as a ship. Avoiding one identity problem, however, might produce another. What would be the legal classification of that linkage of ten such registered ships, travelling and working as one unit for many years? It is also conceivable that engine units, for example, would register as ships while power generating units, for example, would not. It is not clear what status this mixture of ships and structures would have.

Thus, OFEP's would be classified as vessels under U.S. statutory and case law. OFEP's could also be classified as ships under U.S. case law, although the time of their birth and death may be difficult to determine. U.S. law, of course, is only an example of the kind of legal characterization which may achieve international recognition.

Regulation on the High Seas

If OFEP's fall within the definition of a ship, it is likely that they will seek to register as ships flying national flags. This would give them legal status and rights under the law of the sea conventions currently in force. An OFEP could gain this status without subjecting itself to any major regulation. International regulation of ships depends on regulation by the flag state (Convention on the High Seas). Flag-of-convenience states allow ships to register under their flags, pay minimal taxes, and then sail off into the high seas with little further contact with the flag state.²¹ As a new kind of ship with unique problems and capabilities, OFEP's may seek, and flag-of-convenience states may offer, special registration terms which reflect their unique purposes and tonnage. The fact that an OFEP could largely escape regulation on the high seas would be significant if the OFEP ship intended to engage in commercial activities such as mariculture or sea bed mining. These activities would not be regulated under present conventions.

Regulation in the Territorial Sea and Contiguous Zone

Coastal states would have some powers in regard to OFEP ships which enter their territorial waters. Article 1 of the Convention on the Territorial Sea and the Contiguous Zone gives the coastal state sovereignty over its territorial sea,

sovereignty which is modified by the right of innocent passage guaranteed under Article 14. Limitations on this right of innocent passage provide some basis for the regulation of OFEP ships. Under Article 16, “The coastal state may take the necessary steps in its territorial sea to prevent passage which is not innocent.”²² Passage which is not innocent is passage which is prejudicial to the peace, good order or security of the coastal state. A coastal state could thus assert control over an OFEP ship by arguing that a very large, slow-moving OFEP disrupted “good order” in its territorial sea by interfering with coastal shipping, pleasure craft, fishing and other uses of the sea. If the OFEP ship broadcast unauthorized radio or television programs, it might be argued that it was prejudicial to “peace;” and if it obstructed the movement of military ships or blocked access to harbors of the coastal state used for military purposes, it might be argued that it was prejudicial to “security.”

While registration as a ship could give an OFEP the right of innocent passage in territorial seas, few OFEP’s may wish to exercise this right. OFEP’s which operate close to shore, such as those designed to provide power directly to municipal systems, will be permanently positioned or positioned for long periods, and will probably not move any distance through the territorial sea. Other OFEP’s will probably remain in deeper waters beyond the territorial sea. For example, ocean thermal energy conversion (OTEC) platforms could have pipes as deep as 3,000 feet, and thus would remain outside shallow territorial seas, using barges or tankers to transport their products to coastal markets.

Current law of the sea negotiations

The Informal Composite Negotiating Text (ICNT A/CONF.62/WP.10) under consideration by the Third United Nations Conference on the Law of the Sea (UNCLOS III) provides in Article 21 that the coastal state can make laws and regulations in regard to the safety of navigation and regulation of marine traffic, but not in such a way as to “apply to the design, construction, manning or equipment of foreign ships” except when giving effect to generally accepted rules or standards. OFEP ships would be among the most unusually designed and constructed of all ships, but under this clause their design and construction could not be regulated. Under Article 22, the coastal state may require foreign ships to use certain sea lanes, but under Article 24 it may not “impose requirements on foreign ships which have the practical effect of denying or impairing the right of innocent passage.” Special sea lanes may be designated for OFEP ships, but their innocent passage is still guaranteed.

The provisions in Part XI of the ICNT would give an international Sea-Bed Authority power to regulate resources on the high seas. The word “resources” is defined in Article 133 to mean “minerals;” minerals include water, steam, and hot water as well as metallic deposits such as manganese nodules. Thus, it appears that OFEP ships involved in nodule mining or ocean thermal energy conversion could be regulated by the Authority.

Conclusion

Under the conventions on the law of the sea as they now exist, OFEP’s which qualify as ships may enjoy certain rights and escape some forms of regulation. Under the Convention on the Territorial Sea and the Contiguous Zone, OFEP ships could move through the territorial sea and the contiguous zone under the right of innocent passage, but few are likely to do so. OFEP’s which register as ships are likely to be involved in mariculture or manganese nodule mining on the high seas, rather than near-shore power generation. If OFEP’s were registered under a flag of convenience and positioned on the high seas, the Convention on the High Seas would provide no effective control over them. Under the proposed ICNT, OFEP ships involved in manganese nodule mining and ocean thermal energy conversion would be regulated.

Ocean Floating Energy Platforms as Structures

Definition

In *Cope v. Vallette Dry-Dock Co.*,²³ the United States Supreme Court agreed that the terms “ships” and “vessels” are used in a very broad sense, but observed that the fact that something floats on water does not make it a ship or vessel. The court went on to say: “We think no case can be found which would construe the terms (ship or vessel) to include a dry dock, a floating bridge, or meeting house, permanently moored or attached to a wharf.”²⁴ This indicates that an OFEP which was permanently moored would not qualify as a ship or vessel. In later cases, however, lower courts have not focused on permanent mooring so much as the vessel’s current function.

*Hayford v. Doussony*²⁵ involved a former U. S. gunboat which was refitted as “The Pirate Ship,” an amusement or dance barge, docked at Canal Street in New Orleans. The Pirate Ship was attached to land by cables and clamps and a permanent gangway, and was connected to the shore by electrical power lines and plumbing. The court said:

The Pirate Ship was not used, or intended to be used, to carry freight or passengers from one place to another, was not an instrument of navigation or commerce, and performed no function that might not have been performed as well by a floating stage or platform permanently attached to the land.²⁶

The Pirate Ship was deemed to have lost its character as a ship because it no longer functioned as one, even though it remained seaworthy and had in fact been towed to a different pier during litigation. A similar analysis is found in *Cookmeyer v. Louisiana Dept. of Highways*,²⁷ a case in which two barges were in use in a pontoon bridge attached to a pivot structure so they could swing aside from time to time to allow water craft to pass through. The court admitted the barges had been vessels, and could be used as vessels again in the future, but felt that the dispositive issue was the function and character of the barges at the time the litigation arose. Since the barges functioned as a bridge, and carried no passengers or cargo in navigation, they were a structure and not vessels.

A functional analysis led to a different result in *Luna v. Star of India*.²⁸ The Star of India was a three-masted bark launched in 1863 which was renovated and moored in North San Diego Bay as a tourist attraction. The case arose when a visitor slipped and fell on board the Star. Earlier, the Maritime Museum Association, which maintained the Star, had presented evidence to the Coast Guard that the Star was permanently moored to the Embarcadero and was not intended to be used in the future as anything more than a floating museum. The Coast Guard's inspector had determined that the Star was "substantially a land structure" and therefore exempt from the usual inspection and navigation laws. The court, however, followed the 1 USC Sec. 3 definition of a vessel as "every description of water craft or other artificial contrivance used, or capable of being used, as a means of transportation on water." The court found that, were the Star to slip from her moorings, "she would undoubtedly be capable of engaging in maritime transportation, if only as a towed craft."²⁹ Although historical curios were displayed on board the ship, the court found that "it is evident that the Star of India's primary function is to serve as a ship and only secondarily to house various historical curios."³⁰ It distinguished this case from the *Hayford* case discussed above, by noting that The Pirate Ship had been extensively modified to serve as an amusement and dance barge, which were non-maritime purposes.

Interpreting these cases gives rise to a general principle, which is that how a ship or vessel is *currently* being used is more important than how it is *capable* of being used. The courts decided that the barges in the pontoon bridge and the Pirate

Ship were currently being used as structures, while the Star was currently being used as a ship. This functional analysis provides some support for the argument that OFEP's which stabilize their positions offshore should be defined as structures rather than ships or vessels. Again, these definitional distinctions under U.S. law are merely indicative of the kinds of distinctions which may evolve under international law.

Regulation by Coastal States

If OFEP's are defined as structures, they will have no rights under law of the sea conventions, and can be controlled and licensed within the territorial seas of coastal states. This control will be strengthened if current ICNT provisions are adopted.

The ICNT specifically addresses the question of the regulation of structures and installations in its provisions for an exclusive economic zone (EEZ). Under Article 56 the coastal state's rights over the EEZ would include the following:

- (a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the sea-bed and subsoil and the superjacent waters, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds;
- (b) jurisdiction as provided for in the relevant provisions of the present convention with regard to: (i) the establishment and use of artificial islands, installations and structures...

OFEP's which operate on ocean thermal, wave or wind energy would clearly be regulated by this provision. Also, any OFEP which stabilized its position within the EEZ for any length of time would be likely to come under the scope of these provisions, since it could be classified as an artificial island, installation or structure. Under clause (b), if the OFEP were regarded as a structure, the coastal state would have jurisdiction with regard to its establishment and use. In addition, Article 60 provides that

1. In the exclusive economic zone, the coastal State shall have the exclusive right to construct and to authorize and regulate the construction, operation and use of:

- (a) Artificial islands;
 - (b) Installations and structures for the purposes provided for in Article 56 and other economic purposes;
 - (c) Installations and structures which may interfere with the exercise of the rights of the coastal State in the zone.
2. The coastal State shall have exclusive jurisdiction over such artificial islands, installations and structures, including jurisdiction with regard to customs, fiscal, health, safety and immigration regulations.

Article 60 further provides that due notice must be given of the construction of artificial islands, installations and structures; they may not be established where they will interfere with recognized sea lanes essential to international navigation; and coastal states may establish safety zones of up to 500 meters around them to ensure their safety and the safety of navigation.

Conclusion

It is likely that OFEP's will spend long periods of time or seek to be permanently positioned offshore in the territorial sea or EEZ. OFEP's which provide energy directly to coastal state power systems will necessarily be positioned only a few miles offshore. Even if the OFEP manufactures products instead of directly supplying energy, a position within 200 miles of the coastline would be convenient for purposes of resupply and repair, as well as rest and recreation for the crew. If the ICNT provisions are adopted, the coastal states would be able to control OFEP activities in the EEZ by exercising sovereign rights over the production of energy from water, winds, and currents, regulating the construction and use of OFEP's, and subjecting them to the full range of customs, immigration, fiscal, health, and safety regulations. Short of the adoption of such provisions, coastal state control would be strong but limited to sovereign rights over the territorial seas.

Ocean Floating Energy Platforms as New States

Definition

A state has been defined as "...[a] people permanently occupying a fixed territory (*certam sedem*), bound together by common laws, habits, and customs into one body politic, exercising, through the medium of an organized government, independent sovereignty and control over all persons and things within its boundaries..." (Moore, 1906, pp. 14-15). By this definition a state requires a body of people, a fixed territory, and a sovereign government. Of these basic elements of statehood, the most difficult concept for an ocean floating platform is that of fixed territory. The ocean floating platform would itself be a physical domain, but it would rest on another domain, the ocean. The solution to the question of territory may be to establish a horizontal property regime. The floating platform community could be granted territorial rights above the ocean surface, much as today's condominium apartment owners own living space ten stories above the ground. Floating platform communities may thus become condominium countries. Such city states would be unusual in character, but it has been said (Moore, 1906, pp. 14-15):

It is a sound principle... that international law has no concern with the form, character, or power of the constitution or government of a state, with the religion of its inhabitants, the extent of its domain, or the importance of its position and influence in the commonwealth of nations... Provided that the state possess a government capable of securing at home the observance of rightful relations with other states, the demands of international law are satisfied.

An OFEP city state could be founded simply by building a floating energy platform, gathering a body of people to live on it, and organizing a government to run it. Whether the OFEP city truly becomes a state in international law depends on recognition by other states.³¹ The granting of recognition is completely within the discretion of the recognizing state, which must also be a recognized state (Hackworth, 1940, p. 161) if the recognition is to be effective (Moore, 1906, p. 73). However, "recognition is not necessarily express; it may be implied, as when a state enters into negotiations with the new state, sends its diplomatic agents, receives such agents officially, gives exequaturs to its consuls, forms with it conventional relations."³²

Thus an OFEP city could set up its own sovereign government and then seek formal or implied recognition from other states as a means of securing sovereignty under international law. There is some evidence that entrepreneurial groups will attempt to do just that. In recent years, a number of attempts have been made to establish new states on reefs or shallows beyond the jurisdiction of coastal states.³³ There was no question in those cases that new states might be formed. The question was one of jurisdictional claims made by other states to the same reefs or shallows. As of this writing, a British court has upheld the independent status of the Royal Principality of Sealand, a one-family country established on a World War II anti-aircraft tower four miles beyond Britain's territorial sea.³⁴ A floating city could easily escape jurisdictional claims, because it need not rest on reefs, shallows, or any part of a continental shelf and could float beyond the jurisdiction of other states.³⁵

Economic regulations

The birth of OFEP city states could be heavily regulated by coastal states; the tools of regulation would be those already familiar in international economic regulation. A wide variety of approvals and permits would be required to build and launch an OFEP city state. Imported materials would have to go through customs and currency exchange procedures. The people who assembled to form the new floating city state would be subject to immigration controls; those who built the floating city would be subject to labor controls. Local authorities might require the approval of a building site. A permit might be required to tow the floating city across the coastal state's territorial sea, and so on. These direct controls would be ample to prevent the construction and launching of an OFEP city state should the coastal state wish to prevent it.

Even if OFEP city states succeed in getting launched from sympathetic coastal states, there is the question of their economic survival. OFEP's are serious contenders as new floating city states because they can make use of ocean energy not only for consumption by their citizens in their offices and homes but also to support major food production and industrial activity. OFEP's may derive energy from the wind, waves, and ocean thermal energy conversion, and they may fill some of their protein needs through mariculture and fishing operations. Commercial activities might include the mining of manganese nodules, mariculture, manufacture of ammonia, seasonal power generation for coastal states, or service as offshore recreation centers and gambling casinos.

Symbiotic relationships with developing coastal states are possible. The OFEP city state could buy raw materials from the developing nation, and manufacture and sell in return a number of goods which the developing nation needs. Floating only a few miles offshore, transportation costs would be low; the developing nation would not have to build major roadways to facilitate an industry. An OFEP city state might tie up offshore small nations during different seasons to provide additional energy to meet peak needs or support new industrial development. It is conceivable that a developing nation would set up and diplomatically recognize an OFEP city state designed to service its own particular needs. The OFEP city state might attract skilled professionals and immigrant laborers seeking new and better lifestyles under a government of their own choosing, economically tied but legally and geographically at arm's length from the developing nation or nations it serves. Professional skill, cheap labor, and the low cost of transporting goods over water could make OFEP city states economically viable in a symbiotic relationship with a coastal state.

This symbiotic relationship could be very stable politically. It is not likely that an OFEP city state would be seized or nationalized by a developing country. Its factories and assets would not be inside the land-based country, but out on the ocean. Its people would not be a local colony of foreigners but members of an independent state under international law. A large floating platform positioned on the high seas could be difficult to seize physically and could not be seized legally. This gives the OFEP city state strengths which a foreign enterprise does not normally have. Each party, the OFEP city state and the developing nation, would bargain from a balance of strength and need. The OFEP city state would need the developing nation to survive, but it could float off to another coastal state if a particular developing nation abused its trade regulation powers. The developing nation would be hurt if an entire industrial sector or source of power floated off into the horizon, but it could establish a new OFEP city state on the same basis. Neither party could demand too much without being faced with the prospect of having to start all over again and establish a new symbiotic relationship with another OFEP city state or developing nation.

If such coastal state-OFEP relationships are mutually advantageous, the economic regulation of OFEP city states would not be so harsh as to drive them out of existence. However, if symbiotic relationships are not formed, the power of coastal states to regulate trade would remain a major threat to the survival of OFEP city states once they are launched. If the OFEP city manufactured items, it would need to buy raw materials, and coastal state governments could bar exports to it; if it were involved in mining, manufacturing, or mariculture, it would need to export

the finished product and coastal state governments could place tariffs on the product which would be high enough to make the product non-competitive.

Regulation by recognition

Even after an OFEP city state has been launched, has formed a government and declared independence, and has become economically viable, other states may attempt to regulate it by not granting diplomatic recognition and thereby keeping it in a state of limbo under international law. Opposition might be especially pronounced if the OFEP city state operated as a tax haven, abortion clinic, gambling casino, or center for private broadcasting. On the other hand, coastal states benefitting economically from their relationship with OFEP cities would probably grant recognition to OFEP city states which serviced their needs. Major military powers might recognize OFEP city states in return for treaty agreements granting them the right to refuel military ships, obtain hospital service for sailors, and install missiles and other war material there. Recognition can be implied rather than express and need not come from all the nations of the world to provide a minimum of status and diplomatic assurance of the rights of the OFEP city state. Nonrecognition by the majority of powers could cast a shadow over OFEP city states, but nonrecognition would be a weak tool of regulation.

Conclusion

There is agreement in principle that new states can be formed beyond the jurisdiction of existing states. An OFEP city may establish itself as a state by floating beyond coastal state jurisdiction, forming a government, and seeking the recognition of other states. Regulation by coastal states may make it difficult to build the OFEP city state and assure that it is a viable economic activity once it is launched. Even if it becomes economically viable, such a state may not be granted diplomatic recognition by other states, thus preventing it from becoming a full-fledged member of the family of nations. However, it is possible that coastal states will help launch and then recognize new OFEP city states if they service coastal state needs. Close economic and political ties with coastal states may ensure the survival and international position of OFEP city states even without formal recognition.

Regulation of Ocean Floating Energy Platforms by Function

It is typical of both the law and human nature that new developments are met by an attempt to place them in old categories. Automobiles were merely

“horseless carriages” until they began to transform urban society; submarines were “U-boats” until they transformed naval warfare. Similarly, ocean floating platforms will probably be structures, ships, or new states until they transform the use of ocean space and are placed in a category distinctly their own. In the transitional period, a functional analysis may evolve which relies upon but is not bound by the traditional definitions.

The functional approach was used by United States courts in deciding the status of *The Pirate Ship*, the barges in the bridge, and the *Star of India* discussed earlier. This functional approach may evolve of necessity, because OFEP’s may change functions, while traditional definitions assume a single function which does not change. Rather than search for a legal definition which is appropriate to each kind of platform throughout its life, it may be best to apply the classification which is most appropriate to the function which the platform is carrying out at a particular time.

The advantages of the functional definition could be several. OFEP’s could be required to obtain permits as structures, vessels, or ships, specifying the length of time they expect to function in that capacity, and subjecting themselves to the legal implications of each classification. This would establish their legal status and provide the coastal state with appropriate regulatory power over platforms as they change functions. An OFEP city state could either fall under the category of ship, vessel, or structure or seek recognition as an independent state and negotiate its own terms with coastal states. Thus, four categories would be sufficient for a coastal state regulatory scheme:

1. *Structure*. This category would include all OFEP’s while they are being built, and all completed OFEP’s which float in a fixed position for a year or more within the territorial sea or EEZ (if the ICNT is adopted). This category would thus apply not only to structures but also to OFEP vessels, ships, and city states if they took up fixed positions offshore for a year or more. Coastal state regulation would emphasize resource exploitation.
2. *Vessel*. This category would include OFEP’s which take up a fixed position in the territorial sea or EEZ for more than 30 days but less than a year. This category would apply to OFEP structures, ships and city states if they moved frequently, taking up a new position every few months. Coastal state regulations would emphasize appropriate sea lanes and

times for travel so as to minimize interference with other uses of the ocean.

3. *Ship*. This category would include OFEP's registered as ships and flying national flags. This category would apply to an OFEP city state which is registered as a ship and moves through the territorial sea or EEZ without taking up a position there for more than a month. While the status of an OFEP ship would remain unchallenged on the high seas, an OFEP ship would be treated as a vessel or structure in the territorial sea or EEZ if it did not move in transit but remained in a fixed position for more than 30 days. Coastal state regulations would emphasize the limits of innocent passage.
4. *City state*. This category would include all OFEP's which set up their own governments and declare independence. If a coastal state does not recognize the OFEP city state, it could regulate the city state as a structure, vessel, or ship. If recognition is granted, an exchange of letters or a bilateral treaty could establish the terms and conditions under which the OFEP city state remains in the territorial sea or EEZ.

Under this simple scheme, a platform being built would file as a structure; once built, it could continue that status or opt for the status of a vessel, ship, or independent state. An OFEP could register as a ship, roam the oceans for a few years supporting deep ocean mining, and then return and file for status as a structure, taking up a position near shore and generating power into a local grid. An OFEP providing seasonal power could move from time to time as a vessel. An OFEP ship, vessel, or structure servicing the needs of a coastal state could develop a symbiotic relationship and declare itself a new state to negotiate the terms and conditions of its presence in the territorial sea or EEZ.

A functional approach would rely upon current law regarding states, ships, vessels, and structures, but would create a new regulatory scheme by applying current law in a far more flexible way. Such a scheme is suggested by the flexibility of admiralty law. As Benedict (1906, p. 10-2) says:

It may happen that a structure may be a vessel or other appropriate maritime object for the purpose of the application of one rule of admiralty law and not for another; for example, a sea-plane in maritime peril can be the subject of maritime salvage but may well not

be a vessel within the meaning of the statutes limiting the liability of the owner for damage caused by it.

Sometimes special provisions are enacted to regulate the operation of certain types of vessels, which while subject to a special statutory regime for certain purposes continue to be governed by the general law or other statutes for other purposes.

An international treaty could establish acceptable categories of ocean floating platforms and provide a framework for municipal licensing systems. The regulatory scheme of an initial treaty may be based upon application of the traditional definitions of state, ship, vessel, or structure. However, OFEP's are a new form of technology with multiple uses which make them substantially different from the single-purpose, single-use ships, vessels, and structures of the past. Thus, a treaty would be most helpful if it provided not only a declaration of policy and framework for regulation, but also a new definition of OFEP's based on their multiple uses.

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NOTES

¹ Craven, Present and future uses of floating platforms, *Oceanus*, 1975, 19(1), p. 67; Hansen, J. (Ed.), *Open Sea Mariculture*, 1974, pp. 299-333. Ocean floating platforms are widely used as oil-drilling rigs in the Gulf of Mexico and the North Sea. See Gerwick, Current projects in offshore structure development, *Marine Technology and Law: Development of Hydrocarbon Resources and Offshore Structures*, Proceedings of the 2nd International Ocean Symposium, Ocean Association of Japan, Tokyo, 1977, p. 109. Zapata Offshore Company's *Concord*, for example, is a semi-submersible platform working in thousand-foot depths in the Gulf of Mexico. The *Concord* rises 23 stories above the waves, has a deck as large as a football field, and houses roughly 70 employees. Alexander, Offshore drilling is a world apart, *Fortune*, December 1976, p. 74. The Japanese built "Aquapolis," a prototype of the floating city of the future, for the International Ocean Exposition, Okinawa, Japan, in 1975. The "Aquapolis" is 100 m. square and 35 m. high, weighs 16,000 tons, and is capable of handling 2,000 visitors at a time.

² Offshore Power Systems, a joint venture of Westinghouse Electric Corporation and Tenneco, plans to build floating nuclear power plants on barges measuring 378 feet by 400 feet, 32 feet in draft, with the plant rising 177 feet above the barge. The barges will be anchored approximately 3 miles offshore in water which is between 45 and 70 feet in depth. The barges will be surrounded by a D-shaped breakwater designed to withstand 300 mph winds, 50-foot waves, and a collision with any supertanker afloat. Four 1,150 Mw floating reactors have been sold to an electric company in New Jersey. Initial plans called for the first two reactors to be moored by 1980. Selfridge, Floating nuclear power plants: a fleet on the horizon?, *Environmental Law*, 1976, 6, p. 791. A step forward for floating nuclear plants, *Business Week*, February 9, 1974, p. 57. Gwynne, Nuclear power going to sea, *Technology Review*, 1972, 75(2), p. 10.

³ A floating 100-MW coal-fired power plant has been designed by John P. Craven to match existing operational profiles, and where possible, the standard power plant arrangement, of conventional land-based power plants. The floating power plant would be 390 feet long and 340 feet wide, and would rest on three hulls which would be 390 feet wide, 750 feet long, and 90 feet deep. The coal would be brought to the plant by ship and carried aboard by slurry. Power would be transmitted to the shore by underwater cable. The plant would have ballast and buoyancy control and dynamic positioning capabilities. Craven, J., *A Floating 100 MW Coal-Fired Power Plant*, Marine Programs, University of Hawaii, 1975.

⁴ This appears to be the most suitable for floating nuclear power plants and the floating coal-fired plant designed by Craven. Selfridge, *supra* footnote 2 at 797; Craven, *supra* footnote 3.

⁵ While not delivering power directly, an OFEP could produce a product such as ammonia which now consumes land-based sources of energy. The electricity generated by an OFEP could be used to produce hydrogen by electrolyzing water and nitrogen from the air by liquefaction. The hydrogen and nitrogen can then be combined to form ammonia, which is liquefied and stored until transported to coastal states. It is estimated that tropical ocean thermal energy plants could supply all of the new ammonia demand in the United States by 1990. (Avery, 1978, p.12).

⁶ The cold water brought up by an ocean thermal energy plant may be rich in nutrients, and could support a major mariculture operation for food. The cold water could flow through ponds of algae, shellfish, shrimps, lobsters, and seaweed before returning to the ocean. Othmer and Roels, Power, fresh water, and food from cold, deep seawater, *Science*, 1973, 182, p. 121. For a complete discussion see Bardach,

The relation of ocean energy to ocean food, Proceedings, 12th Annual Conference of the Law of the Sea Institute, 1978. An OTEC system may also be very promising for manganese nodule mining in the Pacific. The richest deposits of nickel, copper, and cobalt in the Pacific have been found in a belt running southwest of Hawaii to southeast of Hawaii, with coordinates of roughly 120 to 180 degrees W. longitude and 5 degrees to 15 degrees N. latitude. State of Hawaii Department of Planning and Economic Development, *Manganese Nodule Deposits in the Pacific*, 1972, pp. 49-56. This belt coincides with a belt of ocean water with a prevailing surface temperature of 80 degrees F., the optimum temperature for ocean thermal energy conversion. Avery, 1978, pp. 9-10. Because of the plumes of sediment which may result from discharges at the surface of a nodule mining operation, which could foul the OTEC intake system, as well as general congestion and differences in mobility between an OTEC platform and a mining platform, the OTEC platform could be positioned at a distance from the mining platform and provide energy by cable. With sufficient energy, the mining platform could also process the metals.

⁷ 1 USC Sec.3. This definition was enacted as a rule of general construction and will apply to every federal statute unless that statute provides a different definition.

⁸ *Woods Bros. Const. Co. v. Iowa Unemployment Comm'n*, 229 Iowa 1171, 296 N.W. 346 (1941)(barge); *The Public Bath No. 13*, 61 F. 692 (1894)(bathhouse); *Petition of Kansas City Bridge Co.*, 19 F. Supp. 419 (1937)(floating boarding house); *The Club Royale*, 13 F. Supp. 123 (1935) (floating restaurant); *The Ark*, 17 F. 2d 446 (1926)(houseboat); *The City of Pittsburgh*, 45 F. 699 (1891)(pleasure barge).

⁹ *Offshore Co. v. Robison*, 226 F. 2d 769 (1959).

¹⁰ 46 USC Sec. 688. The Jones Act applies to seamen injured or killed in the course of employment. It was passed to provide seamen with the same rights to recover for negligence as they would have had if they had not been seamen. It has been interpreted to preserve the seaman's special rights to recover maintenance and cure and indemnify for unseaworthiness under general maritime law. Gilmore, G., and Black, C., *The Law of Admiralty* 328, 2nd ed., 1975.

¹¹ 266 F. 2d at p. 776.

¹² "In maritime law... in the absence of a compelling statutory definition, the terms ship and vessel are used interchangeably as synonymous terms, connoting a craft

capable of being used for transportation on oceans, rivers, seas, and navigable waters.” *1 Benedict on Admiralty*, Sec. 162 at 10-3, Release No. 17, 1974 (hereinafter “Benedict”).

¹³ *Pollock v. Cleveland Shipbuilding Co.*, 56 Ohio 655, 47 N.E. 582 (1897).

¹⁴ *Id.* at 584.

¹⁵ *Id.*

¹⁶ The current edition of *Benedict on Admiralty* (1974) defines “ship” by stating: “In common usage the word is applied generally to all larger vessels which are capable of self-propulsion either mechanically or by sails.”

¹⁷ *Tucker v. Alexandroff*, 183 U.S. 424 (1902).

¹⁸ *Thames Towboat Co. v. The Francis McDonald*, 254 U.S. 242 (1920).

¹⁹ *Id.* at 244.

²⁰ *Hanna v. The Meteor*, 92 F. Supp. 530 (1950).

²¹ Article 5 of the Convention on the High Seas states that “there must exist a genuine link between the State and the ship; in particular, the State must effectively exercise its jurisdiction and control in administrative, technical, and social matters over ships flying its flag.” A number of states, however, have chosen not to effectively exercise their jurisdiction and control. These flag states are known as “flags of convenience,” and the convenience includes allowing the ownership and control of registered vessels by non-citizens, easy registration and transfer, the manning of ships by non-citizens, and low taxes or only registry fees and annual fees based on tonnage. Flags-of-convenience states typically do not have the power, governmental machinery, or interest required to enforce any international regulations regarding their registered ships. Jones, N., Flags of convenience in the Pacific 1-2, 1975, Working Paper No. 7, Sea Grant College Program, University of Hawaii.

²² The coastal state is allowed other controls, in addition to the prevention of passage which is not innocent. Under Article 16, when ships are in the territorial sea on their way to internal waters (landward of the territorial sea), “the coastal State shall also have the right to take the necessary steps to prevent any breach of

the conditions to which admission of those ships to those waters is subject.” OFEP’s may seek admission to internal waters from the territorial sea in order to serve local power needs. Article 16 also allows the coastal state to “suspend temporarily in specified areas of its territorial sea the innocent passage of foreign ships if such suspension is essential for the protection of its security.” This clause provides a method for temporarily banning all foreign ships, but it may not be a specific remedy for the problems imposed by ocean-floating platforms. Article 17 supports laws and regulations issued by the coastal state regarding navigation and transportation in the territorial sea, but under Article 18 the coastal state is not allowed to levy charges on foreign ships “by reason only of their passage through the territorial sea.” Charges may be levied only “for specific services rendered to the ship.” The coastal state thus cannot attempt to regulate OFEP ships by charging them for passage, although OFEP’s might be a source of income from the sale of supplies and services rendered to them during their passage. The laws and regulations regarding navigation and transportation which can be issued under Article 17 are also modified by Article 15, which stipulates that “the coastal State must not hamper innocent passage through the territorial sea.”

²³ *Cope v. Vallette Dry-Dock Co.*, 119 U.S. 625, 30 L. Ed. 501, 7 S. Ct. 336 (1887).

²⁴ *Id.* at 630.

²⁵ *Hayford v. Doussony*, 32 F. 2d 605 (1929).

²⁶ *Id.*

²⁷ *Cookmeyer v. Louisiana Dept. of Highways*, 309 F. supp 881 (1970).

²⁸ *Luna v. Star of India*, 356 F. Supp. 59 (1973).

²⁹ *Id.* at 66.

³⁰ *Id.*

³¹ *United States v. Carillo*, 13 F. Supp. 121 (1935); Moore, 1906, pp. 14-15.

³² *Republic of China v. Merchants’ Fire Assurance Corp. of New York*, 30 F. 2nd 278 (1939); Moore, 1906, p. 73.

³³ Two groups made the attempt to build facilities on coral reefs 4-5 miles from Southeastern Florida, but were stopped by a federal court, which granted an injunction on the grounds that the reefs were within the territorial jurisdiction of the USA, construction activities were destroying irreplaceable natural resources, and a permit was required from the Secretary of the Army. *United States v. Ray*, 423 F. 2d 16 (1970). Atlantis Development Corporation, a Bahamian corporation which intervened in the case, had planned to spend \$250 million to establish a sovereign state on the coral reef, a state which would include radio and television stations, a post office, office buildings, stamp department, foreign offices, a government palace, congress, international bank and mint. An attempt to found the new state of Abalonia was made 110 miles off the coast of San Diego on the Cortes Bank, a sea shallow which is rich in abalone and lobster. The state was to be built on a reinforced concrete ship, which was sunk in two fathoms of water. The mooring line broke, however, and the ship sank deeper. The Corps of Engineers declared that the ship was a hazard to navigation, and the federal government claimed jurisdiction to the area as part of the outer continental shelf. *San Diego L. Rev.*, 1969, 6, p. 499. Another group, organized as Caribbean-Pacific Enterprises, Inc., erected two coral and chicken wire structures, planted two flags on the Minerva Reefs in the South Pacific, and declared the reefs to be the Republic of Minerva. The king of Tonga decided to claim the reefs himself, and a Tongan expedition tore down the flags. Dubois, Another Utopia?, *Barron's*, February 16, 1976, p. 9.

³⁴ The Royal Principality of Sealand consists of a platform 25 yards long and 10 yards wide, set atop two cement caissons. Roy Bates, a former British Army major, his wife and son occupied the tower in 1966 and declared independence in 1967. Sealand has issued 180 passports, printed postage stamps, and created a Sealand dollar. Negotiations with a group of German investors to build a \$70 million hotel and gambling complex at Sealand recently failed. Sealand has survived a number of invasion attempts. "Emerging nations: Prince Valiant," *Newsweek*, August 28, 1978, p. 40; West, "He 'rules' over the world's smallest state off England," *Honolulu Star-Bulletin*, September 2, 1978, p. B-16, col. 4.

³⁵ About 30 members of the Global Society, based in Venice, California, plan to build a concrete platform and establish a floating city state beyond the 12-mile limit. Members have called for the formation of global city states throughout the world, and have signed a Global Declaration of Independence. Bronson, "Establishing a new world," *Oakland Tribune*, October 31, 1976, p. 6-D.