

Pacific Heron

A new INF3 class vessel, the Pacific Heron, joined the fleet of Pacific Nuclear Transport Ltd (PNTL) in 2008.



The vessel forms part of an ongoing commitment to provide a dedicated specialist nuclear transport operation. It is a development of the design for the current PNTL ships, which provides a safe and reliable service with the cargo compartments protected by a double hull configuration, together with back-up availability of all essential systems.

PNTL's ships are dedicated to the transportation of nuclear materials that is classified by the International Maritime Organisation (IMO) of the United Nations at its highest level of INF3. The INF Code regulates shipments by sea of packaged irradiated nuclear fuel, plutonium and high level radioactive wastes.

PNTL overview

PNTL is the world's leading nuclear transport specialist, with more than 40 years of experience without any incidents involving the release of radioactivity. Its ships are used to transport Mox fuel assemblies and vitrified high level waste to Japan. PNTL is owned by INS (62.5%), a Japanese consortium (25%) and AREVA through its subsidiary TN International (12.5%). PNTL uses dedicated vessels, which have regularly transported spent fuel from Japan to France and the United Kingdom.

Factbox

Dimensions

Length overall	103.9m
Breadth	17.25m
Draft	6.75m
Number of holds	4
Capacity	20 flasks
Design speed	14 knots
Deadweight (max)	4,500 tonnes

Safety in depth

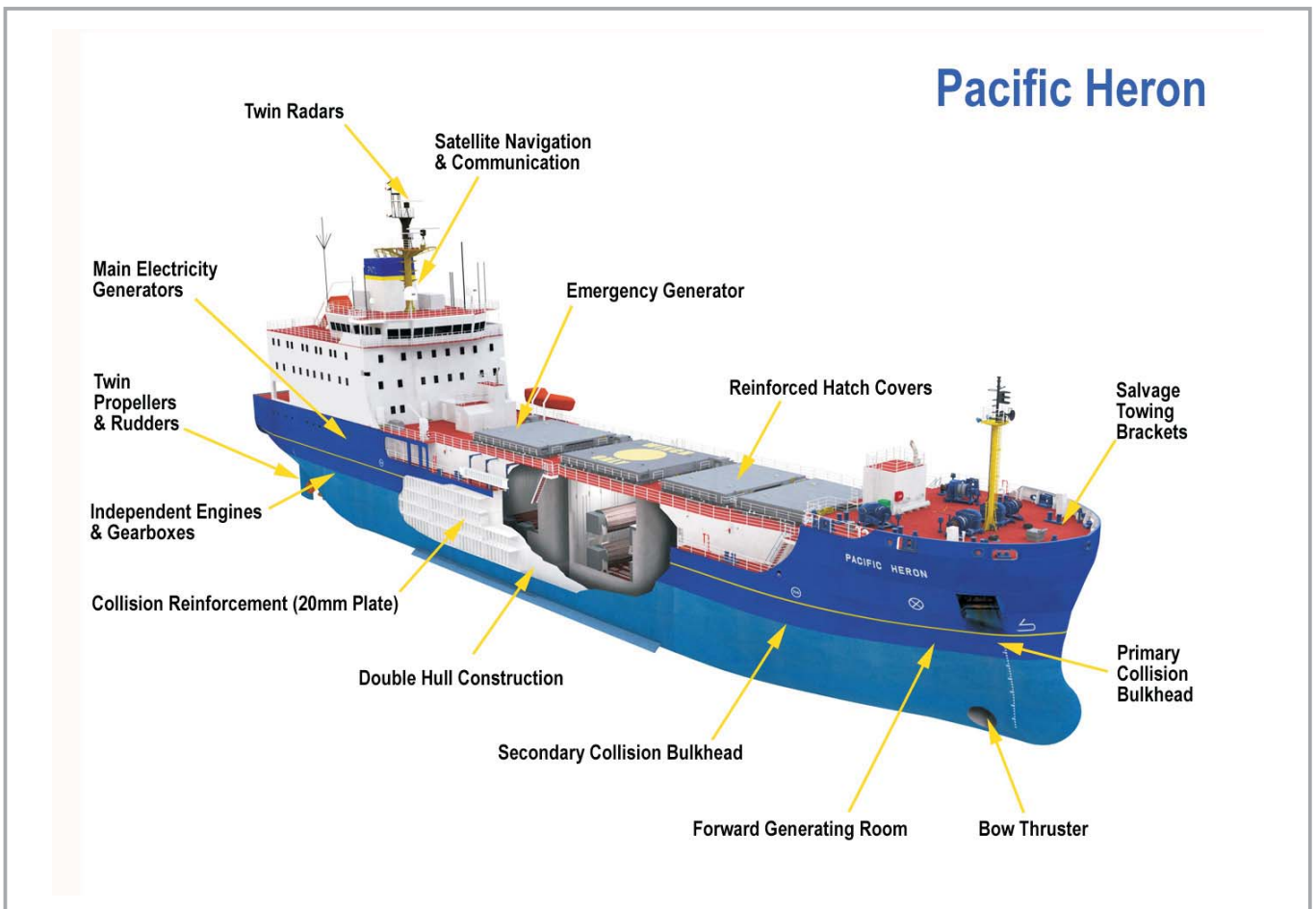
The design of the Pacific Heron represents one of a series of barriers to protect its cargo. It has a double

hull throughout and impact resistant structures between the hulls.

It also has duplication and separation of all the essential systems to provide high reliability and accident survivability. This means that if any important system fails during a voyage, either due to mechanical failure or as a result of an accident, there is always a back-up system ready to be brought into operation. In addition, no tanks or spaces containing oils or other pollutants are positioned directly adjacent to the outer hull in order to ensure that there is no pollution should a tank be ruptured during an incident.

The Pacific Heron has a number of advanced safety features. These include:

- double hull in way of holds
- separate machinery and steering gear rooms
- hold cooling plant located outside holds for easier maintenance
- integrated bridge system
- no oil tanks adjacent to outer shell
- security features incorporated into design
- improved environmental and safety performance
- advanced fire detection and fire fighting systems



In the unlikely event of a ship getting into difficulty, a fully trained and equipped team of marine and nuclear experts is available on a 24-hour emergency standby system, in line with IAEA requirements. Immediate arrangements can be implemented to salvage the ship or cargo where required in the event of a vessel sinking.

Security

The international regulators setting the standards for the protection of nuclear material are the International Atomic Energy Agency (IAEA) and its Member States, and in the European Union, Euratom.

Prior to each shipment, a transport plan is prepared documenting the specific arrangements to be implemented for the shipment to ensure, among other things, adequate physical protection of the cargo to be transported. The plan is established through co-ordination among the industry parties concerned, the governments of Japan, the UK, France and the USA and is subject to the approval of appropriate regulators.

The specific regulations that are met or exceeded by the design and operation of the Pacific Heron are as follows:

- NISR 2003 – UK Nuclear Industry Security Regulations
- Convention on the Physical Protection of Nuclear Material (IAEA publication INFCIRC 274)
- Recommendations on the Physical Protection of Nuclear Material published by the IAEA (INFCIRC 225)
- 1988 US-Japan Agreement for Co-operation Concerning Peaceful Uses of Nuclear Energy. This agreement elaborates in detail extensive physical protection measures to be employed for the transportation of plutonium oxide or MOX fuel by sea

In general, the security measures for Mox shipments of the sort undertaken by the Pacific Heron will fully satisfy the following requirements of the US-Japan Agreement:

- use of a dedicated transport ship
- careful selection of the route to be used
- no scheduled port call en route
- use of armed escorts aboard the transport ship that are independent of the crew
- an armed escort vessel to accompany the transport ship from departure to arrival
- measures to impede the removal of the cargo at sea
- use of multiple and secure communications system
- monitoring of the transport ship location and cargo status by an operation centre
- preparation of a contingency plan

Crew

The Pacific Heron will carry a crew which is substantially larger than that found on chemical tankers of a similar size. All senior navigating and engineering officers hold certificates of competence for a higher rank than the one they serve. For example, the Chief Officer must hold a Master's Certificate. In addition all personnel are actively encouraged to enhance their skills and qualifications and to take relevant training courses.



Regulations

The Pacific Heron's design and operation meets all of the following the requirements:

- United Kingdom Maritime and Coastguard Agency (MCA) regulations
- Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT)
- International Convention for the Safety of Life at Sea (SOLAS), which sets standards for the safe operation of vessels
- The International Convention for the Prevention of Pollution from Ships (MARPOL), which protects the marine environment from pollution by vessels
- IMO International Maritime Dangerous Goods (IMDG) Code applicable to radioactive materials
- IMO International Safety Management Code (ISM Code)
- IMO International Ship and Port Facility Security Code (ISPS Code)
- The United Nations Convention on the Law of the Sea (UNCLOS), which recognises the principles of the right of innocent passage through territorial seas and the freedom of navigation beyond; and also that vessels carrying nuclear substances must carry documents and observe special precautionary measures when exercising the right of innocent passage through territorial seas



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