



# HSV 2 *Swift*

DETAILED SPECIFICATION

98M WAVE PIERCING CATAMARAN



**2003 - 2013** TEN YEARS OF OPERATIONAL SUPPORT  
FOR US FLEET FORCES COMMAND





hull 045



hull 050



hull 060



hull 061



## OVERVIEW

Incat craft have been utilised in a range of military applications, and the commercial off the shelf technology is providing economic, efficient and effective commercial platforms that interest defence forces which understand the need for new ways to achieve results.

The Incat platform offers fast transit, fast turnaround in port, and the shallow draft and optional ramp arrangements can significantly increase access to austere ports. Flexibility and versatility in vehicle deck layout, plus optional helicopter decks and hangars increase mission options. The wide beam and other design aspects improve passenger comfort and crew accommodation; medical and other facilities can be installed for specific requirements. Minimal crewing numbers and reliable economic operation assist with ongoing budget considerations.

## HIGH SPEED + SHALLOW DRAFT = MILITARY VERSATILITY.

Traditionally, world militaries have relied mostly on airlift and sealift to deploy troops and equipment. Ocean travel has meant slow, deep-draft vessels. In this age of terrorism, armies need to get troops and equipment into the fight quicker while navies look for a platform to conduct a variety of sea-based operations.

In 1999 the Royal Australian Navy chartered an Incat 86 metre vessel for use during the East Timor crisis. As HMAS *Jervis Bay* she completed over 100 trips between Darwin and Dili, transporting personnel and equipment as part of the United Nations Transitional Administration in East Timor (UNTAET). With average speeds of 40 knots, the craft completed the 900 nautical mile return trip from Darwin to East Timor in less than 24 hours.

During this time the vessel seized the attention of the US military, enabling them to witness the potential of high speed craft to perform various military roles. As a result, in 2001 joint forces from the US military awarded Bollinger / Incat USA the charter contract of Incat 96 metre HSV X1 *Joint Venture*.

The success of *Joint Venture* led to more charter contracts. The 98m TSV-1X *Spearhead* was delivered to the US Army in September 2002, and HSV 2 *Swift* to the US Navy in August 2003.

All three vessels have displayed their excellence in humanitarian roles, including *Swift's* major role in the Hurricane Katrina relief program, often responding on short notice to meet the needs of disaster relief efforts. The ships became the military benchmarks for future fast sealift acquisitions due to the high operational speed, long range deployment capabilities, combined with a high deadweight capacity.



RHIB Launch Operations from Hull 061 HSV 2 *Swift*



Hull 061 HSV 2 *Swift* participating in Southern Partnership Station operations.



SH60 Helo Transfer Operations on Hull 061 HSV 2 *Swift*

# HSV 2 SWIFT



## HSV 2 *Swift*

Coming three weeks after the US Army award of TSV X1 *Spearhead*, Military Sealift Command awarded the lease of Incat Hull 061 from Bollinger / Incat USA to support US Navy Mine Warfare Command. HSV 2 *Swift* was delivered in 2003 in Hobart Tasmania.

HSV 2 *Swift*, the third Incat high speed vessel contracted by the US Military was obtained to serve as an interim Mine Warfare Command and Support Ship (MCS), and support transformational mine warfare modular mission payload initiatives.

HSV 2 *Swift* is capable of maintaining an average speed of 35 knots or greater, loaded with 500 short tons, consisting of 350 personnel and military equipment. A minimum operating range of 1100 nautical miles at 35 knots was required by the contract, as was a minimum transit range of 4000 nautical miles at an average speed of 20 knots. Furthermore, she is capable of 24-hour operations at slow speeds (3-10 knots) for experimentation with unmanned autonomous vehicles, and to support dedicated and emerging organic mine warfare missions.

The vessel has a NAVAIR certified helicopter flight deck for operation of MH-60S, CH-46, UH-1 and AH-1 helicopters. An area protected from the weather for storage and maintenance of two MH-60S helicopters is provided to enhance aviation operations in day, night and instrument meteorological conditions.

A decade on, HSV 2 *Swift* remains with the US Navy in military service under a charter to Military Sealift Command, Washington DC, from owners Sealift Inc. of New York – a privately held company which operates a fleet of US flagged ships. Through Sealift the HSV 2 *Swift* is operated worldwide in support of US Fleet Forces Command and the war on terrorism. The vessel is also used for emerging operational concepts such as sea basing and the Global Fleet Station.

For the latest Incat military vessel concepts contact head office or your local Incat representative.

# HSU 2 Swi



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# 2003 - 2013 TEN YEARS OF OPERATIONAL SUPPORT FOR US FLEET FORCES COMMAND

Crane Launch RIB



2010 Africa Partnership Station



ruSSia

Refuelling at Sea



Ship to Ship Transfer



smouth

Circle Training Exercise

oulon

greece

lebanon

2006 Delivered Aid

bahrain

2006 Delivered Parts

united arab emirates

china

thailand

2005 Operation Unified Assistance Tsunami Relief



teractions

tion

Partnership Station

djibouti

2010 Africa Partnership Station

singapore



kenya 2012 Africa Partnership Station

tanzania 2010 Africa Partnership Station

2012 Delivered Aid and Supplies

comoros 2010 Africa Partnership Station

mauritius 2010 Africa Partnership Station

2005 Operation Unified Assistance Tsunami Relief

mozambique

australia

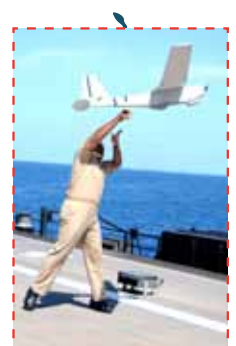
south africa



Partnership Station



2012 Africa Partnership Station



2013 UAV Operations



# 2003 - 2013 TEN YEARS OF OPERATIONAL SUPPORT FOR US FLEET FORCES COMMAND

## 2004

### West African Training Cruise

HSV 2 *Swift* participated in West African Training Cruise-04, an exercise designed to enhance security cooperation between the United States and participating West African nations. The 150 Sailors and Marines embarked on the ship participated in a number of littoral training exercises, including riverine operations and small boat raids.

## 2005

### Thailand, Operation Unified Assistance Tsunami Relief

On 3rd January 2005 HSV 2 *Swift* left its homeport of Naval Station Ingleside, Texas to support Operation Unified Assistance, the humanitarian operation effort in the wake of the tsunami that struck South East Asia, ferrying precious relief supplies. During Operation Unified Assistance the crew conducted many firsts for the unique vessel, including 30 consecutive days at sea, supporting a helicopter detachment and its support crew for the month with high tempo flight operations as well as conducting two underway replenishments at sea.

### New Orleans Joint Task Force Katrina

The HSV 2 *Swift* lived up to its name in delivering supplies to Hurricane Katrina victims. The ferry, loaded with 85 pallets of water, hygiene kits, helicopter maintenance equipment and food while docked at Naval Station Ingleside, took about 18 hours to reach the USS Bataan just off the Louisiana coast. "That is at least 50 percent quicker than a conventional ship," HSV 2 *Swift* Captain Mark Sakaguchi said. Additional relief and supply visit to the coast continued over the next days.

HSV 2 *Swift* further proved its worth during hurricane recovery efforts in New Orleans. The vessel as part of Joint Task Force Katrina, ferried precious relief supplies between Naval Air Station Pensacola and ships deployed throughout the Gulf Coast region stabilising areas affected by the hurricane. The *Swift's* unique design made the high-speed vessel an integral part of the mission by enabling the ship access to depths of less than 4 metres.



## 2006

HSV 2 *Swift* was deployed to the Far East with detachments from US Navy helicopter squadron HSL-37, Mobile Security Squadron 7, and the Second Platoon of the Third US Marine Corps FAST (Fleet Anti-terrorism Security Team) in support of theater security cooperation efforts with the Philippines, Malaysia, and Indonesia.

### Arctic Circle Training Exercise

HSV2 *Swift* catamaran was in Portsmouth, UK to prepare for a military exercise in the Arctic Circle. During the training exercise, *Swift* was home to 60 Royal Navy personnel, comprising staff from the Mine Countermeasures Squadron, divers from Fleet Diving Unit 02 and engineers from Fleet Support Unit 01. *Swift's* arrival in Portsmouth demonstrated the close links between the Royal Navy and the United States. Her high speed and ability to provide engineering and stores support at sea without needing to go alongside provided tremendous flexibility to operations.

### Bahrain

HSV 2 *Swift* used her speed, capacity and maneuverability to deliver repair parts and replenishment items from Manama, Bahrain, to Jebel Ali, United Arab Emirates, for supplying USNS Supply (T-AOE 6) in less than 12 hours. Supply received its shipment much faster than usual, using less manpower. Streamlining intra-theater deliveries saves the Navy money, man-hours, and aircraft wear-and-tear, and that made the 98 metre workhorse very popular in the region. With its enormous 28,000-square-foot mission deck, the ability to traverse littoral waters, the capability of handling speeds in excess of 40 knots, and maneuverability that doesn't require tugboat assistance when arriving or departing the pier, the *Swift* is definitely a multi-tasker.

### Lebanon

US Navy sailors from the HSV-2 *Swift* moved more than 100 tons of humanitarian aid to the pier at Beirut, Lebanon during the 2006 Israel-Lebanon conflict.

HSV 2 *Swift* was called into play during the Israel-Lebanon conflict, being used to transport Humanitarian Assistance Materials from Cyprus to Beirut.

## 2007

### Global Fleet Station (GFS)

In conjunction with Global Fleet Station (GFS) HSV 2 *Swift* conducted exercises and training to ensure operational readiness with participating partnership nations, including visits to Belize, Dominican Republic, Guatemala, Honduras, Jamaica, Nicaragua and Panama. About 100 sailors and soldiers took part in training exercises aimed at bolstering security in the Dominican Republic. Dominican Army troops trained with the US Marines. The training program was just one part of a year-long US-led initiative to improve security and cooperation in South and Central America and the Caribbean.

## 2008

### Africa, West Coast Global Fleet Station (GFS), Africa Partnership Station (APS)

*Swift* joined Fort McHenry in the Gulf of Guinea, where it transported students and trainers during visits to Senegal, Liberia, Ghana, Cameroon, Gabon and Sao Tome and Principe. Training teams focused on a broad range of areas, including maritime domain awareness, leadership, seamanship and navigation, maritime law enforcement, search and rescue, civil engineering and logistics. The training also addressed maritime security threats, such as piracy, unlawful fishing, illegal drug and arms trafficking, oil smuggling and illegal immigration, all of which can compromise peace and stability in the region.

### Panama Southern Partnership Station

Southern Partnership Station is an annual deployment of various specialty platforms to the US Southern Command area of focus in the Caribbean and Latin America. The mission goal is primarily information sharing with navies, coast guards, and civilian services throughout the region. As part of this visit, training teams from Navy Expeditionary Training Command, Naval Criminal Investigative Service and the Marine Corps Training and Advisory Group began their engagement courses with Panamanian National Air and Maritime Service sailors and Panamanian National Police members. The courses provide instruction in a variety of fields such as port security, small boat operations, leadership and medical lifesaving techniques.



# 2003 - 2013 TEN YEARS OF OPERATIONAL SUPPORT OF US FLEET FORCES COMMAND

## 2009

### Jamaica Port Antonio, Southern Partnership Station

HSV 2 *Swift* arrived in Jamaica for the last of two instruction evolutions and the final port visit for Southern Partnership Station (SPS) 2008-2009.

The mission was coordinated through US Naval Forces Southern Command/US 4th Fleet (NAVSO/ 4th Fleet) with partner nations to meet their specific training requests. As the Naval Component Command of SOUTHCOM, NAVSO's mission is to direct US Naval Forces operating in the Caribbean, Central and South American regions and interact with partner nation navies within the maritime environment. Various operations included counter-illicit trafficking, Theater Security Cooperation, Humanitarian Assistance and Disaster Relief, military-to-military interaction and bilateral and multinational training.

### Nuoakchott, Mauritania

HSV 2 *Swift* visited Nuoakchott, Mauritania conducting a series of military-to-military interactions and theatre security cooperation engagements. While in port crewmembers of the *Swift* hosted tours and receptions, as well as participating in meetings designed to further the maritime relationship between both nations' navies.

### Banjul, The Gambia, Africa Partnership

HSV 2 *Swift* arrived in Banjul, The Gambia, September 17, 2009.

Visits like this were important because they helped reinforce the strong ties that already exist between the two countries. The United States Navy is committed to many humanitarian assistance projects around the globe and has, with this visit, transported donated items from 'Gambia Help' in Seattle, Washington and medical supplies from Project Handclasp, which were donated to the Ministry of Health. *Swift* delivered 16 pallets of Project Handclasp supplies.

## 2010

### Africa Africa Partnership Station (APS)

*Swift* visited ports in Djibouti, Kenya, Tanzania, Mozambique, Mauritius, Seychelles and Comoros. During these visits, *Swift* embarked African ship riders in order to conduct professional exchanges on damage control, engineering, medical procedures, navigation and watch standing.

They brought teams of maritime experts from the US Navy and US Marine Corps that provided training and participation in exercises with their African counterparts. Combat lifesaving; damage control; law of war; visit, board, search and seizure; small boat operations/maintenance and physical security just some of the additional topics that were covered.

### Greece Africa Partnership Station (APS)

Arrival of HSV-2 *Swift* to Greece as part of the Africa Partnership Station.

## 2011

### Central and South America Southern Partnership Station (SPS)

During the 155 day deployment, the Sailors, Marines, Airmen and civilian mariners participated in subject matter expert exchanges (SMEE) with government and non-government organizations in Chile, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua and Peru.

The SMEEs were focused on cross training and sharing information in the fields of medicine, construction, physical security, civil affairs, electrical engineering and combat tactics.

In addition to working side-by-side with foreign militaries and non-government organizations, the SPS team also delivered more than 504,500 pounds of Project Handclasp



and humanitarian aid donations, valued at just over \$1.7 million. Project Handclasp is a US Navy program that accepts and transports educational, humanitarian and goodwill material donated by America's private sector on a space-available basis aboard US Navy ships for distribution to foreign nation recipients. The donations included 312 pallets of food, fire fighting equipment, computers, teddy bears, mobility aids, water filters, generators, an ambulance and a mobile medical clinic.

### **Republic of Congo, Sekondi, Ghana, Africa Partnership Station (APS)**

HSV 2 *Swift* visited the Republic of Congo and Sekondi, Ghana as part of Africa Partnership Station (APS)

During the visit, *Swift* was the primary venue for instructional courses for Ghanaian naval forces. These courses were Expeditionary Combat First Aid and Maintenance Management. The training courses are meant to strengthen maritime capabilities of Ghanaian naval forces in order to enhance maritime security.

### **Dominican Republic Southern Partnership Station**

Dominican Republic Rear Adm. Luis Rafael Lee Ballester, Director of Port Security, visited HSV 2 *Swift* as part of HSV-Southern Partnership Station. The exchange culminates in a practical exercise, where participants are tasked with identifying risky behaviour in role-players. The security agents are tasked to describe the behaviour and appearance of suspicious individuals.

### **Port-Au-Prince, Haiti**

HSV 2 *Swift* docked in Haiti carrying nearly \$1 million worth of relief supplies for orphanages. The load of 177 pallets of canned food and bottled water was transported by the Navy's high-speed transport vessel as part of a humanitarian mission. The donated goods were collected in the aftermath of Haiti's devastating January 2010 earthquake. Earlier, *Swift* delivered a mobile medical clinic and 39 pallets of water filters to Haiti.

## **2012**

### **Project Handclasp**

In February 2012, the HSV 2 *Swift* offloaded \$4 million dollars of Project Handclasp humanitarian and medical supplies which were distributed to NGOs and other medical and school institutions in Mirebalais and Cap-Haitien. Project Handclasp was a US Navy program that transported educational, humanitarian and goodwill materials donated by America's private sector aboard Navy ships for distribution to foreign nation recipients.

Haiti was the final stop for the *Swift*, which had already visited the Dominican Republic, El Salvador, Guatemala, Peru, and Panama during this mission.

### **Tanzania, Kenya, Cameroon Africa Partnership Station**

HSV 2 *Swift's* civilian master and military detachment officer-in-charge discussed combating piracy and continued cooperation efforts during an office call with Tanzanian naval leadership. The visit was a chance for both groups to discuss emerging issues that threaten maritime security as well as focus on building upon the partnership that has already developed through several years of working together. While in Tanzania, *Swift's* crew and embarked Marines, NCIS personnel, and members of Maritime Civil Affairs and Security Training teams conducted five separate subject matter expert exchanges during the two-week visit.

### **Toulon, France US and French Navy Joint Exercise**

High Speed Vessel *Swift* (HSV) 2 departed Toulon naval base after a three-day port visit to strengthen relations with the French Navy. *Swift* participated in several training events, including a passing exercise (PASSEX) and a photo opportunity with the French littoral combat ship, L'Adroit.





## 2013

### **Cape Verde, Africa Partnership Station**

*Swift* made its final APS port visit in Mindelo, Cape Verde, in January. There, a team of US Navy maritime civil affairs security training instructors completed eight days of training with Cape Verdian marines and coast guardsmen aboard the ship. The MCAST team from Dam Neck, Virginia, used its military skills during courses on boarding team operations and armed sentry training, and language skills as two instructors fluently communicated in Portuguese. Training included simulated boarding procedures on the Cape Verde Coast Guard patrol boat NP Guardian (P511).

HSV 2 *Swift* completed a nearly 10-month deployment to the Europe and Africa areas of responsibility. During that time, *Swift*, its crew of contract mariners and a US Navy detachment conducted 38 port visits to Africa and 15 to Europe, making theater security cooperation visits and supporting Africa Partnership Station 2012.

### **Belize, Southern Partnership Station**

Sailors disembarked HSV 2 *Swift* to begin Southern Partnership Station 2013, a US 4th Fleet deployment designed to strengthen civil and maritime capabilities with regional partner nations in the Caribbean. The team was comprised primarily of Seabees from Riverine Squadron (RIVRON) 2 and Construction Battalion Maintenance Unit (CBMU) 202. Each team will spend time working with host-nation partners to strengthen relationships.

### **El Salvador, Guatemala, Honduras,**

Southern Partnership Station is an annual series of US Navy deployments focused on subject matter expert exchanges with partner nation militaries and security forces in Central and South America and the Caribbean. US military teams work with partner nation forces during training exercises, military-to-military engagements and community relations projects to enhance partnerships with regional maritime activities and improve the operational readiness of participants.

### **Key West, Florida, USA**

#### ***Swift* tests a IF-25K aerostat**

The TIF-25K Aerostat blimp arrives aboard the US Navy's high-speed vessel *Swift* (HSV 2) to be evaluated at sea for use in future Operation Martillo counter transnational organized crime operations. Operation Martillo (Hammer) is a joint US, European, and Western Hemisphere partnership effort targeting illicit drug trafficking routes in Central American coastal waters.

# HULL 061 HSV 2 *Swift* 98m SPECIFICATION



## General Particulars\*

Designer:	Revolution Design Pty Ltd
Builder:	Incat Tasmania Pty Ltd, Hobart, Australia
Class Society:	Det Norske Veritas
Certification:	DNV +1A1 R1 HSLC Cargo EO HELDK
Length overall:	97.22 metres (318'11")
Length waterline:	92.00 metres (301'9")
Beam overall:	26.60 metres (87'3")
Beam of Hulls:	4.50 metres (14' 8")
Draft:	3.43 metres (11'3") loaded
Speed:	approx 38.0 knots @ 627 tonnes deadweight approx 42.0 knots @ 300 tonnes deadweight

Note - All speeds quoted for smooth sea-state, excluding T-foil and 100% MCR (4 x 7200 kW)

## Capacities

Deadweight	- approximately 627 tonnes
Total persons	- 353 maximum
Vehicle Deck Capacity	- Transom to Frame 4 - 91.5 sqm (985 sqft) with unrestricted headroom.  - Frame 4 to Frame 49 - 1215.6 sqm (13085 sqft) with 4.70m (15'4") clear headroom.  - Frame 49 forward - 807.3 sqm (8690 sqft) with 2.0m (6'6") clear headroom vehicle deck Axle Loads  - Transom to Frame 49 - maximum 10 tonnes per single axle or up to M1A1 capable  - Forward of Frame 49 Ramp A to D - 0.8 tonnes per axle.

## Helicopter Deck

- 24.7 m x 15.24 m (81' long x 50' wide) certified to Level I Class 2A. (Fuel storage and on-deck refueling included) for MH-60S, CH-46, UH-1 and AH-1 helicopters.

- Weather protected stowage area for 2 x MH-60S helo forward of helo deck.

Fuel (operating) - 190,080 litres (50,210 gals)

Fuel (long range) - 2 x 210,238 litres (2 x 55,540 gals)

Fresh Water - 2 x 6,625 litres (1,750 gals) GRP tanks plus 2 x 11,350 litres/day (3,000 gals/day) water maker.

Sewage - 1 x 4,500 litres (1,200 gals)

Lube Oil - 2 x 1,515 litres (400 gals)

Oily Waste - 2 x 1,515 litres (400 gals)

## Accommodation

Sleeping Berths - Total number of berths = 107.

### Crew Staterooms

- CO - single berth stateroom with private head including toilet, shower and washbasin.

- XO/Commodore- single berth state room with private head including toilet, shower and wash basin.

- Officers - two and four berth state rooms

- CPO's - six and three berth staterooms

- Enlisted - two 18-berth bunkrooms, one 15-berth bunkroom and one 12-berth bunkroom.

- Technical Representatives - one 3-berth stateroom

\*GA is 'as built' on delivery 2003

Permanent Seating	- Aircraft style HSC certified seating for 128 persons.
Temporary Seating/Berths	- Aircraft style HSC certified seating for 122 persons reconfigurable to temporary berthing for 87 persons.
Crew Mess	- 39 seat crew mess/day lounge adjacent to galley. - 10 seat officers lounge adjacent to crew cabins.
Galley	- Fitted with cooking systems, day refrigeration and freezer, sinks and food prep area. Additional modular cool/cold room and dry storage units fitted within vehicle deck space.
Sanitary Spaces	- Centralized facilities containing heads, basins and showers.
Laundry	- Laundry space located close to crew accommodations and fitted with 4 x Automatic washers, 4 x dryers, 2 x laundry troughs, and ironing boards.
Office Spaces	- Ships Administration office containing 6 x computer work stations and storage cabinets. Computers considered GFE.
C4ISR	- 700 sqft upper C4ISR room and 200 sqft lower C4I Equipment room with 70kW 'mission essential' electrical power and climate control.
Planning Room	- Staff planning area with 15 seat conference table and office containing 8 x computer workstations.
Medical Space	- Treatment facility containing folding operating table, refrigerator, separate head with shower, basin and toilet.
Storage	- Weathertight storage spaces with rugged shelving systems located on forward vehicle deck levels.

## Safety and Evacuation

Escape - Evacuation is via two LSA Marine Evacuation Systems (17m inflatable slide with 100 person SOLAS A pack liferaft attached). An additional 3 x 100 person SOLAS A pack liferafts are linked to the Marine Evacuation Systems for a total liferaft capacity of 500 persons.

Rescue Boat	- 1 x SOLAS RHIB dinghy with 30 hp motor and approved launch / recovery method.
Work Boat	- 1 x 7 metre RHIB, capable of carrying 10-15 personnel with a diesel engine and water jet propulsion. The 7 metre RHIB will be stowed on the mission deck on a trailer. The aft small boat crane will be used to launch and recover the 7 metre RHIB.

## Machinery Installations

Main Engines	- 4 x resiliently mounted Caterpillar 3618 marine diesel engines, each rated at 7200 kW at 100% MCR and 35/52 Celsius ambient temperatures.  Vertical dry exhaust system discharging outboard at portal top.
Water Jets	- 4 x Wartsilia LIPS LJ120E waterjets configured for steering and reverse.
Transmission	- 4 x ZF 53000 NRH gearboxes, approved by engine manufacturer, with reduction ratio suited for optimum jet shaft speed.
Ride Control	- A 'Maritime Dynamics' active ride control system is fitted to maximize passenger comfort. This system combines, active trim tabs aft and optional fold-down T-foil located at aft end of centre bow fitted with active fins.
Shore Ramp	- Stbd aft slewing stern ramp capable of landing to a wharf starboard alongside or directly aft plus capable of deploying amphibious vehicles to water.
Small Boat Crane	- Slewing telescopic boom crane located port side aft capable of launching small boats/equipment rated as a 100 tonne/metre crane when lifting equipment.

Transfer of equipment /stores between the vehicle deck and helo deck will employ the ship's small boat crane. The crane allows for the transfer of equipment between ship to shore or ship to sea.

## Electrical Installations

Alternators	- 4 x Caterpillar 3406B 230kw (nominal) marine, brushless, self-excited alternators.
Distribution	- 415V, 50 Hz. 3 phase. 4 wire distribution with neutral earth allowing 240 volt supply using one phase and one neutral. Distribution via distribution boards adjacent to or within the space they serve.
Switchboards	- Main switchboards fitted with a load preferential trip system which automatically sheds non-essential loads whilst still maintaining one alternator as a standby set. Each switchboard fitted with a bus coupler breaker to allow the main bus bars to be split in the event of a fault condition.
Essential Distribution	- Distribution to essential services from independent distribution boards supplied from both switchboards.
Shore Power	- Shore power compatible with US shore based power systems. Connection points fitted in starboard anteroom.

## Navigational Equipment

GPS	- 2 x Leica Differential GPS
Radars	- Captain - Kelvin Hughes X band with 15" True motion performance monitor inc. auto track and geographics  - Navigator - Kelvin Hughes S band with 15" Arpa performance monitor inc. auto track and geographics (Radar interswitching)
Autopilot	- Lips
Gyro Compass	- Anschutz
Magnetic Compass	- C.Plath
Electronic Chart System	- Transas Navi-Sailor 2400
Echo Sounder	- Skipper
Speed / Distance Log	- Walker electromagnetic with interface to radars, GPS and autopilot.
Wind Speed/ Direction	- Walker

Weather Fax/ Navtex	- GMC/ICS
Barometer/ Clock	- Builders standard
Air Horn	- Ibuki
Daylight Signal Lamp	- Aldis Francis
Search Light	- Mounted on fwd mast with remote control - Den Hann

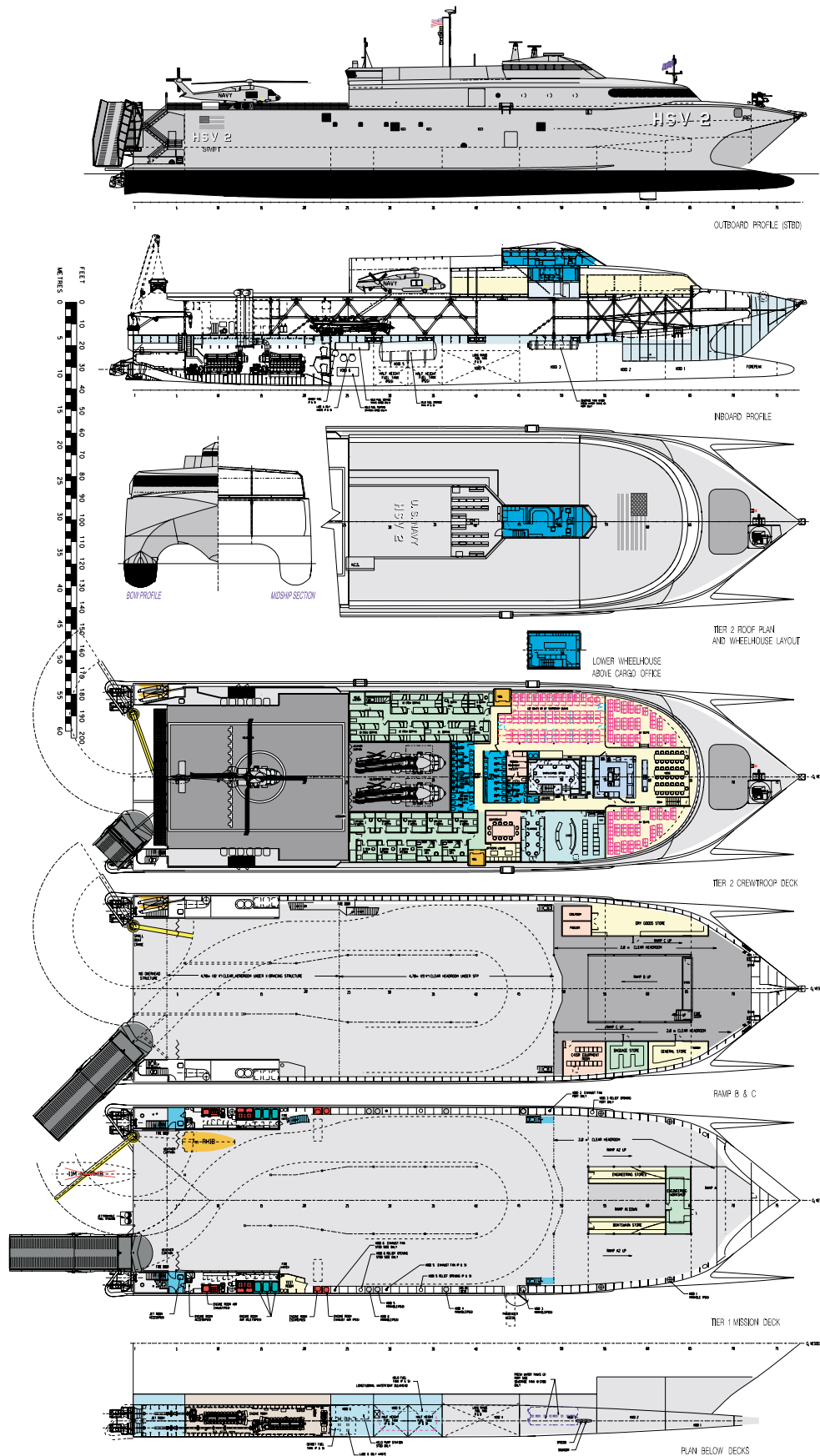
## Radio Communications

MF / HF Radios	- }	
HF DSC inc. 2187.5 kHz	- }	To comply with
Simplex / Semi Duplex VHF Transceivers	- }	GMDSS Sea Area 1 and 2
VHF / DSC Controller with Ch.70 Receive	- }	
Hand held transceivers inc. chargers.	- }	
EPIRB (406 Mhz)	- }	2 each GMDS
SART	- }	Sea Area A3
Satcom C.	- }	

*\*Specification is as per the delivery spec and may have been subject to change through the service life of the vessel.*

# HULL 061 HSV 2 *Swift* 98m

\*GA is 'as built' on delivery 2003



## GENERAL PARTICULARS

Designer/Builder:	Incat, Hobart, Australia
Class Society:	Det Norske Veritas
Certification:	DNV +1A1 R1 HSLC Cargo EO HELDK
Length overall:	97.22 metres (318'11")
Length waterline:	92.00 metres (301'9")
Beam overall:	26.60 metres (87'3")
Beam of Hulls:	4.50 metres (14' 8")
Draft:	3.43 metres (11'3") loaded
Speed:	approx 38.0 knots @ 627 tonnes deadweight
	approx 42.0 knots @ 300 tonnes deadweight



# HSV 2 SWIFT CONFIGURATION

@ THE TIME OF CONSTRUCTION IN 2003

Helicopter Deck



Medical Room



Troop Seating



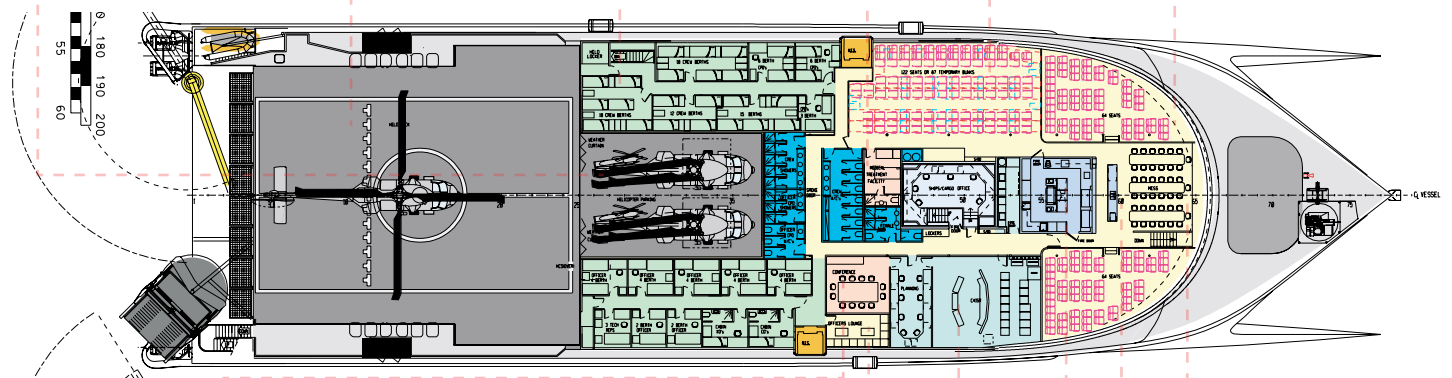
Helicopter Shelter



Officer Berthing



Temporary Berths



Conference Facilities



C4ISR



Officers' Lounge



Galley



Servery



Crew Mess Area





# HSV 2 *Swift* CONFIGURATION @ THE TIME OF CONSTRUCTION IN 2003

## C4ISR



HSV 2 *Swift* incorporates a Command and Control (C2) facility designed to support an operational Mine Countermeasures Squadron Staff (MCMRON) in the conduct of operational mine countermeasures operations for the US Navy. The suite (both equipment and space layout) takes advantage of the lessons learned from *Incat* hull 050, HSV-X1 *Joint Venture*. A secure multi-compartment space has been fitted including an equipment room on the mission bay to house high heat producing systems and to facilitate the mission bay configuration for 5 independent mission modules with full connectivity to the command centre.

The main deck compartment is subdivided into four sections. There is the manned equipment space, a Combat Information Centre (CIC), a Mission planning and post mission analysis room, and a conferencing facility to be used by the embarked commander. The lower equipment room is where many of the US Government Furnished Equipment (GFE) communications transmitters and receivers are located. There are additional empty equipment racks

installed and available for future operational and experimental equipment. The C4ISR planning space has eight workstations to support planning, mission execution, and analysis of planned Naval experiments. The CIC has seven workstations with nine tactical displays currently installed to support a Naval Commander in the execution of an operation or exercise. Each of the displays in CIC, and five of the displays in Planning can be switched to one of four 50-inch (127cm) large screen displays, located within CIC, to allow for the Tactical Action Officer (TAO) and embarked Commander to maintain cognisance of the critical aspects of an ongoing mission. The last of the four sections in the Upper C4ISR space is a conference room with full briefing capabilities including the ability to display (using the overhead projector) one of the many tactical displays from CIC. This room is designed to offer additional planning space as required.

The *Swift's* C2 suite provides military and commercial satellite communication for both data and voice requirements. Additionally, there are transceivers for HF, UHF, and VHF secure military communication using a state-of-the-art 'all digital' switch for patching circuits to what appear as traditional Navy 'Red Phones'. These first of a kind tactical phones combine the added functions of a channel selector and amplified speakers into a single unit. The commercial Dual INMARSAT satellite system provides Internet Protocol (IP) data service for shared Classified and Unclassified Computer connectivity to off ship world wide networks, as well as, voice, FAX and secure telephone service.

Working directly with *Incat*, a robust infrastructure was installed to support the varied operational and experimental Naval missions expected for *Swift* now and into the future.

# HELICOPTER NIGHT OPERATIONS



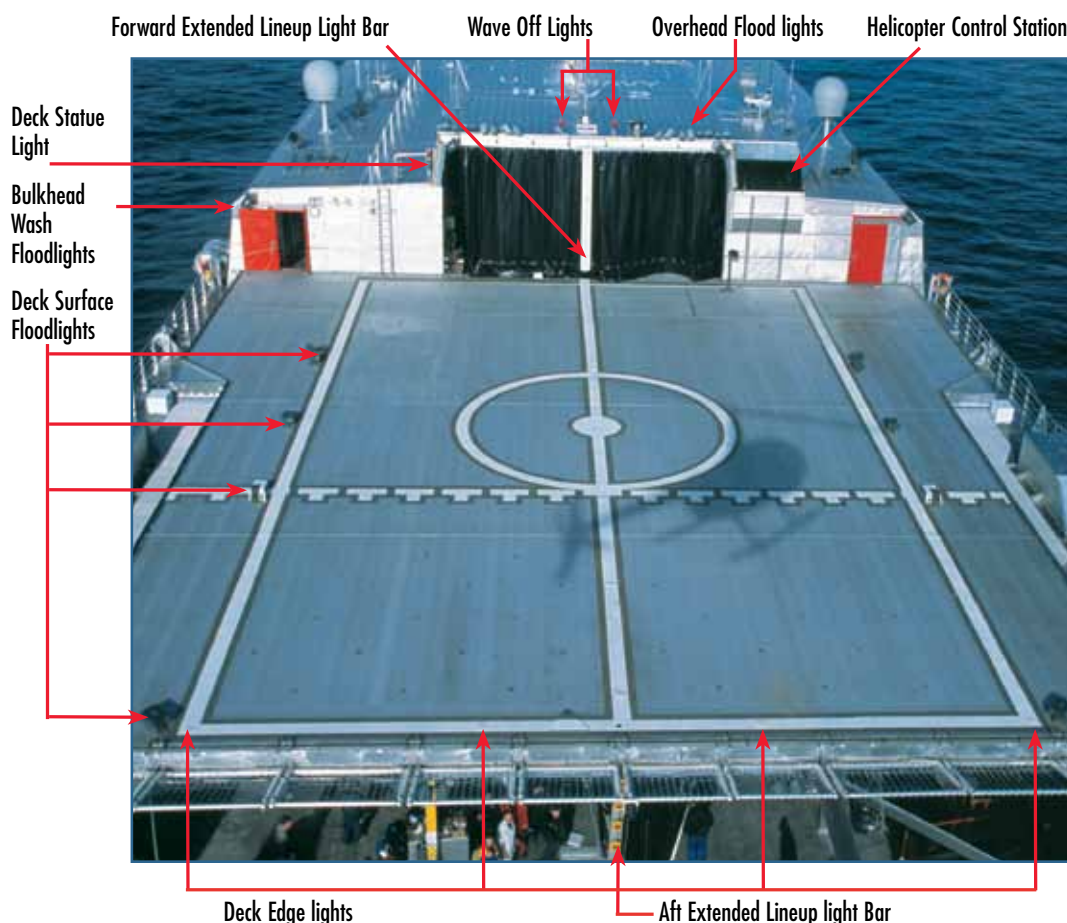
Landing a helicopter on the deck of a ship that is pitching and rolling in heavy weather is not an easy feat, however add poor visibility or night time conditions to the equation and things become a whole lot more difficult. Installing a military approved and proven helicopter deck lighting system provides

the pilot with visual cues enabling safe helicopter operations at night and in poor visibility. The latest vessel delivered to the US Navy by Incat, HSV 2 *Swift*, was the first Incat High Speed Vessel to be fitted with a helicopter deck lighting system certified by the US Navy Naval Air Systems Command (NAVAIR). The helicopter deck is designed for supporting operations of MH-60S Sea Hawk, CH-46 Sea Knight, UH-1 Iroquois and AH-1 Cobra helicopters.

Incat approached Honeywell Aerospace and Defence Services (now Raytheon Australia), after learning of their previous experience in providing similar systems on board the Royal Australian Navy and Royal New Zealand Navy vessels. As a result of Raytheon's proven expertise in systems integration, commissioning, and provision of

reliable, military approved Helicopter Visual Landing Aids (HVLA) equipment, Incat selected Raytheon Australia to design and supply a helicopter deck lighting and visual approach system compliant with NAVAIR requirements for Day and Night Operations under Instrument Meteorological Conditions.

The helicopter deck lighting and visual approach system supplied by Raytheon provides the pilot with improved flight deck illumination, depth perception cues and obstruction definition. The system comprises deck lighting including overhead maintenance floodlights, line up lights, deck edge/perimeter lights, helo storage bulkhead wash floodlights and deck surface floodlights, as well as a Homing Beacon located high on a mast above the deck. The lighting system includes provision for operational compatibility with night vision devices when required. The system also includes a Wave Off system, used to indicate to the pilot to abort the landing, and a Deck Status light system, used to control helicopter operations through a three light (red, amber, green) status system. All systems are controlled through a number of control panels located in the Helicopter Control Station where the Helicopter Control Officer has a full, uninterrupted view of the landing area. Additional control for the Wave Off system is provided in the Bridge.



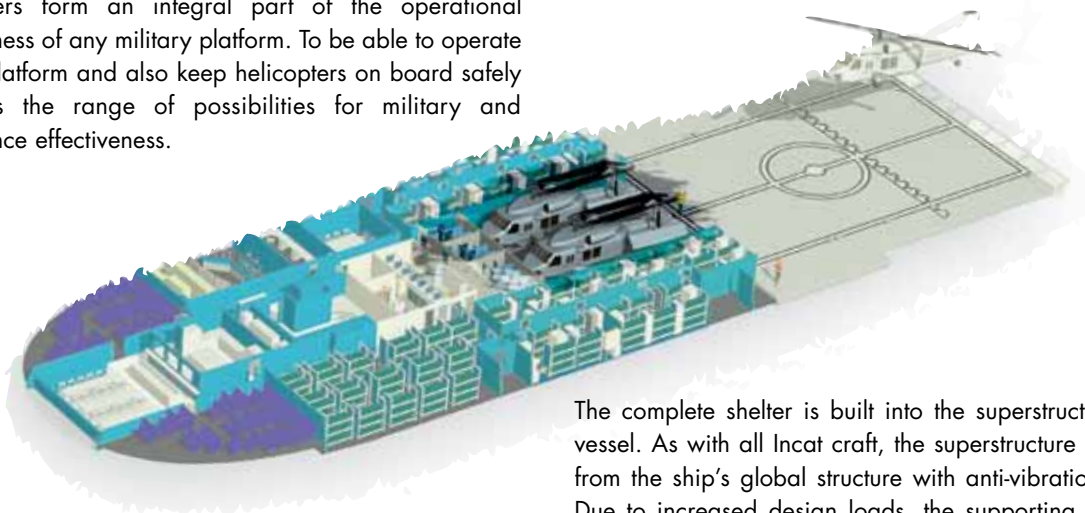
An additional system known as the Stabilised Glide Slope Indicator was later supplied and fitted by the US Navy. This system provides well-defined visual cues identifying the optimum glide path through the use of an optical device projecting three beams of coloured light to show the pilot of an approaching helicopter the correct glide path to the flight deck. The system is electro/hydraulically stabilised to keep the lamp and lens assembly fixed against the pitch and roll of the ship.

With the additional capabilities provided by this helicopter deck lighting and visual approach system, HSV 2 *Swift* is now more effective than ever.



## HELO SHELTER

Helicopters form an integral part of the operational effectiveness of any military platform. To be able to operate from a platform and also keep helicopters on board safely increases the range of possibilities for military and surveillance effectiveness.



Incat vessel HSV 2 *Swift* features a helicopter shelter located forward of the main helo flight deck, in the centre of the vessel. The shelter provides storage for two helicopters, CH 60 or equivalent. Rotors are folded back to allow the helos to be positioned close by, side to side.

The shelter / garage space is enclosed on three sides and features a mobile weather curtain across the open rear through which access is gained to the flight deck (refer Weather Curtains article) The shelter is a special category rated space with A60 minute fire protection requirement. AFFF water/foam drenchers provide extinguishing capability in the event of a fire within the garage.

The interior walls feature a new composite structural fire protection product from CBG Systems As well as providing fire protection, the composite surface helps to absorb sound, thus reducing reverberant noise build up. The noise reduction is an important consideration, given that crew sleeping quarters surround the central helo storage area.

The floor uses the same extrusion as the main flight deck, incorporating an extruded non-skid ridge pattern and shot blast finish to the top surface. A hatch built into the floor provides direct access to the main vehicle deck below.

The complete shelter is built into the superstructure of the vessel. As with all Incat craft, the superstructure is isolated from the ship's global structure with anti-vibration mounts. Due to increased design loads, the supporting raft beam structure was redesigned for additional strength and to accommodate a new arrangement of the anti vibration mounts to optimise load distribution from the parked helicopters. The critical design load was actually from a parked helo with skids instead of wheels, and the associated deck loads due to the combined G-forces from ship motions on the helicopter.

The shelter protrudes above the line of the superstructure roof on three sides. The structure of the panels is immediately noticeable due to its ripple free surface which was achieved using a bonded structure approach to fixing the panels to the frames. Each panel had T bar stiffeners bonded in place in lieu of welding, with no heat distortion, it enabled a smooth ripple free finish.

Araldite adhesive products were used with chemical and mechanical preparation prior to bonding. Edge welding of the panels, once in place, was only required to provide complete, long-term weatherproofing.



# WEATHER CURTAINS

HSV 2 *Swift* Vehicle Deck and Helicopter Storage areas have been fitted with Industrial Weather Curtains providing a lightweight yet effective and manageable weather barrier.

Due to the winds developed during helicopter landing and take-off the helo storage area, located immediately forward of the helo flight deck, required a high strength closing device or weather shield over the exit/entrance from the flight deck. Typically this is achieved on naval vessels using steel or aluminium folding or sliding doors resulting in high weight and complex structures. The closing device on *Swift* had to be flexible enough to remain open during normal vessel operations but rigid and strong enough to withstand the high wind loads during flight operations. It was also essential that the closing device would be able to be opened quickly without requiring excessive manpower.

The need to enclose the mission deck aft was similar, but for lesser wind loads. A lightweight and easily deployed weather shield needed to provide weather protection to sensitive military equipment on the mission deck and to allow maintenance work to continue in all weather conditions without the weighty and bulky alternative of conventional walling or solid roller/ sliding aft doors.

Incat, Revolution Design, the US Navy and Australian company Fabric Solutions worked together to develop a system using lightweight membrane fabric screens for the mission deck and helo storage areas.

The Gold Coast based company Fabric Solutions in-house team of engineers adapted an Industrial Weather Curtain from their designs which have previously been used to seal off large openings in warehouses, construction sites,

loading docks, airline hangers and factories. The Industrial Weather Curtain was redesigned and re-configured to the Navy's and Incat's stringent guidelines. Strength, safety, efficiency and functionality became the key issues! The weather curtain itself needed to be resistant to salt water and meet the most stringent fire safety standards. The result, the curtain being manufactured from heavy duty reinforced PVC.

It was also imperative that the opening and closing of the Industrial Weather Curtain could be done with a minimum of fuss. Though large in size the lightweight and flexibility of the curtains allows an operator to slide the curtain open or shut using one hand while sliding the curtain along its track. The system allows operators to work from the ground quickly and efficiently, not having to bend during the opening or closing operation. The top of the curtain is supported by a series of heavy-duty roller cars that take the weight of the curtain and the loads from the load bearing strapping sewn into the fabric. At the lower end of the trapping a series of heavy-duty stainless steel hold-down buckles, hooked into lugs on the deck, tension the curtain to create a semi-rigid membrane structure.

All Fabric Weather Curtains are designed and manufactured in Australia and meet all international safety and construction standards.





# HELO CONTROL STATION

The helo control officer enters the HCS via a fire door at the top of a ladder within the helo parking area. Once inside the officer can take full control of all flight operations.

HSV 2 *Swift* (Hull 061) is the first high speed vessel fitted with a flight deck meeting the requirements of Air Capable Ship Aviation Facilities Bulletin 1H for Level I Class 2A for MH-60S, CH-46, UH-1 and AH-1 helicopters.

Unlike HSV-X1 *Joint Venture* (Hull 050) which was fitted with a flight deck suitable only for daylight operations, HSV 2 *Swift* has a flight deck capable of landing aircraft in both daylight and night operations.

An integral part of this type of operation is a control station where the helo control officer can see the whole of the flight deck at all times from his work station. To achieve this Incat placed the Helo Control Station (HCS) at the aft end of the superstructure immediately outboard of the helo storage area. The HCS was recessed into the roofline of the superstructure to minimise the overall height while maximising the internal volume of the space. The operator faces aft looking over the flight deck with control panels and instruments immediately in front and to his sides.

The aft and outboard face of the HCS has large tinted windows fitted with wipers and washers. These windows are sized to maximise the control officer's view of incoming/outgoing aircraft on landing/take off. In the event of a fire there is an emergency exit over the roof of the superstructure.

Prior to starting construction of the HSC, a three-dimensional computer model was produced to allow those involved in the operation, approval and certification of the space a view of the final product. This method of design and presentation has become an integral part of Incat's approach to new vessels.



Instrumentation and controls at his fingertips include:

- Directional lighting and surface lighting of the helo deck.
- Internal communication between the HCS, wheelhouse, fire fighting stations and fuel pumping stations.
- External communications with operating aircraft.
- Controls for alarms and PA systems.

Special emphasis was placed on the position, lighting and direction of the instrumentation to ensure the HCS was compatible with NVD night operations on the helo deck. The result being a highly practical and ergonomic working platform for the personnel responsible for flight operations on HSV 2 *Swift*.



Caterpillar Generators on Hull 061

## HYDRAULICS

The hydraulic circuits on HSV 2 *Swift* are the largest and most sophisticated ever installed on an Incat vessel. The normal commercial craft requirements had to be met, plus additional circuits for assisting the military requirements of the US Navy.

The circuit design allows the whole vessel to be run from just three power packs, allowing maximum use of installed power and weight, whilst ensuring long and reliable service life. Each power pack supplies hydraulic power to the MDI ride control system via accumulators and servo-proportional valves. Hydraulic power supplied to a 200T/metre Palfinger Marine Crane installed on the Port aft corner of the mission deck is picked up from the Port Aft Hydraulic Power Pack. The crane allows transfer of equipment between the mission deck, helo deck, dockside, and the water.

Hydraulic power supplied to the slewing shore ramp installed on the starboard aft corner is picked up from the Starboard Aft Hydraulic Power Pack. The shore ramp allows loading and discharge of mobile equipment to either, the starboard side of the vessel, or, directly aft. Both pieces of equipment can be cross fed by the opposite power pack if a failure occurs. Multi purpose capstans of 4.0T line pull were installed on the mission deck and the helo deck, whilst the mooring capstans are 5.0T dynamic line pull and 50T static line pull.

Extensive use of leading edge technology hydraulic seat valves and high strength marine grade aluminium manifolds were incorporated into the design wherever possible. High pressure Linde pumps are installed throughout the vessel. All hydraulic pressures, temperatures, and oil levels can be monitored from the bridge of the vessel.





# BERTHING

- Permanent Berthing: for 103 pax (40 assigned to crew, 3 to technical reps)
- Modular Berthing: 80 racks (temporary racks replace 122 seats)







## SEATING

- Reclining business class airline style
  - Permanent seats: 128,
  - Temporary seats: 122 - (replaces 80 racks)
  - Seating area equipped with AV system



## GALLEY

- Designed to feed 100 pax A-rations for 10 days
- Capability to feed 250 pax for extended periods using UGRs
- Mess area seats 39



## MEDICAL SPACE

- Operating table and refrigerator for meds
- Separate head with shower, basin and toilet

# HSV 2 *Swift*



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