Ministry of Defence

de&s

DES Ships Boats Survey and Trials Form Part 2A Harbour Acceptance Trials (HATs) and Sea Acceptance Trials (SATs)

Version 1.0
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Version Control

Date Issued	Version	Author	Reason for Change

SURVEY AND TRIALS

The Contractor shall provide the Authority with evidence of material state and performance before and after work has been conducted on Boats as part of their respective In-Service Support contracts. This is achieved through conducting Surveys and Trials as part of the standard upkeep core work package for each Boat. When tasked, the Contractor shall conduct Surveys and/or Trials outside of the standard upkeep work package (for example, following a major equipment change or following installation of new equipment).

The Authority has provided a guide for conducting and recording the evidence for the following Surveys and Trials:

a. Condition Survey: A comprehensive Survey of the material state and performance of the Boat and its equipment and systems. **Survey and Trials Form 1A** is to be completed for this activity.

b. Harbour Acceptance Trials (HATs) and Sea Acceptance Trials (SATs): A Trial conducted to prove the material state and performance of the Boat and its equipment and systems following a work package. **Survey and Trials Form 2A** is to be completed for this activity.

Acceptable material state shall be defined as;

- Equipment or system in full working order;
- No damage that will impact or impede full and safe working use of equipment or system;
- No installation of equipment or adjacent equipment that will impact full and safe working use of the equipment or system.

On completion of the Survey and/or Trial, the Contractor shall notify the Authority of any deterioration that may impact the material state of the Boat or its equipment and systems. The Contractor shall provide the Authority with a recommendation for rectification to bring it up to an acceptable material state.

On completion of the Survey and/or Trial (and all accepted recommendations have been rectified), the Contractor shall declare that the functionality and performance of the equipment and systems provided as evidence in the Survey and Trials forms will be upheld for the duration of the **12-month Guarantee Period** from completion of the work package unless prior agreement has been obtained.

The trials are to be witnessed by the Authority or Authority's Authorised Representative unless prior agreement has been obtained.

Copies of completed Survey and Trials forms are to be sent to the Authority and originals are to be retained by the Contractor.

Survey and Trials form 2A	HARBOUR ACCEPTANCE TRIALS SEA ACCEPTANCE TRIALS	V 1.0 16/10/23

BOAT DETAIL	
Boat Type and MOD State	
MOD Boat No.	

REASON FOR TRIALS
Acceptance of craft following upkeep period. ☐ Assessment of craft following damage repair ☐ Acceptance of craft following installation of new equipment. ☐ Other reason _____

CONTRACTOR	
Company:	
Contact Name:	
Address:	
Telephone:	
e-mail:	

MOD REPRESENTAIVE	
Name:	
Section:	
Address:	
Telephone:	
e-mail:	

TRIAL DETAILS

Survey and Trials form 2A	TRIAL DETAILS	V 1.0 16/10/23

TRIAL DETAILS
The Contractor shall complete the following sections to provide evidence of the details and support for the trials. For craft following standard upkeep periods without significant changes to the craft then the acceptance sea trials should be conducted with the craft fully loaded unless prior agreement has been obtained. For craft that have undergone major changes in equipment such as new engines or significant changes in weight it is recommended sea trials are initially conducted in the Light Operating condition (crew, fuel and equipment but excluding payload) and then the fully loaded condition unless prior agreement has been obtained.

BOAT TECHNICAL DETAILS AS GIVEN IN THE BR (Identifying the craft details from the BR now will assist in establishing the trial loads and required craft speed and endurance performance.)	
Boat Type and MOD State	
Craft BR No.	
PAX	
Weight (Light ship & fully loaded)	
Fuel	
Speed	
Endurance	
Fuel Type	
Engines	Inboard / Outboard
Engine(s) Make:	
Propulsion	Propeller / Water Jet
Propulsion. Water Jet make	

TRIALS TO CONDUCT Select the trials to be conducted. (Bollard Pull and Sea Keeping are normally reserved for when major changes to the craft have been conducted.)	
Maximum average speed	Yes ☐ / No ☐
Acceleration	Yes ☐ / No ☐
Crash Stop	Yes ☐ / No ☐
Turning circles	Yes ☐ / No ☐
Zig Zag	Yes ☐ / No ☐
1 hour endurance	Yes ☐ / No ☐

Bollard Pull	Yes ☐ / No ☐
Sea Keeping	Yes ☐ / No ☐

CRAFT LOADING	
Select the load conditions the Trials are to be conducted under.	
Craft in light ship conditions to be weight prior trial:	Kg
Light Operating condition trials (crew, fuel, equipment but excluding load):	Yes ☐ / No ☐
Fully loaded trials to be conducted:	Yes ☐ / No ☐
Loading using:	
Ballast weights	Yes ☐ / No ☐
Water weights	Yes ☐ / No ☐
Passengers	Yes ☐ / No ☐
Other (Details:)	Yes ☐ / No ☐
Weight of load to be added excluding crew:	Kg
Location of loading:	_____
Total load of craft in Light Operating condition:	Kg
Total load of craft in Fully Loaded condition:	Kg

TRIAL AREA	
State the area required for the trial.	
Open sea:	Yes ☐ / No ☐
Sheltered water:	Yes ☐ / No ☐
Shallow water:	Yes ☐ / No ☐

ENVIRONMENTAL REQUIREMENTS	
State the environmental requirements for the trials.	
Day:	Yes ☐ / No ☐
Night:	Yes ☐ / No ☐
Sea State. Preferred trial conditions	SS 0-1 Calm
Sea state: Operational range 0-4 (0-2.5m)	SS 0-4
Sea State limit:	SS 4
Wind strength. Not to exceed a sustained	kts
Visibility distance	nm
Air temperature:	°C
The preferred trial conditions are for calm water and little wind. It is accepted that this is not always achievable within the time frames available. The trials officer should endeavour to conduct the trials in the best conditions that can be found.	

CRAFT DATA TO BE RECORDED	
Determine what data is to be recorded.	
Speed (SOG):	Yes ☐ / No ☐
Craft motion accelerations / WBV:	Yes ☐ / No ☐
Engine revs:	Yes ☐ / No ☐
Engine temperatures:	Yes ☐ / No ☐
Fuel Consumption:	Yes ☐ / No ☐

Craft pull (Bollard pull):	Yes ☐ / No ☐
Craft trim:	Yes ☐ / No ☐
Video Internal/External:	Yes ☐ / No ☐
Still Photos: Internal/External:	Yes ☐ / No ☐

SUPPORT CRAFT	
Confirm if support craft are required.	
Support craft	Yes ☐ / No ☐
Details of support craft (LCU, LCVP, CSB, RIB, Inflatable, other):	

SPECIALIST EQUIPMENT / SUPPORT REQUIRED
(Detail as required. ie Stop watch, GPS data loggers, load cells, noise meters etc)

COMMUNICATION		
Confirm the communications to be used.		
IMM	Yes ☐ / No ☐	Channel No:
Other (Mil coms/Mobile):	Yes ☐ / No ☐	Details:

TRIAL / CRAFT SOPs and STANDING ORDERS	
Confirm the following.	
The craft will be operated during the trials iaw the craft BR and SOPs:	Yes ☐ / No ☐
Trials will be conducted iaw host unit SOPs & SOs:	Yes ☐ / No ☐
Trials conducted in Military Training Areas will be iaw SOs:	Yes ☐ / No ☐
Trials conducted iaw all relevant legal guidelines and regulations:	Yes ☐ / No ☐

RISK ASSESSMENTS	
Confirm the following.	
All Risk assessments conducted and recorded:	Yes ☐ / No ☐
Reference:	

TRIAL WILL BE CANCELLED ON THE FOLLOWING CONDITIONS	
Confirm the trial will be ceased on the following.	
Sea state exceeds: SS ___ / ____m	Yes ☐ / No ☐
Wind state exceeds: Sustained _ kts	Yes ☐ / No ☐
Loss of safety communications.	Yes ☐ / No ☐
Craft material state failure (inc. engine warnings).	Yes ☐ / No ☐
Craft stability is unacceptable.	Yes ☐ / No ☐
Crew injury or MOB.	Yes ☐ / No ☐

SEA STATE

The sea state will be assessed against NATO STANAG 4149 Table F-1.

TABLE F-1 – NATO SEA STATE NUMERAL TABLE FOR THE OPEN OCEAN NORTH ATLANTIC

Sea State Number	Significant Wave Height (m)		Sustained Wind Speed (Knots)*		Percentage Probability of Sea State	Modal Wave Period (sec)	
	Range	Mean	Range	Mean		Range**	Most Probable***
0 – 1	0 – 0.1	0.05	0 - 6	0.5	0	–	–
2	0.1 – 0.5	0.3	7 - 10	3.5	7.2	3.3 – 12.8	7.5
3	0.5 – 1.25	0.88	11 - 16	8.5	22.4	5.0 – 14.8	7.5
4	1.25 – 2.5	1.88	17 - 21	19	28.7	6.1 – 15.2	8.8
5	2.5 – 4	3.25	22 - 27	24.5	15.5	8.3 – 15.5	9.7
6	4 – 6	5	28 - 47	37.5	18.7	9.8 – 16.2	12.4
7	6 – 9	7.5	48 - 55	51.5	6.1	11.8 – 18.5	15.0
8	9 – 14	11.5	56 - 63	59.5	1.2	14.2 – 18.8	16.4
>8	>14	>14	>63	>63	<0.05	15.7 – 23.7	20.0

*Ambient wind sustained at 19.5 m above surface to generate fully-developed seas. To convert to another altitude, H_2, apply $V_2 = V_1 (H_2/19.5)^{1/7}$

**Minimum is 5 percentile and maximum is 95 percentile for periods given wave height range.

***Based on periods associated with central frequencies included in Hindcast Climatology.

BRd6600 – Royal Marines Landing Craft & Small Boat Operations Table 4-3, usefully adds descriptive terms to the sea state figures.

Table 4-3. Maritime Forecast Sea State Code

STATE OF SEA CODE FIGURE	DESCRIPTIVE TERMS	METRES	HEIGHT* FEET (APPROX)	
0	CALM (GLASSY)	0	0	* The average wave height as obtained from the larger well formed wave of the wave system being observed.
1	CALM (RIPPLED)	0-0.1	0-1/3	
2	SMOOTH (WAVELETS)	0.1-0.5	1/3-12/3	
3	SLIGHT	0.5-1.25	12/3-4	
4	MODERATE	1.25-2.5	4-8	
5	ROUGH	2.564	8-13	
6	VERY ROUGH	4-6	13-20	Note. The exact bounding height is to be assigned to the lower code figure e.g. a height of 4 metres is coded as 5.
7	HIGH	6-9	20-30	
8	VERY HIGH	9-14	30-45	
9	PHENOMENAL	OVER 14	OVER 45	

Survey and Trials form 2A	HARBOUR ACCEPTANCE TRIAL	V 1.0 16/10/23

HARBOUR ACCEPTANCE TRIAL		
The craft Harbour Acceptance Trial must be conducted iaw the craft's BR pre-sailing checks. The following lists highlights relevant areas to check.		
Hull.	Visual inspection. Check for any sign of damage.	Yes ☐ / No ☐
Collar.	Visual inspection. Check the collar is not damaged and secure to the hull. For RIB floatation collars check it is evenly inflated.	Yes ☐ / No ☐
Deck.	Visual inspection. Check for damage. Ensure deck is clear and miscellaneous items are stowed away.	Yes ☐ / No ☐
Lifting points.	Visual inspection. Check for damage.	Yes ☐ / No ☐
Consoles.	Visual inspection. Check console secure to deck and free from damage.	Yes ☐ / No ☐
Seating.	Visual inspection. Check seats are securely fixed to the deck. Check condition of foot straps where fitted.	Yes ☐ / No ☐
Hatches.	Visual and functional inspection. Check they are functional and are secure.	Yes ☐ / No ☐
Fire Fighting.	Visual inspection. Check fire alarm system is undamaged and operational. Check fixed and portable fire extinguishers are in date and undamaged.	Yes ☐ / No ☐
Bilges.	Visual inspection. Confirm areas clean and free from debris and liquid.	Yes ☐ / No ☐
Bilge System.	Visual and functional checks iaw BR.	Yes ☐ / No ☐
Fuel and oil systems.	Visual inspection and functional checks iaw BR. Confirm hose fittings and pipework secure. Check for contamination in tanks and filters. Confirm fuel volume carried meets requirement for the trial.	Yes ☐ / No ☐
Engines & Gearbox.	Visual inspection and functional checks iaw BR. Confirm in good condition, equipment is secure, and oils topped up as required.	Yes ☐ / No ☐
Engine controls and instrumentation.	Visual inspection and functional checks iaw BR. Confirm correct operation of the controls.	Yes ☐ / No ☐
Steering.	Visual inspection and functional checks iaw BR. Check that the steering is unobstructed and free to move from hard over port to hard over starboard.	Yes ☐ / No ☐
Electrical System.	Visual inspection. Ensure all cabling correctly secured and terminated.	Yes ☐ / No ☐
Batteries.	Visual inspection. Check for any signs of damage and lose terminals. Confirm batteries are securely tied down.	Yes ☐ / No ☐
Navigation lights.	Visual and function inspection. Check for damage and confirm all functioning correctly.	Yes ☐ / No ☐
Compass.	Confirm compass swings completed, deviation card provided.	Yes ☐ / No ☐
Navigation system.	Visual inspection and functional checks. Confirm latest charts loaded on chart plotters.	Yes ☐ / No ☐

Communications - External	Visual inspection and functional checks of fixed and portable communication equipment. Confirm operating channels and power settings for intended transmission range.	Yes ☐ / No ☐
Communications - Internal.	Visual inspection and functional checks of internal communication system.	Yes ☐ / No ☐
Mast and antennas.	Visual inspection. Check for damage to mast and antennas. Confirm all antennas secured.	Yes ☐ / No ☐

MISCELLANEOUS EQUIPMENT	
The craft iaw its relevant BR must carry emergency and repair equipment. The following list highlights the equipment that should be carried. Confirmation of the full list must be made with reference to the craft BR.	
Fire extinguishers x2.	Yes ☐ / No ☐
Paddles.	Yes ☐ / No ☐
Inflation bellows.	Yes ☐ / No ☐
Sea anchor and warp.	Yes ☐ / No ☐
Hand-held searchlight/signalling lantern.	Yes ☐ / No ☐
Compass.	Yes ☐ / No ☐
Mooring warps.	Yes ☐ / No ☐
Collar repair kit.	Yes ☐ / No ☐
Bilge pump handle.	Yes ☐ / No ☐
Emergency steering tiller.	Yes ☐ / No ☐
Emergency inflation bladders (2 off).	Yes ☐ / No ☐
Rescue throwing lines (2 off).	Yes ☐ / No ☐
Lanyard for Deadman's Switch.	Yes ☐ / No ☐
Radar reflector.	Yes ☐ / No ☐
First aid kit in waterproof case (must reseal after use)	Yes ☐ / No ☐
Rescue flares	Yes ☐ / No ☐

LIFE JACKETS, PPE AND SAFETY	
Confirm the following:	
Life Jackets. (Confirm all PAX are supplied and wearing appropriate size, type and in-service dated maintained life jackets)	Yes ☐ / No ☐
PPE. (Confirm all PAX are aware of the environmental conditions of the trial and wearing appropriate PPE ie Eye protection, & clothing appropriate for weather conditions)	Yes ☐ / No ☐
Safety Brief. (Confirm all PAX are briefed on the trial conduct and personal safety (WBV) guidance.)	Yes ☐ / No ☐

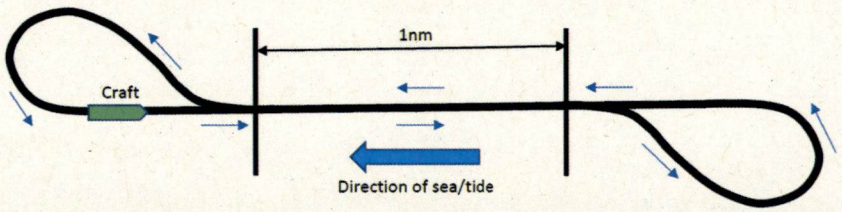
PAX ON BOARD	
A nominal of those on board the trials craft is to be taken and details held at the trials host base.	
Role	Names
Coxswain:	
Second Coxswain/Crew:	
MOD/PDH representative:	
Contractor support representative / engineer:	
Visitors:	

SEA ACCEPTANCE TRIAL

Survey and Trials form 2A	Speed Trial	V 1.0 16/10/23

Boat Type:	Boat Number:	Trial Date:
Trials Location:		

Sea State:	Wind Force:	Wind Direction:	Air Temperature (°C):	Sea Temperature: (°C):
Craft loaded condition:	Weight of craft (Kg):	Ballast added (Kg): Type of ballast:		Fuel (ltr):
Time trial started:		Time trial finished:		



Craft engines are to be run in and at operating temperature. The craft is to accelerate up to its speed. The craft is to maintain its maximum speed for a 1nm distance. (Distance to be established using measured mile markers or GPS chart plotters.) The craft is to conduct a total of 3 runs sailing a 1nm transit in to the sea and 3 runs sailing a 1nm transit with the sea. The time to complete each run is to be recorded. The average speed of the craft is to be calculated from the recorded data.

Engine 1 = Single or Port Engine. Engine 2 = STBD Engine		Trial Runs					
		Run 1	Run2	Run 3	Run 4	Run 5	Run 6
Engine 1	RPM						
	Oil (BAR)						
	FW Temp (°C)						
Engine 2	RPM						
	Oil (BAR)						
	FW Temp (°C)						
Time to complete the run (seconds)							
Average Speed (knots)							
Average speed of Runs 1-6 (knots)							

Did the trial speed recorded meet the craft requirements as detailed in the craft's BR	Yes ☐ / No ☐