

# USV MCM PROPOSAL

## 11 METER USV PLATFORM MONO HULL



### Parameter

- 11.00 length of hull (excluding platform and tube) LH m
- 10.86 length of waterline (at DWL) LWL m
- 10.69 Beam maximum beam BMAX m
- 3.30 beam of hull BH m
- 3.12 beam at waterline (at DWL) BWL m
- 3.09 beam of chine BC m 2.95

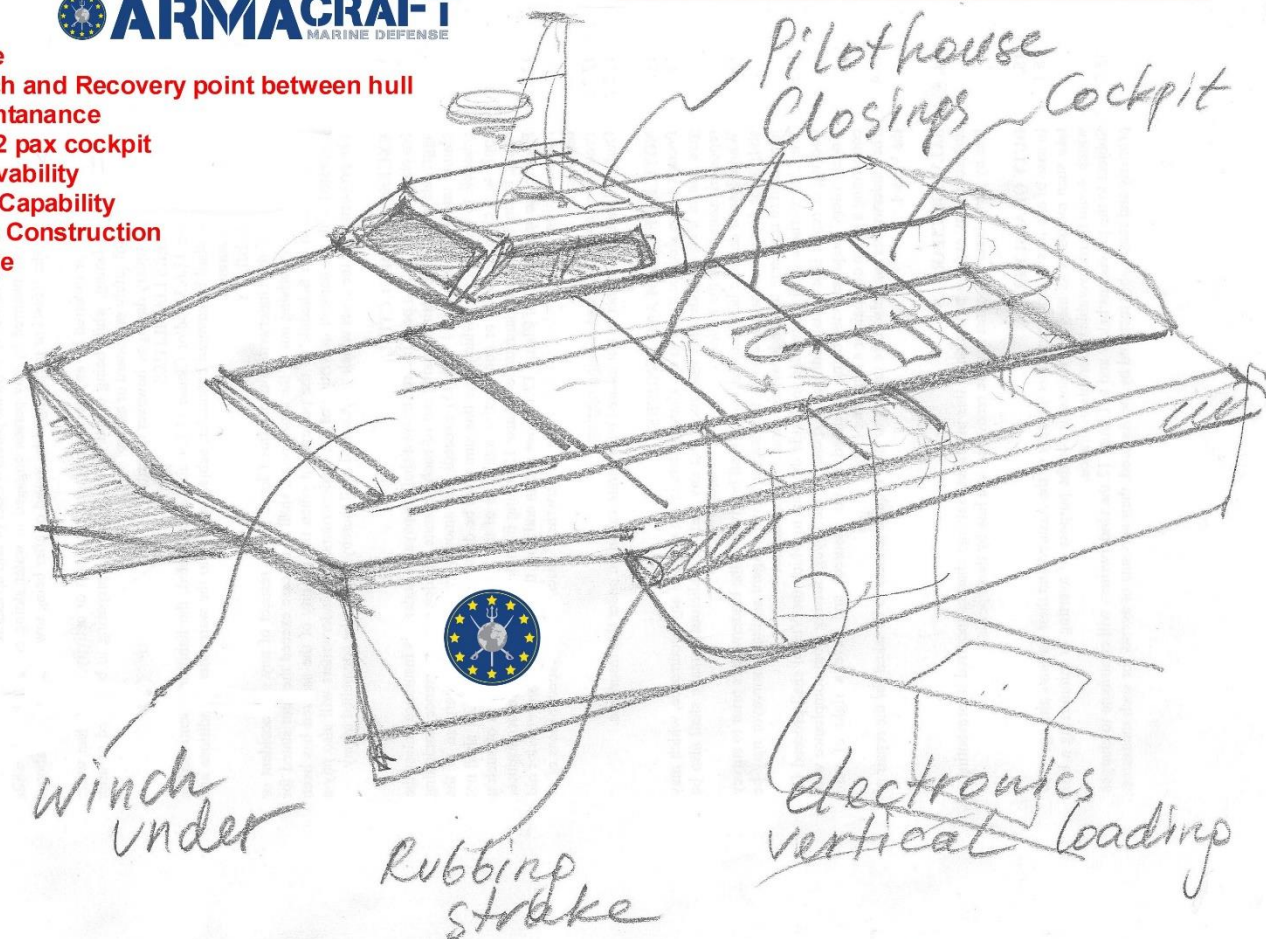
## CATAMARAN DESIGN

### SEVERAL ADVANTAGES FOR THIS SIZE OF VESSEL USING A CATAMARAN HULL DESIGN



- Low Profile
- Low Launch and Recovery point between hull
- Easy Manintanance
- Recessed 2 pax cockpit
- High Survivability
- Multi Task Capability
- Composite Construction
- Long Range

### USV 11 m Multi Task Catamaran



## PROFESSIONAL INSIGHT IN MCM OPERATIONS

Due to different mission profiles, it is not cost effective / optimal performance to have a common platform for different mission payloads.

### 1. USV - mine hunting

This USV will search and locate all mine like objects on the sea bottom. Its payload is the Towed Synthetic Aperture Sonar (TSAS) which has very high resolution to enable mine detection. The USV will tow the TSAS to detect and locate all mine like objects and send their position to the ops control station.

### 2. USV - Expendable Mine Disposal System (EMDS)

This USV will dispose of all mines detected by the USV-TSAS. Upon receiving the position of all mine like objects from the USV-TSAS, the ops control station will deploy the USV-EMDS to the location of the mine like objects. When onsite, the EMDS would be deployed to dispose the mine. Each USV-EMDS can carry between 6 to 8 EMDS.

### 3. USV-Mine Sweeping (MS)

Under very rough and undulating sea bottom conditions (NATO calls this Type D sea bottom), the TSAS is not effective to detect mines as the mines may be obscured / hidden in the trough or "valley" of the sea bottom. Under such ops scenario, Mine Sweeping may be undertaken to conduct mine clearance of the sea area.

The USV-MS will tow a set of magnetic coils and acoustic noise maker to generate a combined acoustic and magnetic signatures. The combination of magnetic and acoustic signatures will detonate the influence mines which may be at the sea bottom. However, this method has a serious drawback, ie.

The USV cannot generate a pressure signature.

Therefore, if the influence mines is programmed to detonate on a combination of acoustic, magnetic and pressure signatures (which is the case for almost all sea bottom mines, except for shallow water anti-landing mines), mine sweeping would not be effective in clearing the mines.

## CONCLUSION

Based on above, there would be 3 different variant of platform;  
One for each type of mission payload

1. USV-TSAS
2. USV-EMDS
3. USV-MS recommend customer to go for first 2; the 3rd MS is not really effective in today's ops context; and is more of a legacy concept.

What is recommended by a highly educated officer on Mine hunting.

When conducting a search grid for mine detection it would be advisable to use one vessel with TSAS equipment and when coming on to a target, pass the gps point the second vessel equipped with EMDS to neutralize the target!

- We have access to booth TSAS sonar and EMDS Mine Disposal System
- Our own ATTACK USV
- Able to do advanced design concept with systems integration and performance calculations
- Complete vessel and electronics design package including license to build
- Supplying turnkey vessels or build assist including systems integration at clients facility