

## Viewport Arrangements Under Consideration by WHOI for the Replacement HOV

Detailed analyses of 4 different viewport configurations have been undertaken by the Southwest Research Institute (SwRI) for WHOI. To guide its recommendation to WHOI for the choice of configuration, the Replacement HOV Oversight Committee (RHOC, made up of scientists and engineers<sup>1</sup>) is soliciting input from the user community and pilots regarding preferences and rationales in support of or against particular configurations.

Earlier this year, the RHOC had asked WHOI to examine using all 7" windows in the front of the personnel sphere instead of two 6" windows and one 7" window. This would provide improved fields of view as well as simpler logistics related to spares. SwRI has completed this review and also considered option of eliminating the side windows. The original decision for the inclusion of outboard (side) observer windows and their locations was based on maintaining ALVIN's current ability to have a fairly close view of the sea floor and sediments as well as increasing the overall field of view and allowing their use for a vehicle situational awareness in tight quarters.

Summary information regarding viewport options is contained in this document. We will not know the total vehicle weight and volume and other factors until well after the fabrication for the personnel sphere is underway and so are not be able to fully realize the implications of the choice of viewport configuration at this time.

There are two basic questions to answer:

- 1) Should the front three windows be a mix of 6 and 7 inch or should they all be 7 inch?
- 2) Should the outboard observer windows be retained?

Please send your response to Chris German ([cgerman@whoi.edu](mailto:cgerman@whoi.edu)) by 15 December 2006. Chris will collate responses and report to a joint WHOI/RHOC teleconference.

### VIEWPORT OPTIONS

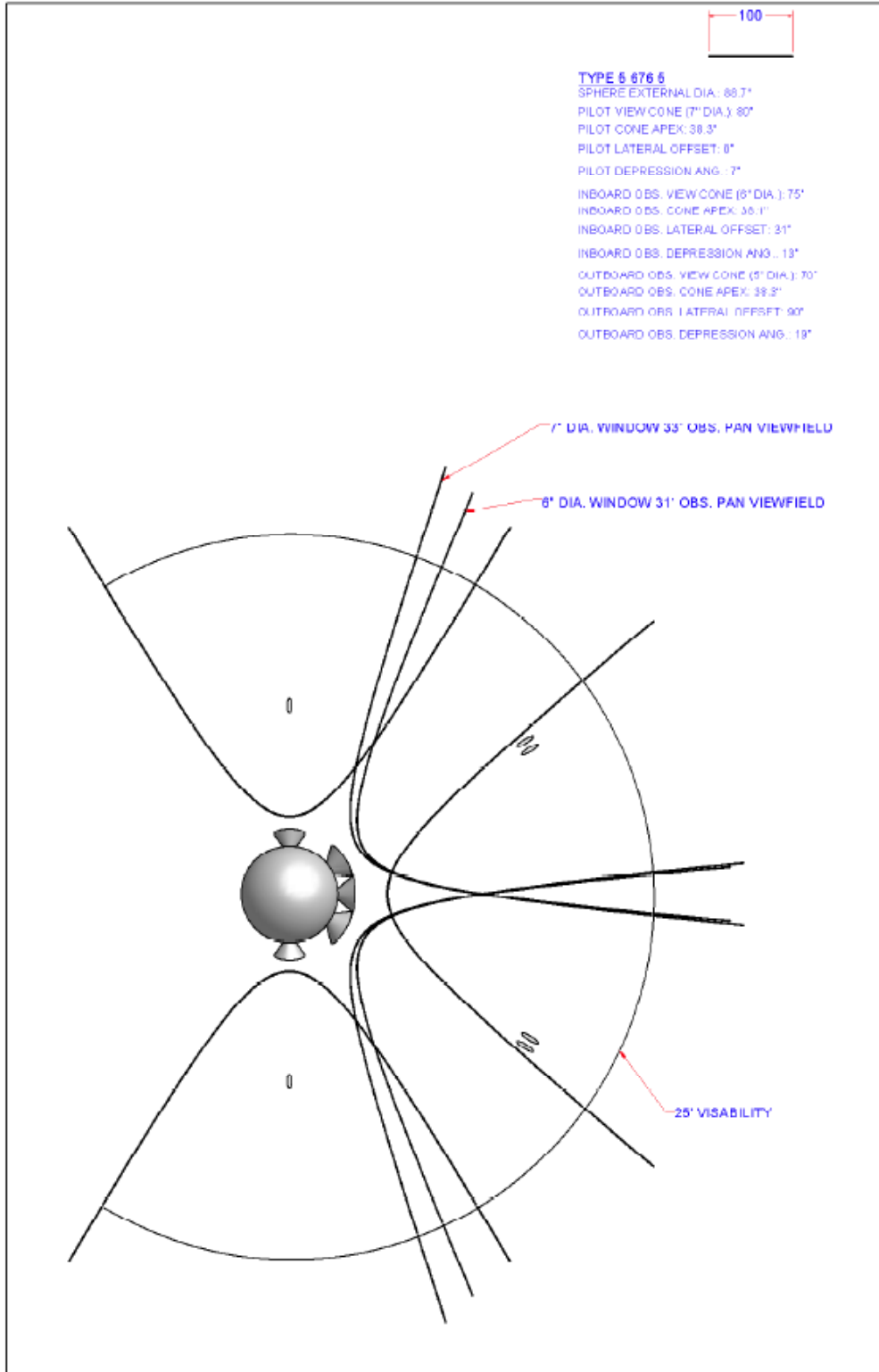
OPTION	A	B	C	D
number of viewports	5	3	5	3
window diameter in inches	5-6-7-6-5	6-7-6	5-7-7-7-5	7-7-7
total cost (\$K)	\$758-1012	\$485-643	\$764-1000	\$466-624
total weight (lbs; viewport system and foam)	348	222	366	318
syntactic volume (ft <sup>3</sup> )	10.9	6.9	11.4	9.9
comments	specified in contract	minimum weight	most viewing area	least expensive

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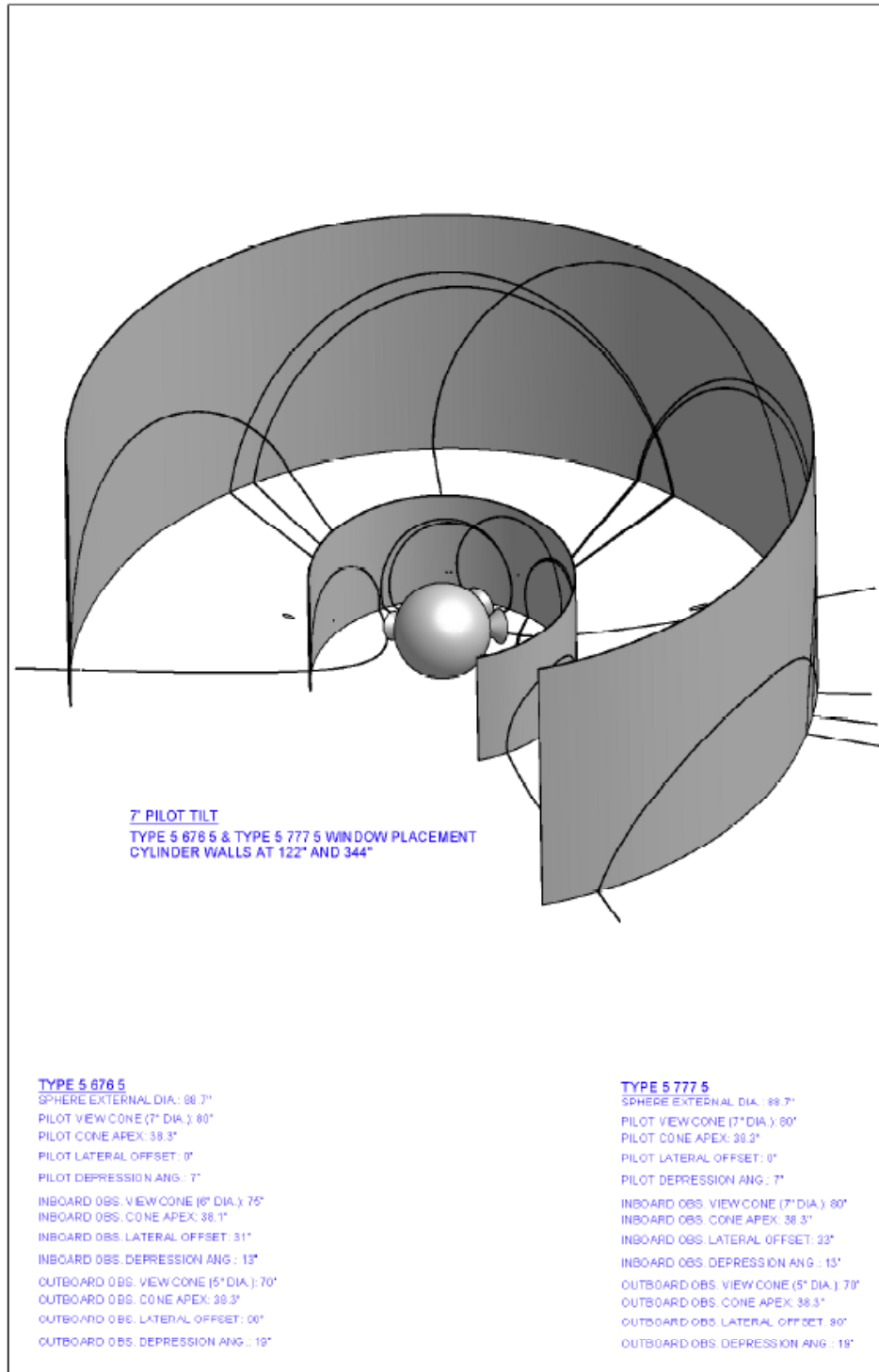
<sup>1</sup> [http://www.unols.org/committees/dessc/replacement\\_HOV/replacement\\_hov.html](http://www.unols.org/committees/dessc/replacement_HOV/replacement_hov.html)

Side Window Evaluation	
PROs	CONs
Increased total available field of view for observation	Questionable actual usage
More effective search	
Increased area for selection of sampling sites	
Closer view of seafloor/sediment	
Allows for monitoring proximity to hazards on side of vehicle	Increased exposure to hazards on side of vehicle
	Manipulator mounts become complicated and heavier

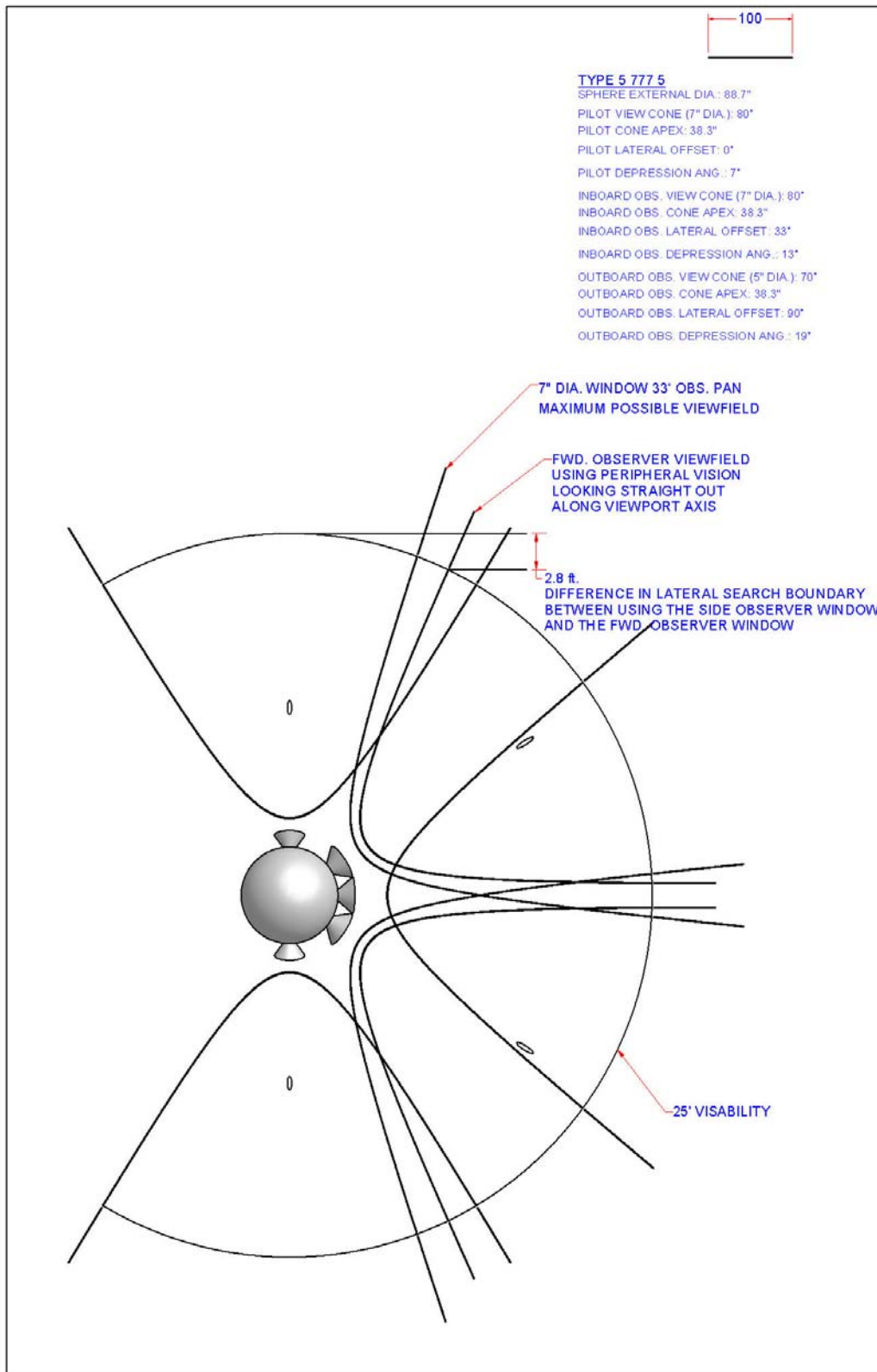
Three 7" Window Evaluation	
PROs	CONs
Small increase in field of view	Small increase in vehicle weight
Increased ease of use	Small increase in vehicle volume
Simpler logistics (one size vs two)	Small increase in fabrication complexity



Window Field of View (plan view)



Window Field of View (isometric)



Difference in Lateral Search Limits