CSMWG17-06.7A



CONTRACT BETWEEN THE INTERNATIONAL HYDROGRAPHIC BUREAU, OF MONACO AND CARIS BV

REVISION, AMENDMENT AND TESTING OF CONDITIONAL SYMBOLOGY PROCEDURES WRECKSnn AND OBSTRNnn

Version 1.0 2007/05/29

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Document Version

Date	Primary Author(s)	Version	Description of Version
2007-05-29	Sherry Munn	1.0	Initial Document
2007-05-30	Sherry Munn	1.1	Added Mike Eaton's notes to the Purpose/Objective Section

1 Distribution List

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1 Terminology

1.1 Acronyms & Abbreviations

CSMWG – Colours and Symbols Working Group CSP – Conditional Symbology Procedure



2 Introduction

2.1 Project Participant(s) and Contact Information

The CARIS representative for this contract is: Mr. Mark Pronk CARIS BV Mgr. van Oorschotstraat 13 PO Box 47 5473 ZG Heeswijk The Netherlands

The technical authority for this contract is: Dr. Mathias Jonas, Bundesamt fur Seeschifffahrt und Hydrographie (BSH) Neptunalle 5, D18057 Rostock, Germany.

The financial authority for this contract is: Mr. Christian Velard International Hydrographic Bureau, BP 445, MC 98011 Monaco CEDEX, Principality of Monaco.

2.2 Purpose/Objective

This development is required as a result of action item 37 of the minutes of the 16th meeting of the IHO Colours and Symbols Maintenance Working Group (CSMWG) held in Monaco in 2006. It is aimed at visualizing the values of soundings belonging to a wreck or another obstruction lying on the sea bed, by modifying the relevant Conditional Symbology Procedures (CSP).

At present when the mariner selects viewing group 33010 (soundings) the display shows only the depths of the soundings in object class SOUNDG. To see the depths over rocks, wrecks or obstructions as well, the mariner must make cursor-picks of the objects individually. Or he can select viewing group 34050 (non-dangerous rocks, wrecks and obstructions) for display, which would bring in all such objects whether they had a sounding value or not and so cause clutter.

This amendment sets up a new viewing group 34051 (non-dangerous rocks, wrecks and obstructions <u>which have a VALSOU attribute</u>), and conditional symbology procedures OBSTRNnn and WRECKSnn have been revised to assign all non-dangerous rocks, wrecks and obstructions which have a VALSOU attribute to this group. Also, because at present these procedures only display depths of less than 20 metres they have been revised to display all depths. The sounding will always be shown whenever these objects are on the display

Note however that Isolated Dangers (rocks, wrecks and obstructions whose depth is less than the safety contour and which lie in water deeper than the safety contour) will continue to be symbolised only with the "Isolated Danger" symbol SY(ISODGR01), whose shape was not designed for showing a depth value.

The revised versions of procedures OBSTRNnn and WRECKSnn are included in this document together with a revision to the Viewing Groups and a discussion on displaying the depth over Isolated Dangers.



2.3 References

IHO ECDIS Presentation Library. Edition 3.3, March 2004. Special Publication No. 52: ANNEX A of APPENDIX 2. Published by the International Hydrographic Bureau, Monaco.



3 Delivery Items

3.1 Viewing Groups

A new viewing group (34051) for non-dangerous rocks (UWTROC), wrecks (WRECKS) and obstructions (OBSTRN) which have a VALSOU attribute has been added.

Update to section 13.2 VIEWING GROUPS for Other Chart Information:

J, K, L SEABED	, OBSTRUCTIONS, PIPELINES
34000	Seabed Information: rocks, wrecks & obstns, pipes & cables
34010	nature of seabed (SBDARE)
34020	spring (SPRING), sea weed (WEDKLP)
34030	na
34040	fish haven (FSHHAV), fishing stakes, etc. (FSHFAC)
34050	rocks (UWTROC), wrecks (WRECKS), obstructions (OBSTNS), which are not a danger to own-ship's navigation (these are all Display Base if a danger to own-ship)
34051	non-dangerous rocks (UWTROC), wrecks (WRECKS) and obstructions (OBSTRN) which have a VALSOU attribute and are not a danger to own-ship's navigation (these are all Display Base if a danger to own-ship)
34060	na
34070	submarine cable (CBLSUB), submarine pipeline (PIPSOL)

By adding a new viewing group, the Mariner can view all of the obstructions and wrecks lying on the sea bed that have the attribute VALSOU set along with soundings by choosing the viewing group 34051 and 33010 (soundings). If viewing group 34050 is not selected, then the obstructions and wrecks lying on the seafloor without the attribute VALSOU set will not be displayed.



3.2 OBSTRNnn Conditional Procedure

The OBSTRN05 diagrams have been updated as follows:

3.2.1 Title Page:

Title page and diagrams have been renamed to increment the version number (from OBSTRN05 to OBSTRN06).

3.2.2 Page 1:

Inserted "SET THE VIEWING GROUP TO 34051" before the call to SNDFRM03. Note that the viewing group will be overridden by the UDWHAZ04 procedure if the feature is an isolated danger.

3.2.3 Continuation A:

For UWTROC or OBSTRN features that have an attribute VALSOU > 20 metres, set the 'SOUNDING' local variable to TRUE to indicate that the sounding value should be displayed.

3.2.4 Continuation B:

In the NO section of the "HAS THE PROCEDURE 'UDWHAZ04' INDICATED THE ISOLATED DANGER SYMBOL SHOULD BE SHOWN?" if statement, remove the condition for VALSOU <= 20 metres.

3.2.5 Continuation C:

No changes.

The following diagrams have red boxes around the modified sections. Diagrams with no red-lining have been included at the end of this document.



12.2.9 Conditional Symbology Procedure 'OBSTRN06'

Applies to:	S-57 Object Class "obstruction" (OBSTRN) S-57 Object Class "under water rock" (UWTROC)
Spatial Object(s):	Point, Line, Area.
Attribute(s) used:	"value of sounding" (VALSOU) "water level" (WATLEV) "exposure of sounding" (EXPSOU)
Parameter(s):	Object to be symbolized from SENC
Defaults:	Display Priority given by look-up table OVERRADAR priority given by look-up table Display Category given by look-up table Viewing Group given by look-up table Area Color fill from underlying 'DEPARE' or 'UNSARE'
Remarks:	Obstructions or isolated underwater dangers of depths less than the safety contour which lie within the safe waters defined by the safety contour are to be presented by a specific isolated danger symbol and put in IMO category "DISPLAY BASE" (see IMO Performance Standard for ECDIS, App.2, 1.3). This task is performed by the most recent edition of sub-procedure UDWHAZnn which is called by this symbology procedure. Objects of the class "under water rock" are handled by this routine as well to ensure a consistent symbolization of isolated dangers on the seabed.
	The current UDWHAZnn also allows the mariner the option of displaying isolated dangers in the waters between the safety contour and the zero metre line.
	In the case that the value of attribute VALSOU for this object is unknown, the

n, the most recent edition of sub-procedure DEPVALnn is called. This will provide a default 'least_depth' from the DRVAL1 of the underlying depth area on condition that the value of attribute EXPSOU is not 2 (shoaler than the depth area), and the value of attribute WATLEV is 3 (always underwater).



OBSTRN06

Conditional symbology procedure for symbolizing objects of the class obstruction (OBSTRN) and underwater rock (UWTROC).





QUAPNT02					
PERFORM THE SYMBOLOGY PROCEDURE TO OR NOT TO DISPLAY THE LOW ACCURAC	IUAPNTO2" WHICH RETURNS A FLAG NIXICATING WHETH Y SYMBOL AND RETURNS THE SELECTED SYMBOL	ER			
	HAS THE PRO THE	ISOL Sł	re ND Ateo e Kould	WHA2 XANGE BE SI	CD4' NOXATED CF SYNBOL HOWN ?
SHOW THE SYMBOL SELECTED BY 'UDWHAZO	4' AT THE CALLING OBJECTS LOCATION	_	-	-	
F SO INDICATED BY THE PROCEDURE 'OUAPNT LOW ACCURACY SYMBOL AT THE CALLING GE	02', SHOW THE RETURNED SECT'S LOCATION				
SYMBOLIZATION IS FINISHED EXIT PROCEDURE					DO NOTHING HERE
SET THE LOCAL VARIABLE "SOUNDING" TO FALS SYMBOL(S) RETURNED FROM "SNDFRMD3" SHOU	E TO INDICATE THAT SOUNDING LO NOT BE DRAWN				
P45	IS THE VALUE / VALUE / VALUE /	OF TH SOU' (E ATTR	RIBUT	E
S THE CALL THE TYPE SELECT THE APPROPRATE SYMBOL AND DECIDE # THE SOUNDING SHOULD BE SHOWN. IF WATLEY'=3 (dways submerged). THEN SELECT 'SY(UNROCOL') AND 'SOUNDING'=TRUE ELSE IF 'WATLEY'=4 (covers and uncovers) THEN SELECT 'SY(UNROCOL') AND 'SOUNDING'=TAUSE ELSE IF 'WATLEY'=5 (awash) THEN SELECT 'SY(UNROCOL') AND 'SOUNDING'=TAUSE ELSE (DEFAULT) SELECT 'SY(DANCERD')' AND 'SOUNDING'=TRUE	UNC OBJECT OF TUWTROC? NUST BE OF THE TYPE 'OBSTRM, F 'CATOBSTEG (food areq), THEN SELECT 'SY(DANGERD1' AND 'SOUNDING'=TRUE ELSE F 'WATLEY'=1 (partly submerged at HW) OR 2 (always dry), THEN SELECT 'SY(OBSTRM: 1)' AND 'SOUNDING'=FALSE ELSE F 'WATLEY'=3 (always submerged) THEN SELECT 'SY(DANGERD1)' AND 'SOUNDING'=TRUE ELSE F 'WATLEY'=4 (covers and uncovers) OR 5 (awash) THEN SELECT 'SY(DANGERD3)' AND 'SOUNDING'=TRUE ELSE (DEFAULT) SELECT 'SY(DANGERD1)' AND 'SOUNDING'=TRUE	ELECT 'SY (DANG ERGO' AND 'SO UNDING-'TRUE	F WAILEV'=5 (dways submerged), THEN SELECT 'SY(UNTROCDS);	ELSE (BEFAULT) SELECT 'SY(UWTROCO4)	OF THE TYPE 'OBSTRN'. F 'CATOBS'=6 (foul area), THEN SELECT 'SY(OBSTRND1)' ELSE IF 'WATLEY'=1 (partly submerged at H0 08 2 (always dry), THEN SELECT 'SY(OBSTRN11)' ELSE IF 'WATLEY'=3 (always submerged), THEN SELECT 'SY(OBSTRN01)' ELSE F 'WATLEY'=4 (covers and uncovers) 08 5 (awash) THEN SELECT 'SY(OBSTRN03)' ELSE (DEFAULT) SELECT 'SY(OBSTRN01)'
SHOW THE SELECTED SYMBOL AND THE SOU returned from SHDFRM03) AT THE CALLING F SO INDICATED BY THE PROCEDURE 'QUAPHT LOW ACCURACY SYMBOL AT THE CALLING OB SYMBOLIZATION IS FINISHED EXIT PROCEDURE	NDING SYMBOL(S) (F REQUIRED - S OBJECT'S LOCATION 02', SHOW THE RETURNED JECT'S LOCATION				







a objects, obstructions (OBSTRN)				
QUAPNT02				
PERFORM THE SYMBOLOGY PROCEDU WHETHER OR NOT TO DISPLAY THE	RE 'QUAPNTO2' WHICH RETURNS A FLAC LOW ACCURACY SYMBOL AND RETURNS	INDICATING THE SELECTED	SYMBOL	
	HAS THE PROCED THAT THE	OURE 'UDWHAZO ISOLATED DANGE SHOULD BE SHO	4' INDICATED R SYMBOL DWN ?	
YES PRESENT THE AREA OBJECT WITH AN O	PAQUE COLOUR FILL WITH		N	
THE COLOUR 'DEPVS', AND THE AREA I SYMBOLIZE THE AREA BOUNDARY AS A	PATTERN 'FOULARO 1' DOTTED LINE, 2 UNITS WIDE,			
IN THE COLOUR 'CHBLK' LS(DOTT, 2, CH SHOW THE SYMBOL RETURNED BY 'UDW	BLK) Ha704'			
IN THE CENTRE OF THE AREA.	HADATADI SUON TUS BETUDISO	-	DO NOTHING	
LOW ACCURACY SYMBOL IN THE CENTR	E OF THE AREA	0	HERE	
SYMBOLIZATION IS FINISHED EXIT PROCEDURE	IS THE VALUE OF TH	E ATTRIBUTE		
YES IS THE VALUE OF	THE ATTRIBUTE	SELECT THE AP	PROPRIATE SYMBOL	
'VALSOU' LE OR EC	SS THAN DUAL	AS THE DEFAUL IF 'CATOBS'=6	T SYMBOLIZATION (foul greg),	
YES	Im.? NO	THEN SELECT	AP(FOULAR01):LS(DOTT, 2, CHBLK	
SYMBOLIZE THE AREA BOUNDARY WITH		ELSE IF 'WATLEV'=1 (partly submerged at HW) THEN SELECT 'AC(CHBRN);LS(SOLD, 2, CSTLN)		
COLOUR 'CHBLK' 'LS(DOTT, 2, CHBLK)'	SYMBOLIZE THE AREA BOUNDARY AS LS(DASH, 2, CHGRD)	ELSE IF 'WATLEV'=2 (always dry) THEN SELECT 'AC(CHBRN):LS(SOLD, 2, CSTLN)'		
0250mad2800m2042	1	ELSE IF 'WATLEV'=4 (covers and uncovers) THEN SELECT 'AC(DEPIT);LS(DASH , 2, CSTLN)'		
		ELSE IF 'WATLEV'=5 (awash) THEN SELECT 'AC(DEPVS):LS(DOTT, 2, CHBLK)		
SHOW THE SOUNDING SYMBOL(S) RETURNED FROM 'SNDFRM03' IN THE CENTRE OF THE AREA.		ELSE IF 'WATLEV'=3 (alwoys submerged) THEN SELECT 'AC(DEPVS);LS(DOTT, 2, CHBLK)		
		ELSE (DEFAUL 'AC(DEPVS);LS		
IF SO INDICATED BY THE PROCEDURE 'Q	UAPNTO2', SHOW THE RETURNED RE OF THE AREA			
	(Mexany) and the (Colones Tai)			
SYMBOLIZATION IS FINISHED				



3.3 WRECKSnn Conditional Procedure

The WRECKS03 diagrams have been updated as follows:

3.3.1 Title Page:

Title page and diagrams have been renamed to increment the version number (WRECKS03 to WRECKS04).

3.3.2 Page 1:

Inserted "SET THE VIEWING GROUP TO 34051" before the call to SNDFRM03. Note that the viewing group will be overridden by the UDWHAZ04 procedure if the feature is an isolated danger.

3.3.3 Continuation A:

Move the block "SHOW THE SOUNDING SYMBOL(S) (returned from SNDFRM03) ON TOP AT THE CALLING OBJECT'S LOCATION" from inside of the "IS THE VALUE OF VALSOU <= 20 metres" outside (to ensure that soundings are displayed regardless of the attribute VALSOU's value).

3.3.4 Continuation B:

Remove the "IS THE VALUE OF THE ATTRIBUTE VALUE 'VALSOU' <= 20 metres" condition. Keep the following two statements:

"WHERE REQUIRED, SHOW THE SELECTED SYMBOL(S) RETURNED BY 'UDWHAZ04' AND 'QUAPNT02' I NTHE CENTRE OF THE AREA"

and

"SHOW THE SOUNDING SYMBOL(S) (returned from SNDFRM03) IN THE CENTRE OF THE AREA."

The following diagrams have red boxes around the modified sections. Diagrams with no red lines have been included at the end of this document.



12.2.27 Conditional Symbology Procedure 'WRECKS04'

Applies to:	S-57 Object Class "wrecks" (WRECKS)
Spatial Object(s):	Point, Area
Attribute(s) used:	"value of sounding" (VALSOU) "category of wreck" (CATWRK) "water level" (WATLEV)
Parameter(s):	Object to be symbolized from SENC
Defaults:	Display Priority given by look-up table OVERRADAR priority given by look-up table Display Category given by look-up table Viewing Group given by look-up table Area colour fill from underlying DEPARE or UNSARE
Remarks:	Wrecks of depths less than the safety contour which lie within the safe waters defined by the safety contour are to be presented by a specific isolated danger symbol and put in IMO category "DISPLAY BASE" (see App.2, 1.3, of the IMO Performance Standards for ECDIS). This task is performed by the sub-procedure "UDWHAZnn" which is called by this symbology procedure.
	CSP "UDWHAZ" also allows the mariner the option of displaying isolated dangers in the waters between the safety contour and the zero metre line.
	In the case that the value of attribute VALSOU for the wreck is unknown, sub- procedure "DEPVAL' is called. This will provide as default 'LEAST_DEPTH' the DRVAL1 of the underlying depth area, but only on condition that the value of attribute EXPSOU is not 2 (shoaler than the depth area), and the value of attribute WATLEV is 3 (always underwater).
	For the case that a wreck of unknown VALSOU lies in deep water, sub- procedure 'DEPVAL' also provides the DRVAL1 of the underlying depth area as the 'SEABED_DEPTH' for use in calculating a 'safe clearance depth' over the wreck in accordance with IHO publication M-4 appendix to specification B-422.7.





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VES.	IS THE VALUE (VALSOU	Y THE ATTRBUTE Y GIVEN ?			
IS THE VALUE OF THE LESS THAN OR	E ATTRBUTE 'VALSOU' EQUAL TO 20m ? NO THEN 'VALSOU' > 20m	SELECT THE APPROPRIATE SYMBOL : IF "CATWERK"=1 (non-dongerous wreck) AND "WATLEV"=3 (olways submerged THEN SELECT "SY(WRECKSD4)"			
SELECT 'SY(DANGEROI)' SELECT 'SY(DANGERO2)' SHOW THE SELECTED SYMBOL(S) (danger, low accuracy) AT THE CALLING OBJECT'S LOCATION SHOW THE SOUNDING SYMBOL(S) (refurmed from SNDFRM03) ON TOP AT THE CALLING OBJECT'S LOCATION DO NOTHING		ELSE F 'CATWRK'=2 (dengerous wreck) AND 'WATLEV'=3 (dways submer- THEN SELECT 'SY(WRECKSD5)' ELSE F 'CATWRK'=4 (wreck showing most/mosts) THEN SELECT 'SY(WRECKSD1)'			
		THEN SELECT 'SY(WRECKSO1)' ELSE F 'WATLEV'=1 (partly submerged at IIW) THEN SELECT 'SY(WRECKSO1)' D SE F WATLEV'=2 (down dw)			
		ELSE F WATLEV =2 (dwgss dry) THEN SELECT 'SY(WRECKSO1)' ELSE F 'WATLEV'=5 (dwgsh) THEN SELECT 'SY(WRECKSO1)'			
HLKL		ELSE F 'WATLEV'=4 (covers and uncovers) THEN SELECT 'SY(WRECKSD1)' ELSE (DEFAULT) SELECT 'SY(WRECKSD5)' SHOW THE SELECTED SYMDOL(S) (wreak, low accuracy) AT THE CALLME ORDET'S LOCATION			







3.4 NOTES/EXCEPTIONS:

There are three instances when OBSTRN, UWTROC or WRECKS features with a value set for the attribute VALSOU will not have a sounding displayed using these revised symbolization procedures:

- 1. Features that have been flagged by procedure UDWHAZnn as isolated dangers. The isolated danger symbol does not support the display of a sounding on top. If the CSMWG determines that the Mariner will want to display soundings over the isolated danger symbols, the following steps could be taken:
 - Design a new isolated danger symbol that could support the display of soundings on top. Note that this symbol may have to be larger in size and it will only be used if the feature is an isolated danger and VALSOU has been set (to avoid unnecessary clutter).
 - Add a new viewing group xxxxx for isolated dangers with VALSOU set. This would match with the proposal for adding a new viewing group for non-isolated dangers with VALSOU set.
 - Procedure UDWHAZnn would set the viewing group to the new viewing group if the calling feature has VALSOU set and the feature is an isolated danger.
 - Procedure UDWHAZnn would choose the new symbol only if the calling feature is an isolated danger and has VALSOU set.
 - Add a recommendation to the title pages of the WRECKS and OBSTRN procedures: "It is recommended that whenever viewing group 33010 is displayed, viewing group xxxxx should also be displayed. This will ensure that depths over isolated dangers are displayed as well as those from object class soundings."
- 2. UWTROC features with VALSOU set and WATLEV=4 (covers and uncovers) or WATLEV=5 (awash) display the UWTROC04 symbol, which is a star and will not support the display of a sounding over top of the symbol.
- 3. OBSTRN features with VALSOU set and WATLEV=1 (partly submerged at high water) or WATLEV=2 (always dry) displays the OBSTRN11 symbol, which is a small box with a black outline and land area colour fill. A sounding symbol cannot be displayed on top of this symbol.

3.5 Testing

Testing was done to ensure that the sounding symbols could be displayed inside of the DANGER02 symbol, which will now have soundings displayed on top for rocks, wrecks or obstructions with VALSOU attribute values > 20 metres.

Testing for removing the condition for displaying soundings only on top of rocks, wrecks or obstructions with VALSOU attribute values <= 20 metres was performed.

Diagram 1: Testing drawing of soundings on top of OBSTRN/UWTROC features (points, lines and areas). The line OBSTRN feature is symbolized with a dashed black line. The sounding value is difficult (if not impossible) to interpret. It will be necessary to review this symbolization instruction. For point and area features, the sounding symbols are displayed clearly.







Diagram 1: Testing drawing of soundings on top of OBSTRN/UWTROC features (points, lines and areas).



3.6 Diagrams



OBSTRN06

Conditional symbology procedure for symbolizing objects of the class obstruction (OBSTRN) and underwater rock (UWTROC).

GE	T THE OBJECT WHICH IS	CALLING THIS PROCEDURE	
GE			
VEO	(value	of sounding) GIVEN ?	
162		SET THE LOCAL VARIABLE "LEAST DEPTH" TO LINKNO	NO
SE	T THE LOCAL	GET THE VALUE OF THE ATTRIBUTES 'WATLEY' AND	'EXPSOU'
1 VA 1 DE	ARIABLE EPTH_VALUE'	DEPVALO2 ('LEAST DEPTH')	2.11 000
EQ	UAL TO 'VALSOU'		
SE GF	ET THE VIEWING ROUP TO 34051	PERFORMS THE SYMBOLOGY PROCEDURE 'DEPVALO' THE LOCAL VARIABLES 'LEAST_DEPTH' AND 'SEABE	2' WHICH RETURNS A VALUE FOR D_DEPTH'.
SNDF	RMO3 ('DEPTH_VALUE')	Note: 'seabed_depth' is returned from depval02.	but is not used by this procedure.
		IS THE VALUE OF TH	E LOCAL VARIABLE
	PERFORM THE SYMBOLOGY	LEAST_DEPTH EQUA	AL TO UNKNOWN ?
	PROCEDURE SNDERMO 37	YES	NO
	WHICH RETURNS A LIST OF SOUNDING SYMBOLS.	SET THE LOCAL VARIABLE 'DEPTH_VALUE' TO A FAIL-SAFE DEPTH BASED ON THE VALUE OF THE ATTRIBUTES 'CATOBS' AND 'WATLEV':	
	PASS 'DEPTH_VALUE'	IF 'CATOBS'=6 (foul area) THEN 'DEPTH_VALUE'=0.01	
	REMEMBER THE	ELSE IF 'WATLEV'=5 (awash at low water) THEN 'DEPTH_VALUE' = 0	SET THE LOCAL VARIABLE
	SOUNDING SYMBOL(S).	ELSE IF 'WATLEV'=3 (always under water) THEN 'DEPTH_VALUE' = 0.01	'DEPTH_VALUE' EQUAL TO THE LOCAL VARIABLE 'LEAST_DEPTH'.
		ELSE F 'WATLEV'=4 (covers and uncovers) THEN 'DEPTH_VALUE' = -15	
		ELSE IF 'WATLEV'=1 OR 2 (always dry) THEN 'DEPTH_VALUE' = -15	
L		ELSE 'WATLEV' = ' ' (unknown or missing) THEN 'DEPTH_VALUE' = -15	
UDW	VHAZO4 ('DEPTH	_VALUE')	
[PERFORM THE SYMBOLO	GY PROCEDURE 'UDWHAZO4' WHICH RETURNS A FLAG IN OLATED DANGER SYMBOL TIMO PS Add, 2 1,3] AND THE	DICATING WHETHER OR
	PASS 'DEPTH_VALUE' O	N TO IT.	
		IS THE OBJECT OF TYPE POINT ?	
YES			NO
		IS THE OBJECT O	OF TYPE LINE ?
CON	NTINUATION A	YES	THEN IS TYPE AREA
		CONTINUATION B	CONTINUATION C



OUAPNT02	55 m (1977 - 1996) (1997 - 199				
PERFORM THE SYMBOLOGY PROCEDURE TO OR NOT TO DISPLAY THE LOW ACCURAC	UAPNED2" WHCH RETURNS A FLAG INDICATING WHETH Y SYNBOL AND RETURNS THE SELECTED SYMBOL	ER			
	HAS THE PRO THE	CEDU ISOL Sł	RE "UD" ATED E KOULD	WHA2 DANG BE S	204' INDICATED ER SYNBOL HOWN ?
SHOW THE SYNBOL SELECTED BY 'UDWHAZO	4' AT THE CALLING OBJECTS LOCATION	_	-	-	
IF SO INDICATED BY THE PROCEDURE 'OUAPNT LOW ACCURACY SYMBOL AT THE CALLING OF	02', SHOW THE RETURNED JECT'S LOCATION				
SIMBOLIZATION IS FINISHED EXIT PROCEDURE					DO INDITING NERE
SET THE LOCAL VARIABLE "SOUNDING" TO FALS	E TO NOICATE THAT SOUNDING				10
STMBLU(S) RETORIED FROM SILFRINGS SHOO	IS THE VALUE (OF, TH	E ATTE	RBUT	6
IES IS THE CALL THE TYPE SELECT THE APPROPRIATE SYMBOL AND DECIDE IF THE SOUNDING SHOULD BE SHOWN. IF WAILEV'=3 (dways submerged), THEN SELECT 'SY(UNADCEND1)' AND 'SOUNDING'=TRUE ELSE IF 'WAILEV'=4 (covers and uncovers) THEN SELECT 'SY(UNADCO4)' AND 'SOUNDING'=TALSE ELSE IF 'WAILEV'=5 (dwash) THEN SELECT 'SY(UNADCO4)' AND 'SOUNDING'=TALSE ELSE (DEFAULT) SELECT 'SY(DANGERD1)' AND 'SOUNDING'=TRUE	INC OBJECT OF "UWTROC" NO CALLING OBJECT MUST BE OF THE TYPE OBSTEM, F "CATOBSTEM (four area). THEN SELECT "SY(DANGERD1" AND "SOUNDING"=TRUE ELSE F "WATLEV"#1 (partly submerged at HW) OR 2 (always dry). THEN SELECT "SY(OBSTEN1:1) AND "SOUNDING"=FALSE ELSE F "WATLEV"#1 (always submerged) THEN SELECT "SY(DANGERD1)" AND "SOUNDING"=TRUE ELSE F "WATLEV"#4 (covers and uncovers) OR 5 (awash) THEN SELECT "SY(DANGERD3)" AND "SOUNDING"=TRUE ELSE (DEFAULT) SELECT "SY(DANGERD1)" AND "SOUNDING"=TRUE	SELECT 'SY (DANG ERO2)' AND 'SO UNDING-'TRUE	F "WAILEV'=S (dways submerged), THEN SELECT "SY(UWTHOCDS)"	ELSE (DEFAULT) SELECT 'SY(UWTROCD4)	CALLING OBJECT MUST BE OF THE TYPE "OBSTRM". F "CATOBS'=6 (foul oreo) THEN SELECT "SY(OBSTRND1)' ELSE F "WATLEV'=1 (parthy submerged of H OR 2 (always dry). THEN SELECT "SY(OBSTRND1)' ELSE F "WATLEV'=3 (clways submerged). THEN SELECT "SY(OBSTRND1)' ELSE F "WATLEV'=4 (covers and uncovers) OR 5 (awash) THEN SELECT "SY(OBSTRND3)' ELSE (DEFAULT) SELECT "SY(OBSTRND1)'
SHOW THE SELECTED SYMBOL AND THE SOU returned from SNDFRM03) AT THE CALLING F SO INDICATED BY THE PROCEDURE 'QUAPHT LOW ACCURACY SYMBOL AT THE CALLING OB SYMBOLIZATION IS FINSHED EXIT PROCEDURE	NDING SYMBOL(S) (IF REQUIRED - COBJECT'S LOCATION 02', SHOW THE RETURNED JECT'S LOCATION				







OBSTRN06 Continuation C

Area objects, obstructions (OBSTRN)

	HAS THE PROCE	DURE 'UDWHAZO4' I	IDICATED		
	THAT THE	SOLATED DANGER S SHOULD BE SHOWN	YMBOL ?		
S PRESENT THE AREA OR FOT WITH AN O					
THE COLOUR 'DEPVS', AND THE AREA P	ACCE COLOGN FILE WITH				
SYMBOLIZE THE AREA BOUNDARY AS A IN THE COLOUR 'CHBLK' LS(DOTT, 2, CH	DOTTED LINE, 2 UNITS WIDE, BLK)				
SHOW THE SYMBOL RETURNED BY 'UDWI IN THE CENTRE OF THE AREA.	HAZO4'		DO		
IF SO INDICATED BY THE PROCEDURE 'Q	UAPNTO2', SHOW THE RETURNED E OF THE AREA		NOTHING HERE		
7					
SYMBOLIZATION IS FINISHED					
<u> </u>	IS THE VALUE OF THE	E ATTRIBUTE			
IS THE VALUE OF	THE ATTRIBUTE	SELECT THE APPRO	PRIATE SYMBOL		
"VALSOU" LE	SS THAN	AS THE DEFAULT S	YMBOLIZATION		
5 10 20	m.? NO	THEN SELECT 'AP(GLARO1);LS(DOTT, 2, CHB		
SYMBOLIZE THE AREA BOUNDARY WITH	SYMBOLIZE THE AREA BOUNDARY AS LS(DASH, 2, CHGRD)	ELSE IF 'WATLEV'=1 (partly submerged at HW THEN SELECT 'AC(CHERN') S(SOLD 2 CSTLN)			
A DOTTED LINE, 2 UNITS WIDE, COLOUR 'CHBLK' 'LS(DOTT, 2, CHBLK)'		ELSE IF 'WATLEV'=2 (always dry) THEN SELECT 'AC(CHBRN);LS(SOLD, 2, CSTLN)'			
		ELSE IF 'WATLEV'=4 (covers and uncovers) THEN SELECT 'AC(DEPIT);LS(DASH , 2, CSTLN)			
			ELSE IF 'WATLEV'=5 (awash) THEN SELECT 'AC(DEPVS):LS(DOTT, 2, CHBLK)		
	D 5004	THEN SELECT AU			
HOW THE SOUNDING SYMBOL(S) RETURNE SNDFRM03' IN THE CENTRE OF THE AREA	D FROM	ELSE IF 'WATLEV'= THEN SELECT 'AC(=3 (always submerged) DEPVS):LS(DOTT, 2, CHBLK)		
HOW THE SOUNDING SYMBOL(S) RETURNE SNDFRM03' IN THE CENTRE OF THE AREA	D FROM	ELSE IF 'WATLEY'= THEN SELECT 'AC(ELSE (DEFAULT) S 'AC(DEPVS);LS(DO'	-3 (always submerged) DEPVS):LS(DOTT, 2, CHBLK) ELECT IT, 2, CHBLK)		







WRECKS04 Continuation A

Point objects, wrecks (WRECKS)

IS THE VALUE OF TH	E ATTRBUTE 'VALSOU'	N GVEN 7 N SELECT THE APPROPRIATE SYMPON -				
ES	THEN "VALSOU" > 20	40 IF 'CATWRK'=1 (non-dangerous wreck) AND 'WATLEV'=3 (dways submerged), T THEN SELECT 'SY(WRECK504)'				
SELECT 'SY(DANGERO1)'	SELECT 'SY(DANGERO 2)'	ELSE F 'CATWRK'=2 (dangerous wreck) AND 'WATLEV'=3 (always submerged THEN SELECT 'SY(WRECKSD5)'				
SHOW THE STIPATED SAUDOL(S)		ELSE F 'CATWRK'=4 (wreck showing most/masts) THEN SELECT 'SY(WRECKSD1)' ELSE F 'CATWRK'=5 (wreck showing any partial of hull or superstructure) THEN SELECT 'SY(WRECKSD1)' ELSE F 'WATLEV'=1 (partly submerged of HW) THEN SELECT 'SY(WRECKSD1)' ELSE F 'WATLEV'=2 (always dry) THEN SELECT 'SY(WRECKSD1)' ELSE F 'WATLEV'=5 (awash) THEN SELECT 'SY(WRECKSD1)' ELSE F 'WATLEV'=4 (acvers and uncovers) THEN SELECT 'SY(WRECKSD1)' ELSE (DEFAULT) SELECT 'SY(WRECKSD5)'				
(danger, bw occurrey) AT THE CALLING OBJECT'S LOCATION						
SHOW THE SOUNDING SYMBOL(S) (returned from SHOFINO3.) ON TOP AT THE CALLING OBJECT'S LOCATION						
DQ NOTHING HERE						
						SHOW THE SELECTED SYMBOL(S) (wreek, law accuracy) AT THE CALLING CODIECT'S LOCATION
				/		75
				SYMBOLIZATION IS FINISHED EXIT PROCEDURE		



	NENT OF THE OBJECT, PE	REORM THIS LOOP :			
GET THE SPATIAL OBJ	ECT		IS THE SPATIA	ATTRENTE	
ES			'QUAFOS'	GIVEN 7	
ES	IS THE VALUE OF 1	THE ATTREVITE 'QUAPOS' 4', '5', '8', 8', CR '9' ?		0	
POSITION IS INACOURATE SYMEDUZE THE AREA BOUNDARY SPATIAL COMPONENT WITH 'LC(LOWADC41)' GO TO TOP OF LODP		POSITION IS ACCURATE		POSITION IS ACCURATE	
HAS T THAT SH	THE PROCEDURE "UDWHAZO" THE ISOLATED DANGER ST WULD BE SHOWN ?	(* INDICATED MBDL			
		IS THE VA	LUE OF THE ATTRI	PUTE	
	YES IS THE VALUE OF THE ATTRIBUTE VALSOU LESS THAN OF EQUAL TO 20m ? SYMBOLIZATION FOR THE AREA BOUNDARY SPATIAL COMPONENT				
SPATIAL COMPONENT	165	THEN WALSOUT > 20	OM ELSE IF WATLE	V=2 (clwcys cry) THEN SELECT 'LS(SOLD, 2, CSTLN)'	
SPATIAL COMPONENT WITH A DOTTED LINE, 2 UNITS WOE, COLOUR "CHELK" "LS(DOTT, 2, CHELK")	SYMBOLIZE THE AREA BOUNDARY SPATUL COMPONENT WITH A DOTTED LINE, 2 UNITS WOR, COLCORE CHELK 'LS(DOTT, 2, CHELK)'	THEN VALSOU > 20 SYMBOLIZE THE AREA BOUNDARY SPATIAL COMPONENT WITH A DASHED LINE, 2 UNITS WIDE, COLOUR, CHELK 'LS(DASH, 2, CHELK)	ELSE IF WATLE ELSE IF WATLE ELSE IF WATLE ELSE IF WATLE ELSE (DEFAULT SYMBOLIZE TH SPATIAL COMP SELECTED LINI	V=2 (elweys dry) THEN SELECT %S(SOLD, 2, CSTLN) V=4 (convers and unconvers) THEN SELECT %S(DASH, 2, CST V=5 (awash) THEN SELECT %S(DOTT, 2, CSTLN) V=3 (elweys submarged) THEN SELECT %S(DOTT, 2, CSTLN)) SELECT %S(DOTT, 2, CSTLN) E AREA BOUNDARY ONEDT WITH THE SYMBOLOGY	
SPATIAL COMPONENT WITH A DOTTED LINE, 2 UNITS WOE, COLOUR "CHELK" "LS(DOTT, 2, CHELK)"	SYMBOLIZE THE AREA BOUNDARY SPATUAL COMPONENT WITH A DOTTED LINE, 2 UNITS WIDE, COLOUR "CHELK" "LS(DOTT, 2, CHELK)"	THEN WALSOU > 20 SYMPOLIZE THE AREA BOUNDARY SPATIAL COMPONENT WITH A DASHED LINE, 2 UNIT'S WIDE, 2 UNIT'S WIDE, COLOUR, "CHELK" US(DASH, 2, CHELK") IS THE VALU	Im ELSE IF WATLE ELSE IF WATLE ELSE IF WATLE ELSE IF WATLE ELSE (DEFAULT SYMBOLIZE TH SPATIAL COMP SELECTED LINI IE OF THE ATTRIBU ISOUT GIVEN ?	V=2 (clways dry) THEN SELECT %S(SOLD, 2, CSTLN) V=4 (covers and uncovers) THEN SELECT %S(DASH, 2, CST V=5 (cwash) THEN SELECT %S(DOTT, 2, CSTLN) V=3 (clways submerged) THEN SELECT %S(DOTT, 2, CSTLN)) SELECT %S(DOTT, 2, CSTLN) E AREA BOUNDARY ONEDIT WIT THE % SYMBOLOGY TE	
SPATIAL COMPONENT WITH A DOTTED LINE, 2 UNTS WDE, COLOUR 'CHELK' 'L'S(DOTT, 2, CHELK' 'L'S(DOTT, 2, CHELK') HERE RECURED, SHOW INVEOL(S) RETURNED B NO 'OLAPHTO 2' IN THE HE AREA	SYMBOLIZE THE AREA BOUNDARY SPATUL COMPONENT WITH A DOTTED LINE, 2 UNITS WOE, COLOUP CHELK 'LS(DOTT, 2, CHELK)' 'LS(DOTT, 2, CHELK)'	THEN WALSOU > 20 SYMPOLIZE THE AREA BOUNDARY SPATIAL COMPONENT WITH A DASHED LINE, 2 UNITS WIDE COLOUR, "CHELK" LS(DASH, 2, CHELK) IS THE VALL 'WW	Im ELSE F WATLE ELSE F WATLE ELSE F WATLE ELSE F WATLE ELSE (DEFAULT SYMBOLIZE TH SPATIAL COMP SELECTED LINI USOU' GIVEN ? SELECT TH AS DEFAUL F WATLEV= ELSE F WAT ELSE F WATLEV=	V=2 (olways dry) THEN SELECT 'LS(SOLD, 2, CSTLN)' V=4 (covers and uncovers) THEN SELECT 'LS(DASH, 2, CST V=5 (cwash) THEN SELECT 'LS(DOTT, 2, CSTLN)' V=3 (clways submarged) THEN SELECT 'LS(DOTT, 2, CSTLN)) SELECT 'LS(BOTT, 2, CSTLN)' E APEA BOURDARY 'ONEDIT WITH THE E APPROPRIATE ASEA FILL T SYMBOLOGY TE E APPROPRIATE ASEA FILL T SYMBOLOGY T (partly submarged of HW) THEN SELECT 'AC(CHERN)' ILEV'=2 (clways dry) THEN SELECT 'AC(CHERN)' ILEV'=4 (covers and uncovers) THEN SELECT 'AC(DEPIT)' ILEV'=4 (covers and uncovers) THEN SELECT 'AC(DEPIT)' ILEV'=4 (covers and uncovers) THEN SELECT 'AC(DEPIT)'	