

Search Diver

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Search Diver is a microgame involving dive planning and underwater search. Two players compete to be the first to locate a specific search target such as a drowning victim or a boat wreck. Players must plan their dives to maximize their chances of locating the target without violating dive safety guidelines.

Warning: This microgame is intended to be used for recreational purposes only. The information contained herein should not be considered a substitute for formal scuba training administered by qualified instructors. The dive tables included in this microgame should not be used for planning actual dives. If you are interested in scuba diving, contact your nearest dive shop or go on the web at www.scubadiving.com.

Setting up.

Print out the map, Time Track, and the markers and cut out the markers.

Select one of the Search Target markers (sunken ship, drowning victim, or downed aircraft) and eight to sixteen of the dummy Search Target markers (scuba diver). The more dummy markers used, the longer the game. Place all markers face down and shuffle them together. Players alternate placing Search Target markers randomly on the map, one per hex, without looking at the face side.

Players decide who will be the “Red” diver (red and white national diving flag) and who will be the “Blue” diver (blue and white international flag). Each player finds the Dive marker with the “A” (Dive Group) printed on it and the Last Dive marker and places them on the Time Track at 6AM. Place the Time marker at 6AM also. Flip a coin to see who goes first.

How to Play

1. Place a Last Dive marker on the Time Track at the same time as the Dive marker. Select an area (hex) to search by moving the Dive marker from the Time Track to hex on the map.
2. Note the depth of the water in the hex to be searched. Each color represents a different depth, and one hex on the map contains a number representing the depth of all hexes of that color.
3. Look up Residual Nitrogen Time (RNT) for the depth of the hex being searched and the Dive Group (the letter printed on the Dive marker) in Table 3.
4. Choose an Actual Bottom Time (ABT). This time must not be greater than the adjusted no-decompression limit in Table 3 for the depth and Dive Group letter.
5. Calculate Total Bottom Time ($TBT = RNT + ABT$)
6. Look up the new Dive Group letter from Table 1.
7. Exchange the old Dive marker for new Dive marker with new Dive Group letter.
8. Conduct Search. Using Table 4, cross reference the depth of the hex searched with the ABT (not the TBT!) and determine what type of search (Hasty, Thorough, Complete) has been conducted. Next, look in Table 5. for the minimum die roll needed to reveal the target marker. Roll 1D6 and make any adjustments to the roll based on previous "Special Events." If the adjusted die roll is equal to or greater than the minimum die roll required, flip the Search Target marker to its face up side. If the marker shows only a scuba diver, the game continues. If the marker shows the target of the search, the player revealing the marker has located the target of the search and wins the game.
9. If a player rolls an un-adjusted 6 when conducting a search, the search fails but a Special Event has occurred. Roll 1D6 and consult Table 6 to determine what the effect is.
10. Schedule the next dive by moving the Dive marker to the time of next dive on Time Track.
11. Calculate the Surface Interval Time (SIT) as the difference between the Last Dive and the next scheduled dive.
12. Determine the new Dive Group letter based on SIT in Table 2.
13. Exchange the Dive marker on the Time Track for new Dive marker with new Dive Group letter.
14. Advance the Time marker to next dive of any player. That player goes next. In case of two or more divers diving at the same time, the diver with the lower Dive Group letter goes first. In case of a tie, flip a coin.

Examples of Play

Both players Diver markers are A Dive Group and are at 6AM. The Blue player wins the coin toss and decides to search hex 1607, which is a 40 feet, and places his Dive marker on the map. He opts to search for 21 minutes ABT, the minimum required to conduct a Thorough search. Referring to Table 3, he notes that an A diver has an RNT of 9 minutes at 40 feet. He adds his RNT to his ABT to get a TBT of 30 minutes ($TBT=RNT + ABT = 9 + 21 = 30$). He refers to Table 1 and determines that a 30 minute TBT dive to 40 feet results in a new Dive Group letter of D. He exchanges the A Dive marker with the D (leaving it on the map). Next, he conducts his search. Since a 21 minute ABT dive to 40 feet is a Thorough search, Blue must roll a 4 or better (from Table 5) in order to reveal the Search Target. He rolls a 5, and turns the Search Target marker over to reveal a scuba diver. He has failed to locate the target of the search on this dive. He moves his

Dive Marker (which is now a D) to the Time Track for 8AM. His Last Dive marker is still back at 6AM, so he notes that his Surface Interval will be two hours (2:00). Referring to Table 2, he notes that a D diver on the surface for 1:10 to 2:38 becomes a C diver. He exchanges the D marker for a C, moves his Last Dive marker to 8AM, and his turn is over.

The Red player goes next. He opts to make two dives an hour apart (one at 6AM and one at 7AM) and fails to locate the search target. He schedules his next dive for 2PM, so it is Blue's turn again.

Blue considers moving his Dive Marker (C) to attempt to reveal a face-down Search Target marker in hex 1809, which is 80 feet. As a C diver, he notes from Table 3 that the no-decompression limit for 80 feet is 20 minutes. However, Table 4. states that at >60, a dive of 20 minutes or less is not adequate to perform a search (No Search). Instead, Blue moves his Dive Marker to 1710 to attempt to reveal a Search Target in that hex at a depth of 60 feet. From Table 3, Blue notes he could dive to 60 feet for a maximum of 41 minutes. This would allow (according to Table 4) just enough time to conduct a Complete Search, so Blue decides on an ABT of 41 minutes. Referring again to Table 3, Blue notes that his RNT at 60 feet as a C diver is 14 minutes. He adds ABT to RNT to get a TBT of 55 minutes. Referring to Table 1, Blue determines that a dive to 60 feet for 55 minutes makes him an I diver. He exchanges his C marker for an I marker. Blue conducts a search by rolling 1D6 and comparing to the minimum roll of 2 required to reveal a Search Target marker. He rolls a 1, so he cannot turn the Search Target marker over.

Blue must now decide on when to dive again that day, if at all. He notes in Table 2 that a SIT of between 3:44 and 5:12 would allow an I diver to move back to a C. He exchanges his Dive marker (I becomes C) and moves it and his Last Dive marker to 12NOON.

Table 1:

No-Decompression Limits and Repetitive Group Designation Table For No-Decompression Air Dives

Depth feet / metres	No-Deco Limits (min)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
10 3.0		60	120	210	300											
15 4.6		35	70	110	160	225	350									
20 6.1		25	50	75	100	135	180	240	325							
25 7.6		20	35	55	75	100	125	160	195	245	315					
30 9.1		15	30	45	60	75	95	120	145	170	205	250	310			
35 10.7	310	5	15	25	40	50	60	80	100	120	140	160	190	220	270	310
40 12.2	200	5	15	25	30	40	50	70	80	100	110	130	150	170	200	
50 15.2	100		10	15	25	30	40	50	60	70	80	90	100			
60 18.2	60		10	15	20	25	30	40	50	55	60					
70 21.3	50		5	10	15	20	30	35	40	45	50					
80 24.4	40		5	10	15	20	25	30	35	40						
90 27.4	30		5	10	12	15	20	25	30							
100 30.5	25		5	7	10	15	20	22	25							
110 33.5	20			5	10	13	15	20								
120 36.6	15			5	10	12	15									
130 39.6	10			5	8	10										
140 42.7	10			5	7	10										
150 45.7	5			5												
160 48.8	5					5										
170 51.8	5					5										
180 54.8	5					5										
190 59.9	5					5										

**U.S. Navy
Dive Tables
Table 1**

Table 3:

PRESSURE GROUP AT END OF SURFACE INTERVAL

Depth (feet)	Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A	
35	205	188	168	152	139	127	117	108	100	92	85	79	73	67	62	57	52	48	44	40	36	32	29	25	19	10	
40	140	129	120	111	104	97	91	85	79	74	69	64	60	55	51	48	44	40	37	34	31	27	25	22	16	9	
50			80	75	71	67	63	60	57	53	50	47	44	41	38	36	33	31	28	26	24	21	19	17	13	7	
60				55	54	52	49	47	44	42	39	37	35	33	31	29	27	25	23	21	19	17	16	14	11	6	
70						1	3	6	8	11	13	16	18	20	22	24	26	28	30	32	34	36	38	39	41	44	49
80								40	38	36	34	33	31	29	27	26	24	22	21	19	18	16	15	13	12	9	5
90									2	4	6	7	9	11	13	14	16	18	19	21	22	24	25	27	28	31	35
100									30	29	28	26	25	23	22	21	19	18	17	15	14	13	11	10	8	4	
110										25	24	23	22	21	19	18	17	16	15	13	12	11	10	9	7	4	
120											20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	3	
130												2	3	4	5	6	7	8	9	10	11	12	14	17	18	21	
													16	15	14	14	13	12	11	10	9	8	7	6	3		
																13	12	12	11	10	9	8	7	6	5	3	
																			2	3	4	5	6	7	8	10	
																				10	9	8	8	7	6	5	3
																							3	4	5	7	

TABLE 3 ♦ REPETITIVE DIVE TIMETABLE

White area indicates *Residual Nitrogen Time* (RNT) in minutes and is to be added to Actual Bottom Time (ABT)

Blue area indicates adjusted no-decompression limits. *Actual Bottom Time* (ABT) should not exceed this number.

$$\frac{\text{RNT} + \text{ABT}}{= \text{TBT}}$$

RETURN TO TABLE ONE

25
30

Table 4: Search Table

Depth\ABT	0-20	21-40	>40
0-30	Thorough	Complete	Complete
31-60	Hasty	Thorough	Complete
>60	No search	Hasty	Thorough

Table 5:

Search	Minimum Roll to Reveal
No search	-
Hasty	6
Thorough	4
Complete	2

Table 6:

Die Roll	Special Event
1	Shorthanded. Members of your search team call it a day and go home. Add one to all Search rolls for the rest of the day.
2	Equipment Malfunction. Next Surface Interval must be at least 3 hours long.
3	Fatigued. Next Surface Interval must be at least 2 hours long.
4	Second Look. Conduct an additional “free” Hasty Search of the Area just Searched.
5	Good Visibility. Conduct an additional “free” Thorough Search of the Area just searched.
6	Excellent Visibility. Conduct one additional “free” Hasty Search of any Area adjacent to the one just searched.

SEARCH DIVER TIME TRACK

