be exceeded nor the decompression stops and time of stops as listed in table I be reduced. When this time is exceeded, the casualty treatment prescribed elsewhere shall be followed.

The length of time at each stop as listed indicates the time which must actually be spent at that stop and does not include the time necessary to pass from any stop to the next shallower one. The exposure time listed includes the time consumed in descending, i. e., the interval of time between leaving the surface and the beginning of the ascent in regular decompression and the interval of time between leaving the surface and the time the stage starts to the surface with the diver on it in surface decompression.

In extremely cold water, desaturation of the tissues is less rapid but the following table is adequate for all water temperatures which may be expected in normal service.

Decompression table No. 1

Depth of dive (feet)	Time from leaving surface to beginning of ascent for regular decompression or to "upstage" for surface decompression	Stops at different depths in minutes. Except in emergencies speed on ascent between stops should not exceed 25 feet per minute.						Total time of decompression; sum of times at various stops	Approximate total time for values in column 4 plus time between stops
		Feet 60	*Feet 50*	*Feet 40*	*Feet 30*	*Feet 20*	*Feet 10*		
	Minutes							*Minutes*	*Minutes*
40	120						0	0	1
40	180						2	2	3
40	Opt.* 240						4	4	5
40	300						6	6	7
50	78						0	0	2
50	120						2	2	4
50	150						5	5	7
50	Opt.* 190						9	9	11
50	300						12	12	14
60	55						0	0	2
60	75						2	2	4
60	110						13	13	15
60	Opt.* 150					5	15	20	22
60	180					7	16	23	25
60	210					8	18	26	28
70	43						0	0	2
70	60						4	4	7
70	75						13	13	16
70	90					4	16	20	23
70	Opt.* 120					13	16	29	32
70	150					18	21	39	42
70	180					21	32	53	56
80	35						0	0	3
80	50						6	6	9
80	70					16	14	30	33
80	100					20	16	36	39
80	Opt.* 115					22	26	48	51
80	150					28	29	57	60
90	30						0	0	3
90	45						6	6	9
90	60					4	16	20	24
90	75					18	14	32	36
90	Opt.* 95				2	27	21	50	54
90	130				9	27	29	65	69
100	25						0	0	5
100	40						12	12	17
100	60					16	16	32	37
100	75					27	21	48	53
100	Opt.* 85				6	28	21	55	60
100	90				8	27	24	59	64
100	120				17	28	48	93	98
110	20						0	0	5
110	35						12	12	17

Decompression table No. 1—Continued

Depth of dive (feet)	Time from leaving surface to beginning of ascent for regular decompression or to "upstage" for surface decompression	Stops at different depths in minutes. Except in emergencies speed on ascent between stops should not exceed 25 feet per minute						Total time of decompression; sum of times at various stops	Approximate total time for ascent; column 4 plus time between stops
	Minutes	*Feet 60*	*Feet 50*	*Feet 40*	*Feet 30*	*Feet 20*	*Feet 10*	*Minutes*	*Minutes*
110	55					22	21	43	48
110 Opt.*	75				14	27	37	78	83
110	105			2	22	29	50	103	108
120	18						0	0	5
120	30						11	11	16
120	45					18	21	39	44
120 Opt.*	65				13	28	32	73	78
120	100			5	22	27	69	123	128
130	15						0	0	5
130	35					11	15	26	31
130	52				6	28	28	62	68
130 Opt.*	60				13	28	28	69	75
130	90			9	22	28	69	128	134
140	15						4	4	10
140	30					8	21	29	35
140	45				5	27	27	59	65
140 Opt.*	55				15	28	32	75	81
140	85			14	22	32	69	137	143
150	15						7	7	13
150	30					13	21	34	40
150	38					28	30	58	64
150 Opt.*	50				16	28	32	76	82
150	80			18	23	32	68	141	147

Depth of dive (feet)	Time from leaving surface to beginning of ascent for regular decompression or to "upstage" for surface decompression	Stops at different depths in minutes								Total time of decompression; sum of times at various stops	Approximate total time for ascent; column 4 plus time between stops
	Minutes	*Ft. 90*	*Ft. 80*	*Ft. 70*	*Ft. 60*	*Ft. 50*	*Ft. 40*	*Ft. 30*	*Ft. 20*	*Ft. 10*	*Minutes*	*Minutes*
160	15									9	9	16
160	34								27	28	55	62
160 Opt.*	45							17	28	43	88	95
160	75					3	19	23	34	68	147	154
170	15									11	11	18
170	30								24	27	51	58
170 Opt.*	40							19	28	46	93	100
170	75					9	19	23	38	68	157	165
185	15									25	25	32
185	26								24	37	61	69
185 Opt.*	35							19	28	46	93	101
185	65				18	18	23	37	65	51	212	220
200	15									32	32	40
200	23								23	37	60	68
200 Opt.*	35							22	28	46	96	104
200	60			5	18	18	23	37	65	51	217	226
210	15									35	35	44
210 Opt.*	30						5	16	28	40	89	98
210	55			6	18	18	23	37	65	51	218	227
225	15								6	35	41	50
225 Opt.*	27						22	26	35	48	131	140
225	60			13	18	18	23	47	65	83	267	276
230	15								17	37	54	64
230 Opt.*	25					2	23	26	35	51	137	147
230	50		12	14	17	19	29	49	65	83	288	299
300	12								20	37	57	69
300 Opt.*	20					9	23	26	35	51	144	156
300	45	6	14	15	17	18	31	49	65	83	298	311

*These are the optimum exposure times for each depth which represent the best balance between length of work period and amount of useful work for the average diver. Exposure beyond these times is permitted only under special conditions as described in the text.

TABLE II.—*Limits of depths and exposure for surface decompression*

	Minutes
100 feet	85
110 feet	75
120 feet	60
130 feet	55
140 feet	45
150 feet	40
170 feet	30

Repeated dives. In considering precautions for insuring the safety of the diver in making his ascent, certain rules in regard to the number of dives an individual may make in short periods of time shall be observed. Specifically, a diver should not, except in emergencies, make more than one dive of any considerable depth in 24 hours. However, should it become necessary for one individual to make more than one dive in 24 hours, his ascent on the latter of the two dives should be governed by the following rule: Take the total combined time of exposure on both dives and use a decompression for that exposure at the depth of the latter dive.

Timekeeper. The timekeeper shall keep an accurate record of the time required for the diver to reach the bottom, the time of exposure on the bottom, the time of ascent to the first stop, and the time spent at each stop during the subsequent ascent. If there is any doubt as to the time that the diver has spent on any phase of the ascent, the time allowance should be made in the diver's favor. These times shall be carefully kept and recorded as in the following example:

	a. m.
Entered water	10.00
Started descent	10.05
On bottom	10.07
Started ascent	10.30
First stop, 50 feet	10.32
Second stop, 40 feet	10.37

Instructions to attendants. The attendant shall always keep himself informed as to the depth of the diver under water. This can be estimated by the length of hose out and, when diving with air pumps, by the pressure registered on the diving gages. The diving hose usually tends straight up and down, especially in shallow depths, provided that the sweep of the current is not too great. After the diver is on the stage the depth can be readily ascertained by the markers on the stage lines.

The attendant shall frequently contact the diver by telephone or signal while on the bottom and on the stage to ascertain if all is well.

The attendant shall give the diver a few minutes' notice before the expiration of the diver's time on the bottom, so that the diver can make the necessary preparation prior to his ascent and not exceed his limit of stay on the bottom.

During the time that the diver is making preparations for the ascent the attendant shall remove any slack in the lines,

Maximum and minimum concentrations of oxygen.

In deciding the oxygen concentration of the oxygen-helium mixture to be used for divers, care should be exercised to insure that the maximum concentration does not exceed 2½ atmospheres (absolute) of pure oxygen at the depths of the dive and that the minimum in all cases is sufficient to insure enough oxygen to meet the diver's requirements under all conditions of descent, work on the bottom, and ascent. A minimum of 15 percent has been the practice in training.

TABLE I.—*Rate of ascent in feet per minute*

Depth	Oxygen percent								
	10	15	20	25	30	35	40	45	50
50	10	10	20	20	30	30	40	50	75
100	10	20	30	40	50	75	----	----	----
150	10	30	40	50	75	----	----	----	----
200	10	40	50	75	----	----	----	----	----
250	20	50	75	----	----	----	----	----	----
300	20	50	75	----	----	----	----	----	----
350	30	75	----	----	----	----	----	----	----
400	30	75	----	Rate, feet per minute					----
450	40	75	----	----	----	----	----	----	----
500	40	75	----	----	----	----	----	----	----
550	50	75	----	----	----	----	----	----	----
600	50	75	----	----	----	----	----	----	----

NOTE.—75 feet per minute is the maximum practical rate.

TABLE II.—*Helium-oxygen—table of partial pressures—40 to 600 feet*

Depth	Percentage of oxygen used												
	13	15	17	19	21	23	25	30	35	40	45	50	55
40	65	64	62	61	59	58	56	-----	-----	-----	-----	-----	-----
50	74	72	71	69	68	66	64	60	56	-----	-----	-----	-----
60	83	81	79	78	76	74	72	67	63	58	53	-----	-----
70	92	90	88	86	84	82	80	75	69	64	59	54	-----
80	101	99	96	94	92	90	87	82	76	71	65	59	53
90	110	107	105	103	100	98	95	89	83	77	71	65	58
100	119	116	113	111	108	105	103	96	90	83	76	70	63
110	128	124	121	119	116	113	110	103	97	89	82	75	67
120	136	133	130	127	124	121	118	110	103	95	87	80	72
130	145	142	139	135	132	129	126	118	109	101	93	85	-----
140	154	151	147	144	140	137	133	125	116	107	99		
150	163	159	156	152	148	145	141	132	123	114	104		
160	172	168	164	160	157	153	149	139	129	120			
170	181	177	173	169	165	160	156	146	136	126			
180	190	186	181	177	173	169	164	154	143				
190	199	194	190	185	181	176	172	161	150				
200	208	203	198	194	189	184	180	168	156				
210	216	212	207	202	197	192	187	175					
220	225	220	215	210	205	200	195	183					
230	234	229	224	219	213	208	203	190					
240	243	238	232	227	222	216	211	197					
250	252	247	241	235	230	224	218						
260	261	255	249	243	237	231	225						
270	270	264	258	252	246	240	233						
280	280	273	267	260	253	247	241						
290	288	281	275	268	262	255	249						
300	297	290	283	277	270	263	257						
310	306	299	292	285	278	271							
320	314	307	300	293	286	279							
330	323	316	309	302	294	287							
340	332	325	317	310	303	295							
350	341	334	326	318	311	303							
360	350	343	335	327	319								
370	359	351	343	335	327								
380	368	359	351	343	334								
390	377	368	360	351									
400	386	377	368	359									
410	395	386	377	368									
420	403	394	385	376									
430	412	403	394	385									
440	421	412	403										
450	430	420	410										
460	439	429	419										
470	448	438	428										
480	457	447	437										
490	466	456	446										
500	475	465											
510	484	473											
520	493	482											
530	502	492											
540	511	500											
550	520	509											
560	529	518											
570	538	527											
580	548												
590	557												
600	566												

1. Obtain partial pressure from table II.
2. Time of dive is from time diver starts down until beginning of ascent.
3. When diver reaches 60-foot stop, or 50-foot stop when first stop is at 50 feet, shift to pure oxygen and have diver "ventilate" with 25 cubic feet of pure oxygen to remove helium from dress and hose. Finish decompression with diver breathing pure oxygen.

TABLE III.—*Decompression tables*

Partial pressure (feet)	Time of dive in minutes	Stops, 50 feet	Time to first stop	Total time
60	10	0	2	2
	20	0	2	2
	30	0	2	2
	40	0	2	2
	60	4	1	5
	80	7	1	8
	100	10	1	11
	120	12	1	13
70	10	0	2	2
	20	5	1	6
	30	8	1	9
	40	10	1	11
	60	15	1	16
	80	21	1	22
	100	26	1	27
	120	29	1	30
	140	31	1	32
	160	32	1	33
80	10	4	1	5
	20	9	1	10
	30	14	1	15
	40	18	1	19
	60	26	1	27
	80	34	1	35
	100	42	1	43
	120	46	1	47
	140	48	1	49
	160	49	1	50
90	10	5	2	7
	20	13	2	15
	30	19	2	21
	40	25	2	27
	60	36	2	38
	80	46	2	48
	100	55	2	57
	120	59	2	61
	140	61	2	63
	160	62	2	64
	180	63	2	65
100	10	6	2	8
	20	17	2	19
	30	26	2	28
	40	33	2	35
	60	46	2	48
	80	57	2	59
	100	65	2	67
	120	70	2	72
	140	73	2	75
	160	74	2	76
	180	75	2	77
	200	76	2	78
110	10	6	2	8
	20	21	2	23
	30	32	2	34
	40	41	2	43
	60	57	2	59
	80	69	2	71
	100	76	2	78
	120	81	2	83
	140	84	2	86
	160	85	2	87
	180	86	2	88
	200	87	2	89
120	10	8	2	10
	20	27	2	29
	30	38	2	40
	40	48	2	50
	60	65	2	67
	80	78	2	80
	100	86	2	88
	120	91	2	93
	140	94	2	96
	160	95	2	97
	180	97	2	99
	200	98	2	100
130	10	9	2	11
	20	31	2	33
	30	44	2	46
	40	56	2	58
	60	75	2	77
	80	88	2	90
	100	95	2	97
	120	100	2	102
	140	103	2	105
	160	105	2	107
	180	106	2	108
	200	107	2	109
	220	108	2	110
140	10	10	2	12
	20	34	2	36
	30	50	2	52
	40	63	2	65
	60	83	2	85
	80	96	2	98
	100	104	2	106
	120	109	2	111
	140	111	2	113
	160	113	2	115
	180	115	2	117
	200	116	2	118
	220	117	2	119

TABLE III.—*Decompression tables*—Continued

Partial pressure (feet)	Time of dive in minutes	Stops (minutes)				Time to first stop	Total time
		80 feet	70 feet	60 feet	50 feet		
	10				10	3	13
	20				36	3	39
	30				56	3	59
	40			10	61	3	74
	60			10	81	3	94
	80			10	94	3	107
	100			10	101	3	114
150	120			10	106	3	119
	140			10	109	3	122
	160			10	111	3	124
	180			10	113	3	126
	200			10	114	3	127
	220			10	114	3	127
	240			10	115	3	128
	10				21	3	24
	20			10	34	3	47
	30			10	54	3	67
	40			10	69	3	82
	60			10	91	3	104
	80			10	102	3	115
	100			10	108	3	121
160	120			10	113	3	126
	140			10	115	3	128
	160			10	116	3	129
	180			10	117	3	130
	200			12	117	3	132
	220			14	117	3	134
	240			15	117	3	135
	10			10	16	3	29
	20			10	38	3	51
	30			10	61	3	74
	40			10	75	3	88
	60		7	10	94	3	114
	80		7	10	106	3	126
	100		7	10	113	3	133
170	120		7	10	117	3	137
	140		8	13	117	3	141
	160		10	14	117	3	144
	180		12	15	117	3	147
	200		13	15	117	3	148
	220		14	15	117	3	149
	240		15	15	117	3	150
	10		7	10	19	3	39
	20		7	10	43	3	63
	30		7	10	64	3	84
	40		7	10	80	3	100
	60		7	10	101	3	121
	80		9	10	110	3	132
	100	7	5	12	117	3	144
180	120	7	9	13	117	3	149
	140	7	11	14	117	3	152
	160	7	14	15	117	3	156
	180	7	17	15	117	3	159
	200	7	19	15	117	3	161
	220	7	21	15	117	3	163
	240	7	23	15	117	3	165

TABLE III.—*Decompression tables*—Continued

Partial pressure, (feet)	Time of dive	Stops (minutes)						Time to first stop	Total time
		100 feet	90 feet	80 feet	70 feet	60 feet	50 feet		
190	10				7	10	21	4	42
	20				7	10	49	4	70
	30				7	10	70	4	91
	40			7	0	10	87	4	108
	60			7	5	10	103	4	129
	80			7	9	10	115	4	145
	100			7	13	11	117	4	152
	120			7	17	13	117	4	158
	140			9	19	14	117	4	163
	160			11	20	15	117	4	167
	180			13	21	15	117	4	170
	200			14	22	15	117	4	172
	220			15	23	15	117	4	174
	240			16	23	15	117	4	175
200	10				7	10	24	4	45
	20			7	0	10	55	4	76
	30			7	0	10	74	4	95
	40			7	4	10	91	4	116
	60			7	9	10	109	4	139
	80		7	3	13	12	115	4	154
	100		7	6	16	14	117	4	164
	120		7	8	20	15	117	4	171
	140		7	11	21	15	117	4	175
	160		7	15	23	15	117	4	181
	180		7	17	23	15	117	4	183
	200		7	18	23	15	117	4	184
	220		7	20	23	15	117	4	186
	240		8	20	23	15	117	4	187
210	10			7	0	10	27	4	48
	20			7	0	10	57	4	78
	30		7	0	3	10	79	4	103
	40		7	0	7	10	94	4	122
	60		7	4	10	10	110	4	145
	80		7	8	14	12	117	4	162
	100		7	12	17	14	117	4	171
	120		8	15	21	15	117	4	180
	140		10	17	21	15	117	4	184
	160		12	17	22	15	117	4	187
	180		14	18	22	15	117	4	190
	200		16	18	23	15	117	4	192
	220		17	19	23	15	117	4	194
	240		18	20	23	15	117	4	196
220	10			7	0	10	29	4	50
	20		7	0	1	10	62	4	84
	30		7	0	6	10	84	4	111
	40		7	3	9	10	98	4	131
	60	7	0	9	11	11	113	4	155
	80	7	3	11	15	13	117	4	170
	100	7	6	14	17	15	117	4	180
	120	7	8	18	23	15	117	4	192
	140	7	11	18	23	15	117	4	195
	160	7	14	19	23	15	117	4	199
	180	7	15	20	23	15	117	4	201
	200	7	16	20	23	15	117	4	202
	220	8	17	20	23	15	117	4	204
	240	9	19	20	23	15	117	4	207

TABLE III.—*Decompression tables*—Continued

Partial pressure (feet)	Time of dive	Stops (minutes)								Time to first stop	Total time
		120 feet	110 feet	100 feet	90 feet	80 feet	70 feet	60 feet	50 feet		
230	10	------	------	------	------	7	0	10	31	4	52
	20	------	------	------	7	0	3	10	66	4	90
	30	------	------	------	7	2	4	10	87	4	116
	40	------	------	7	0	6	9	10	102	4	138
	60	------	------	7	4	9	12	11	114	4	161
	80	------	------	7	8	12	17	14	117	4	183
	100	------	------	7	12	15	20	15	117	4	194
	120	------	------	8	14	19	23	15	117	4	204
	140	------	------	10	16	20	23	15	117	4	209
	160	------	7	6	18	20	23	15	117	4	214
	180	------	7	7	19	20	23	15	117	4	216
	200	------	7	9	19	20	23	15	117	4	218
	220	------	7	11	19	20	23	15	117	4	220
	240	------	7	13	19	20	23	15	117	4	222
240	10	------	------	------	7	0	0	10	35	4	56
	20	------	------	7	0	1	4	10	71	4	97
	30	------	------	7	0	5	7	10	90	4	123
	40	------	7	0	3	7	9	10	103	4	143
	60	------	7	0	8	10	14	11	115	4	169
	80	------	7	3	10	14	18	14	117	4	187
	100	------	7	6	12	17	23	15	117	4	201
	120	------	7	7	16	19	23	15	117	4	208
	140	------	7	11	16	20	23	15	117	4	213
	160	------	7	13	19	20	23	15	117	4	218
	180	------	8	15	19	20	23	15	117	4	221
	200	------	8	17	19	20	23	15	117	4	228
	220	------	9	17	19	20	23	15	117	4	226
	240	------	11	17	19	20	23	15	117	4	230
250	10	------	------	7	0	0	1	10	38	4	60
	20	------	------	7	0	1	6	10	73	4	101
	30	------	7	0	4	6	6	10	95	4	132
	40	------	7	0	5	8	9	10	106	4	149
	60	------	7	4	8	11	14	12	117	4	177
	80	------	7	7	11	16	18	15	117	4	195
	100	------	7	10	14	19	23	15	117	4	209
	120	7	3	12	17	19	23	15	117	4	217
	140	7	4	15	18	19	23	15	117	4	222
	160	7	7	16	19	19	23	15	117	4	227
	180	7	9	17	19	20	23	15	117	4	231
	200	7	11	17	19	20	23	15	117	4	233
	220	7	12	17	19	20	23	15	117	4	234
	240	7	13	17	19	20	23	15	117	4	235
260	10	------	------	7	0	0	2	10	41	4	64
	20	------	7	0	0	3	7	10	77	4	105
	30	------	7	0	4	6	8	10	97	4	136
	40	------	7	2	5	9	9	10	109	4	155
	60	7	0	7	9	12	16	13	116	4	184
	80	7	3	9	13	15	21	15	117	4	204
	100	7	6	11	14	19	23	15	117	4	216
	120	7	8	13	19	20	23	15	117	4	226
	140	7	11	15	19	20	23	15	117	4	231
	160	8	13	17	19	20	23	15	117	4	236
	180	9	14	17	19	20	23	15	117	4	238
	200	10	16	17	19	20	23	15	117	4	241
	220	11	16	17	19	20	23	15	117	4	242
	240	13	16	17	19	20	23	15	117	4	244

TABLE III.—*Decompression tables*—Continued

Partial pressure (feet)	Time of dive	Stops (minutes)											Time to first stop	Total time
		150 feet	140 feet	130 feet	120 feet	110 feet	100 feet	90 feet	80 feet	70 feet	60 feet	50 feet		
	[1] 10	-----	-----	-----	-----	7	0	0	0	4	10	44	4	70
	20	-----	-----	-----	-----	7	0	2	4	6	10	80	4	113
	30	-----	-----	-----	7	0	2	5	6	9	10	100	4	143
	40	-----	-----	-----	7	0	3	8	9	10	10	110	4	161
	60	-----	-----	-----	7	3	7	10	14	16	13	117	4	191
	80	-----	-----	-----	7	6	10	13	17	23	15	117	4	212
270	100	-----	-----	7	2	9	13	16	20	23	15	117	4	226
	120	-----	-----	7	4	11	14	19	20	23	15	117	4	234
	140	-----	-----	7	5	14	15	19	20	23	15	117	4	239
	160	-----	-----	7	7	15	17	19	20	23	15	117	4	244
	180	-----	-----	7	9	16	17	19	20	23	15	117	4	247
	200	-----	-----	7	11	16	17	19	20	23	15	117	4	249
	220	-----	-----	7	13	16	17	19	20	23	15	117	4	251
	240	-----	-----	7	15	16	17	19	20	23	15	117	4	253
	[1] 10	-----	-----	-----	-----	7	0	0	1	3	10	47	4	73
	20	-----	-----	-----	7	0	0	2	6	6	10	84	4	119
	30	-----	-----	-----	7	0	3	6	6	9	10	104	4	149
	40	-----	-----	7	0	2	5	8	8	12	11	113	4	170
	60	-----	-----	7	0	6	8	10	14	18	14	116	4	197
	80	-----	-----	7	3	8	11	14	17	23	15	117	4	219
280	100	-----	-----	7	5	11	13	16	20	23	15	117	4	231
	120	-----	-----	7	8	12	16	19	20	23	15	117	4	241
	140	-----	-----	7	10	16	17	19	20	23	15	117	4	248
	160	-----	-----	8	13	16	17	19	20	23	15	117	4	252
	180	-----	-----	9	14	16	17	19	20	23	15	117	4	254
	200	-----	-----	10	15	16	17	19	20	23	15	117	4	256
	220	-----	-----	12	15	16	17	19	20	23	15	117	4	258
	240	-----	-----	14	15	16	17	19	20	23	15	117	4	260
	[1] 10	-----	-----	-----	-----	7	0	0	2	3	10	49	4	76
	20	-----	-----	-----	7	0	0	4	6	7	10	86	4	124
	30	-----	-----	7	0	1	5	5	9	9	10	105	4	155
	40	-----	-----	7	0	4	6	8	9	12	11	114	4	175
	60	-----	-----	7	4	6	8	12	15	18	14	117	4	205
	80	-----	7	0	7	9	11	15	17	23	15	117	4	225
290	100	-----	7	2	9	11	15	17	20	23	15	117	4	240
	120	-----	7	4	11	13	16	19	20	23	15	117	4	249
	140	-----	7	5	13	16	17	19	20	23	15	117	4	256
	160	-----	7	8	14	16	17	19	20	23	15	117	4	260
	180	-----	7	10	15	16	17	19	20	23	15	117	4	263
	200	-----	7	12	15	16	17	19	20	23	15	117	4	265
	220	-----	7	13	15	16	17	19	20	23	15	117	4	266
	240	-----	7	14	15	16	17	19	20	23	15	117	4	267
	[1] 10	-----	-----	-----	7	0	0	0	3	3	10	52	5	81
	20	-----	-----	7	0	0	1	6	6	6	10	91	5	133
	30	-----	-----	7	0	2	5	5	9	9	10	106	5	158
	40	-----	-----	7	0	5	7	8	11	13	12	111	5	179
	60	-----	7	0	6	7	9	12	15	20	15	117	5	213
	80	-----	7	2	8	10	12	16	19	23	15	117	5	234
300	100	-----	7	5	10	12	15	19	20	23	15	117	5	248
	120	-----	7	8	11	16	17	19	20	23	15	117	5	258
	140	-----	8	9	14	16	17	19	20	23	15	117	5	263
	160	-----	8	13	15	16	17	19	20	23	15	117	5	268
	180	7	3	13	15	16	17	19	20	23	15	117	5	270
	200	7	5	14	15	16	17	19	20	23	15	117	5	273
	220	7	6	14	15	16	17	19	20	23	15	117	5	274
	240	7	9	14	15	16	17	19	20	23	15	117	5	277

[1] Take 1 extra minute from first stop to next stop.

TABLE III.—*Decompression tables*—Continued

Partial pressure (feet)	Time of dive	Stops (minutes)													Time to first stop	Total time
		170 feet	160 feet	150 feet	140 feet	130 feet	120 feet	110 feet	100 feet	90 feet	80 feet	70 feet	60 feet	50 feet		
310	[1]10	....	....	....	....	....	7	0	0	1	3	3	10	54	5	84
	20	....	....	....	....	7	0	0	3	5	6	6	10	93	5	135
	30	....	....	....	7	0	0	5	5	7	8	9	10	109	5	165
	40	....	....	....	7	0	3	5	8	8	11	13	11	115	5	186
	60	....	....	....	7	3	6	7	10	12	17	20	15	117	5	219
	80	....	....	7	0	6	9	11	12	16	19	23	15	117	5	240
	100	....	....	7	1	9	10	14	17	19	20	23	15	117	5	256
	120	....	....	7	4	11	12	14	17	19	20	23	15	117	5	263
	140	....	....	7	5	12	15	16	17	19	20	23	15	117	5	270
	160	....	....	7	8	14	15	16	17	19	20	23	15	117	5	275
	180	....	....	7	10	14	15	16	17	19	20	23	15	117	5	277
	200	....	....	7	12	14	15	16	17	19	20	23	15	117	5	279
	220	....	....	8	13	14	15	16	17	19	20	23	15	117	5	281
	240	....	....	9	13	14	15	16	17	19	20	23	15	117	5	282
320	[1]10	....	....	....	....	7	0	0	0	2	3	3	10	57	5	88
	[1]20	....	....	....	7	0	0	1	4	5	6	7	10	94	5	140
	30	....	....	....	7	0	2	4	5	7	8	11	10	110	5	169
	40	....	....	7	0	1	4	6	7	8	12	15	12	117	5	194
	60	....	....	7	0	5	6	9	11	13	17	20	15	117	5	225
	80	....	....	7	3	7	9	11	13	17	20	23	15	117	5	247
	100	....	....	7	5	9	11	13	17	19	20	23	15	117	5	261
	120	....	....	7	7	12	13	16	17	19	20	23	15	117	5	271
	140	....	7	2	9	12	15	16	17	19	20	23	15	117	5	277
	160	....	7	3	11	14	15	16	17	19	20	23	15	117	5	282
	180	....	7	5	11	14	15	16	17	19	20	23	15	117	5	284
	200	....	7	6	13	14	15	16	17	19	20	23	15	117	5	287
	220	....	7	7	13	14	15	16	17	19	20	23	15	117	5	288
	240	....	7	9	13	14	15	16	17	19	20	23	15	117	5	290
330	[1]10	....	....	....	....	7	0	0	0	3	3	3	10	60	5	92
	20	....	....	....	7	0	0	2	5	5	6	8	10	96	5	144
	30	....	....	7	0	0	4	4	6	7	9	11	11	112	5	176
	40	....	....	7	0	4	4	6	7	9	12	16	14	114	5	198
	60	....	7	0	2	6	8	9	11	14	17	23	15	117	5	234
	80	....	7	0	6	8	8	13	14	19	20	23	15	117	5	255
	100	....	7	2	7	10	13	16	17	19	20	23	15	117	5	271
	120	....	7	4	9	12	13	16	17	19	20	23	15	117	5	277
	140	....	7	6	11	13	15	16	17	19	20	23	15	117	5	282
	160	....	7	8	13	14	15	16	17	19	20	23	15	117	5	287
	180	....	7	10	13	14	15	16	17	19	20	23	15	117	5	289
	200	....	7	12	13	14	15	16	17	19	20	23	15	117	5	291
	220	....	9	12	13	14	15	16	17	19	20	23	15	117	5	293
	240	....	10	12	13	14	15	16	17	19	20	23	15	117	5	294
340	[1]10	....	....	....	7	0	0	0	1	3	3	4	10	64	5	98
	[1]20	....	....	7	0	0	1	3	4	6	5	10	10	98	5	150
	30	....	....	7	0	1	4	5	6	8	8	13	11	113	5	181
	40	....	7	0	1	4	5	7	7	10	12	17	13	117	5	205
	60	....	7	0	5	6	8	9	11	15	19	23	15	117	5	240
	80	....	7	2	7	8	10	13	15	19	20	23	15	117	5	261
	100	....	7	5	9	9	13	16	17	19	20	23	15	117	5	275
	120	7	1	7	10	13	15	16	17	19	20	23	15	117	5	285
	140	7	2	9	12	14	15	16	17	19	20	23	15	117	5	291
	160	7	4	10	13	14	15	16	17	19	20	23	15	117	5	295
	180	7	5	12	13	14	15	16	17	19	20	23	15	117	5	298
	200	7	6	12	13	14	15	16	17	19	20	23	15	117	5	299
	220	7	8	12	13	14	15	16	17	19	20	23	15	117	5	301
	240	7	10	12	13	14	15	16	17	19	20	23	15	117	5	303

[1]Take 1 extra minute from first stop to next stop.

TABLE III.—*Decompression tables*—Continued

Partial pressure (feet)	Time of dive	Stops (minutes)															Time to first stop	Total time
		190 feet	180 feet	170 feet	160 feet	150 feet	140 feet	130 feet	120 feet	110 feet	100 feet	90 feet	80 feet	70 feet	60 feet	50 feet		
350	[1]10	---	---	---	---	---	7	0	0	0	2	3	3	4	10	67	5	102
	[1]20	---	---	---	---	7	0	0	1	4	5	7	8	9	10	99	5	156
	30	---	---	---	7	0	0	3	5	5	6	8	9	13	10	115	5	186
	40	---	---	---	7	0	2	4	6	7	8	10	13	16	14	117	5	209
	60	---	---	7	0	3	5	6	9	10	13	16	18	19	15	117	5	243
	80	---	---	7	0	7	7	8	11	13	15	19	20	23	15	117	5	267
	100	---	---	7	2	8	8	12	13	16	17	19	20	23	15	117	5	282
	120	---	---	7	4	9	11	13	15	16	17	19	20	23	15	117	5	291
	140	---	---	7	6	11	13	14	15	16	17	19	20	23	15	117	5	298
	160	---	---	7	9	11	13	14	15	16	17	19	20	23	15	117	5	301
	180	---	---	8	9	12	13	14	15	16	17	19	20	23	15	117	5	303
	200	---	---	8	11	12	13	14	15	16	17	19	20	23	15	117	5	305
	220	---	---	10	11	12	13	14	15	16	17	19	20	23	15	117	5	307
	240	---	---	11	11	12	13	14	15	16	17	19	20	23	15	117	5	308
360	[1]10	---	---	---	---	7	0	0	0	1	2	3	3	5	10	69	5	106
	[1]20	---	---	---	7	0	0	0	3	4	5	5	7	9	10	102	5	158
	30	---	---	---	7	0	1	4	4	5	7	8	11	13	11	114	5	190
	40	---	---	7	0	1	3	5	6	7	8	11	14	17	15	117	5	216
	60	---	---	7	0	5	5	8	8	11	12	16	19	23	15	117	5	251
	80	---	---	7	2	7	7	10	11	13	17	19	20	23	15	117	5	273
	100	---	7	0	6	8	9	11	15	16	17	19	20	23	15	117	5	288
	120	---	7	1	7	9	12	14	15	16	17	19	20	23	15	117	5	297
	140	---	7	3	9	11	13	14	15	16	17	19	20	23	15	117	5	304
	160	---	7	4	10	12	13	14	15	16	17	19	20	23	15	117	5	307
	180	---	7	5	11	12	13	14	15	16	17	19	20	23	15	117	5	309
	200	---	7	7	11	12	13	14	15	16	17	19	20	23	15	117	5	311
	220	---	7	9	11	12	13	14	15	16	17	19	20	23	15	117	5	313
	240	---	7	10	11	12	13	14	15	16	17	19	20	23	15	117	5	314
370	[1]10	---	---	---	---	7	0	0	0	1	2	2	3	7	10	69	5	106
	[1]20	---	---	---	7	0	0	1	3	4	5	5	8	10	10	104	5	162
	30	---	---	7	0	0	3	3	5	6	7	8	11	12	14	117	5	198
	40	---	---	7	0	2	4	5	7	7	9	10	14	19	15	117	5	221
	60	---	---	7	2	5	6	7	9	11	14	16	19	23	15	117	5	256
	80	---	7	0	6	6	8	11	12	14	16	19	20	23	15	117	5	279
	100	---	7	2	7	8	11	13	13	16	17	19	20	23	15	117	5	293
	120	---	7	4	8	10	12	14	15	16	17	19	20	23	15	117	5	302
	140	7	0	7	9	12	13	14	15	16	17	19	20	23	15	117	5	309
	160	7	0	9	10	12	13	14	15	16	17	19	20	23	15	117	5	312
	180	7	2	9	11	12	13	14	15	16	17	19	20	23	15	117	5	315
	200	7	3	10	11	12	13	14	15	16	17	19	20	23	15	117	5	317
	220	7	5	10	11	12	13	14	15	16	17	19	20	23	15	117	5	319
	240	7	7	10	11	12	13	14	15	16	17	19	20	23	15	117	5	321
380	[1]10	---	---	---	7	0	0	0	0	2	3	3	3	7	10	72	5	113
	[1]20	---	---	7	0	0	0	2	4	4	5	5	8	10	10	105	5	166
	[1]30	---	7	0	0	1	3	4	4	7	7	8	11	16	11	117	5	202
	40	---	7	0	0	4	4	5	6	8	10	11	14	20	15	117	5	226
	60	---	7	0	4	5	7	8	9	11	13	17	20	23	15	117	5	261
	80	7	0	3	6	7	9	10	12	15	17	19	20	23	15	117	5	285
	100	7	0	6	7	9	10	14	15	16	17	19	20	23	15	117	5	300
	120	7	1	7	9	11	13	14	15	16	17	19	20	23	15	117	5	309
	140	7	2	9	11	12	13	14	15	16	17	19	20	23	15	117	5	315
	160	7	4	10	11	12	13	14	15	16	17	19	20	23	15	117	5	318
	180	7	5	10	11	12	13	14	15	16	17	19	20	23	15	117	5	319
	200	7	7	10	11	12	13	14	15	16	17	19	20	23	15	117	5	321
	220	7	9	10	11	12	13	14	15	16	17	19	20	23	15	117	5	323
	240	8	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	325

[1] Take 1 extra minute from first stop to next stop.

TABLE III.—*Decompression tables*—Continued

Partial pressure (feet)	Time of dive	Stops (minutes)																	Time to first stop	Total time
		210 feet	200 feet	190 feet	180 feet	170 feet	160 feet	150 feet	140 feet	130 feet	120 feet	110 feet	100 feet	90 feet	80 feet	70 feet	60 feet	50 feet		
390	[1]10	...	...	...	...	...	7	0	0	0	0	2	3	3	4	7	10	74	5	116
	[1]20	...	...	...	...	7	0	0	1	2	4	5	5	5	9	9	10	109	5	172
	30	...	...	...	7	0	0	2	4	5	6	7	8	10	12	12	12	116	5	206
	40	...	...	...	7	0	2	3	5	6	6	8	9	13	14	21	15	117	5	231
	60	...	...	7	0	2	5	5	8	8	9	11	15	17	20	23	15	117	5	268
	80	...	...	7	0	5	7	8	9	11	12	16	17	19	20	23	15	117	5	292
	100	...	...	7	2	7	8	9	11	14	15	16	17	19	20	23	15	117	5	307
	120	...	...	7	5	8	9	11	13	14	15	16	17	19	20	23	15	117	5	316
	140	...	7	0	7	10	10	12	13	14	15	16	17	19	20	23	15	117	5	322
	160	...	7	1	9	10	11	12	13	14	15	16	17	19	20	23	15	117	5	325
	180	...	7	3	9	10	11	12	13	14	15	16	17	19	20	23	15	117	5	327
	200	...	7	5	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	329
	220	...	7	7	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	331
	240	...	7	8	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	332
400	[1]10	...	...	...	...	...	7	0	0	0	1	2	3	3	6	9	10	74	5	121
	[1]20	...	...	...	7	0	0	0	1	4	4	5	8	8	10	10	109	5	176
	[1]30	...	...	7	0	0	0	4	4	4	5	7	7	10	11	15	13	117	5	209
	40	...	...	7	0	1	4	5	6	6	6	7	10	11	16	18	15	117	5	234
	60	...	7	0	0	5	5	6	7	8	11	13	14	17	20	23	15	117	5	273
	80	...	7	0	3	6	6	8	10	12	12	15	17	19	20	23	15	117	5	295
	100	...	7	0	6	7	8	10	13	14	15	16	17	19	20	23	15	117	5	312
	120	...	7	2	6	9	11	12	13	14	15	16	17	19	20	23	15	117	5	321
	140	...	7	2	8	10	11	12	13	14	15	16	17	19	20	23	15	117	5	324
	160	...	7	3	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	327
	180	...	7	5	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	329
	200	...	7	7	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	331
	220	...	7	9	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	333
	240	7	1	9	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	334
410	[1]10	...	...	...	...	7	0	0	0	0	2	2	3	3	6	9	10	78	5	126
	[1]20	...	...	...	7	0	0	0	2	4	4	4	5	7	9	11	10	110	5	179
	30	...	...	7	0	0	2	3	4	4	5	7	8	12	15	15	12	117	5	216
	40	...	...	7	0	2	3	4	6	6	6	9	11	13	16	20	15	117	5	240
	60	...	7	0	2	5	5	6	7	10	10	13	15	19	20	23	15	117	5	279
	80	...	7	0	5	6	8	8	9	12	15	16	17	19	20	23	15	117	5	302
	100	...	7	3	6	7	8	11	13	14	15	16	17	19	20	23	15	117	5	316
	120	7	0	5	7	10	10	12	13	14	15	16	17	19	20	23	15	117	5	325
	140	7	0	7	9	10	11	12	13	14	15	16	17	19	20	23	15	117	5	330
	160	7	2	8	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	334
	180	7	3	9	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	336
	200	7	5	9	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	338
	220	7	7	9	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	340
	240	7	8	9	10	10	11	12	13	14	15	16	17	19	20	23	15	117	5	341

[1] Take 1 extra minute from first stop to next stop.

Alternative decompressions for emergencies.

In an emergency it may be that oxygen cannot be used for decompression, owing to failure of oxygen supply, or possibly to symptoms of oxygen poisoning. Either air or helium-oxygen mixtures may be used. Emergency tables for using helium-oxygen mixtures may be calculated for the particular dive being made. In order to have a table that may be available immediately, the decompression provided in regular tables should be given up to the 60-foot stop, and from that point on, table IV should be used (using same helium-oxygen mixture that was used on the dive).

TABLE IV

60 feet	50 feet	40 feet	30 feet	20 feet	10 feet
23 minutes	26 minutes	30 minutes	35 minutes	42 minutes	55 minutes

In emergencies when it is not possible to use helium-oxygen mixtures or oxygen during decompression, it may become necessary

to use air. Decompression for each case can be calculated. However, since the emergency may occur at any point from the bottom to the last stop, it is impractical to attempt to cover all of the possibilities in tables. Therefore, a table (table V) for maximum saturation is provided and this table may be used for any emergency. When it is possible to do so, the air should be administered or furnished through the recirculator for the first twenty minutes of these tables. Otherwise the diver may experience uncomfortable symptoms, dizziness, weakness, loss of consciousness, etc., as a result of a sudden shift to air.

The tables are provided for each 50 feet and the table selected should be one next higher than the actual depth, unless the depth is at an even 50-foot figure.

TABLE V

Stops (feet)	Depth (feet) up to—								
	100 feet	150 feet	200 feet	250 feet	300 feet	350 feet	400 feet	450 feet	500 feet
230									9
220									9
210								6	10
200								10	10
190							3	11	11
180							11	11	11
170							12	12	12
160						9	12	12	12
150						13	13	13	13
140					4	13	14	14	14
130					14	15	15	15	15
120					16	16	16	16	16
110				13	16	17	17	17	17
100				18	18	18	18	18	18
90			7	19	19	20	20	20	20
80			22	22	22	22	22	22	22
70			24	24	24	24	24	24	24
60		22	26	26	26	27	27	27	27
50		30	30	30	30	30	30	30	30
40	14	35	35	35	35	35	35	35	35
30	42	42	42	42	42	42	42	42	42
20	52	52	52	52	52	52	52	52	52
10	68	68	68	68	68	68	68	68	68

SURFACE DECOMPRESSION

Many occasions may arise where it is desirable or necessary to bring the diver aboard as quickly as possible. When a diver is removed from the water before his decompression has been completed (except after blowing up) the following procedure should be followed:

1. (*a*) Decompress diver in the water in accordance with the regular helium-oxygen tables until the diver has reached the 50-foot stop. (The diver is shifted to oxygen at 60 feet and remains there for the time called for in the regular tables.)

(*b*) Keep the diver (on oxygen) at 50 feet for the same time that he spent at 60 feet.

(*c*) Upon completion of his stop at 50 feet, bring the diver to the surface (at the rate of 50 feet per minute), remove helmet, belt and shoes, and then place him in the recompression chamber as quickly as possible.

(*d*) Recompress diver in the recompression chamber to 50 feet. If the diver can clear his ears, he should start breathing oxygen on his way down; otherwise as soon as he reaches 50 feet he should start breathing oxygen. The tender should assist diver to remove the diving suit and underwear while pressure is being applied. The total elapsed time, from 50 feet in the water until the diver is at 50 feet in the chamber breathing oxygen, should not exceed 3 to 4 minutes.

(*e*) Keep the diver at 50 feet (on oxygen) in the recompression chamber for the time required for the 50-foot stop as given in the normal helium oxygen decompression tables.

(*f*) When bringing the diver out of the recompression chamber, reduce the pressure at the rate of 10 feet per minute (that is, take 5 minutes to bring him to the surface from 50 feet).

2. (*a*) In case the first stop in the table used is 50 feet, bring the diver to 50 feet and shift him to oxygen.

(*b*) After he has been breathing oxygen for 10 minutes at 50 feet, bring him to surface and carry out the same procedure for recompression as described in paragraphs 1 (*c*), (*d*), (*e*), and (*f*) above.

Recompression chamber should be equipped with oxygen supply system, and oxygen masks provided for use in the chambers.

Decompression in this manner has been successful for exposures of 1 hour at 250 feet, 20 minutes at 300 feet, and 10 minutes at 350 and 440 feet.

Decompression procedure following "blow up" by diver using helium oxygen.

1. Bring diver aboard and remove helmet, belt, and shoes as quickly as possible and place in recompression chamber.

2. Recompress to point of relief of symptom (or recovery), plus 15 pounds. If no symptoms have developed, recompression to 75 pounds.

3. Maintain maximum pressure a minimum of 30 minutes after symptoms have been relieved. If no symptoms have developed maintain pressure of 75 pounds for 30 minutes.

4. Decompress according to Table V, selecting the next higher table than the actual depth (pressure) used in preceding paragraph, unless the depth (pressure) is at an even 50-foot figure as tabulated in Table V. For example, if pressure (depth) used is 175 feet, use the 200-foot table.

5. Complete the decompression from the 60-foot level (stop) by breathing pure oxygen for 90 minutes as follows:

(*a*) At 60 feet for time as indicated in air treatment table. (22 minutes if 150-foot table used.)

(*b*) At 50 feet for 68 minutes.

(*c*) From 50 feet to surface in 15 minutes with oxygen mask in place.

6. Surface slowly after 90 minutes oxygen breathing period, maintaining the oxygen mask until surface is reached.

SECTION III. MIXING OXYGEN AND HELIUM

Source of helium.

Helium for diving purposes is obtained from the Naval Air Station Lakehurst, Lakehurst, N. J., and stocked at the submarine bases at New London, Coco Solo, San Diego, and Pearl Harbor.