

Naval Education and
Training Command

NAVEDTRA 130A
July 1997

Support Manual for
MIL-HDBK-1379-2



TASK BASED CURRICULUM DEVELOPMENT MANUAL VOLUME II SAMPLE PRODUCTS



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DEPARTMENT OF THE NAVY

CHIEF OF NAVAL EDUCATION AND TRAINING

250 DALLAS ST

PENSACOLA FLORIDA 32508-5220

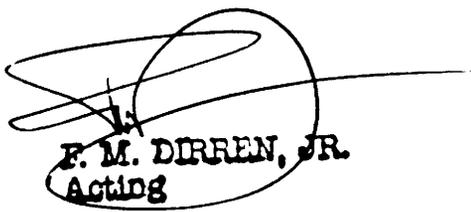
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Ser N5228/100182

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LETTER OF PROMULGATION FOR NAVEDTRA 130A

1. This guidance manual has been extensively revised. Most of the revisions are in response to user comments and reflect a continuing effort to increase the manual's utility to the training field. NAVEDTRA 130A supercedes and replaces NAVEDTRA 130.
2. A paradigm shift is taking place in Navy training materials development as we move from products developed within a rigid framework, and move toward design and development of training materials using a process oriented Instructional Systems Design/Systems Approach to Training (ISD/SAT). The ISD/SAT process is described in MIL-HDBK 1379-2 (9 June 1997). NAVEDTRA 130A supports the ISD/SAT process and training materials designed and developed using NAVEDTRA 130A are fully compatible with the ISD/SAT concept.
3. The procedures in this manual follow a Task Based Curriculum Development method. This manual is intended for use by military, civil service, and contractor personnel engaged in Navy training materials development and modification.
4. The task based method contains six interrelated phases: Plan, Analyze, Design, Develop, Implement, and Evaluate. Guidelines for the first four of these phases are contained in this manual. Guidelines for the implementation and evaluation phases are contained in NAVEDTRA 135A, Navy School Management Manual (October 1995).
5. Procedural guidance for development of training materials following a Personnel Performance Profile based method is published in NAVEDTRA 131A.
6. Corrections and comments concerning this manual are invited and should be addressed to Chief of Naval Education and Training, Education Training Systems (ETS) division.
7. Reviewed and approved.


F. M. DIRREN, JR.
Acting

NOTICE TO ONLINE USERS OF THIS MATERIAL

To keep online file size to a minimum, blank pages used in the paper copy for pagination have been omitted.

Only printed pages are contained online.

Chief of Naval Education and Training Education and Training Systems Division (ETS)

TAB A-1

TRAINING PROJECT PLAN

NAVEDTRA 130A, Volume II

TRAINING PROJECT PLAN

FOR

NAVY SCUBA DIVER

A-433-0023A

PREPARED FOR

DEPUTY FOR SHORE/TECHNICAL TRAINING (CNET T2)
250 DALLAS STREET
PENSACOLA, FLORIDA 32508-5220

PREPARED BY

NAVAL DIVING AND SALVAGE TRAINING CENTER
PANAMA CITY, FLORIDA 32407

JANUARY 1989

(MARCH 1991)

NAVEDTRA 130A, Volume II

TRAINING PROJECT PLAN

TABLE OF CONTENTS

<u>Contents</u>	<u>Page</u>
Course Data	A-1-5
Justification for Course Revision	A-1-8
Safety Risks and Hazardous Materials	A-1-9
Curriculum Development Method	A-1-10
Resource Requirements	A-1-11
Compensation	A-1-32
Milestones	A-1-32

TRAINING PROJECT PLAN

A. **COURSE DATA**

CIN: A-433-0023A

New

Revision

Cancel

CDP (s):

Training Site (s):

1. 6419 Naval Diving and Salvage Training Center
Panama City, Florida 32407
2. 087R Mobile Diving and Salvage Unit Two
Little Creek, Virginia 23521
3. 031Y Naval Amphibious School
Coronado, California 92155
4. 2114 Naval Submarine Training Center, Pacific
Pearl Harbor, Hawaii 96860

Course Mission Statement:

The SCUBA Diver course is designed to provide qualified personnel with the basic training necessary to qualify as a SCUBA diver, perform as a dive team member to plan and conduct open circuit SCUBA diving operations including inspection of major hull components. Diving operations includes underwater searches, underwater maintenance and preparation of records and reports. Conduct initial treatment of diving related injuries. Inspection and maintenance is performed on open circuit SCUBA equipment and accessories along with charging of SCUBA cylinders. Day and night diving operations will be conducted from a shore installation and open water to a qualification depth of 130 FSW.

NAVEDTRA 130A, Volume II

Occupational Classification: NEC 5345

NOTE TO READER: The information provided in this sample TPP has been constructed to illustrate the requirements of this manual and governing instructions. It is based on the SCUBA course but does not represent the actual course.

NAVEDTRA 130A, Volume II

Prerequisites: There are no prior training prerequisites for this course. Service and physical requirements are in CANTRAC.

Course Overview: Instruction includes:
Diving physics and medicine
Buoyant and free ascent procedures
Underwater search procedures
Work techniques using open circuit SCUBA
Graduates are qualified to a maximum depth of 130 feet.

Training Site(s) Summary:

1. Naval Diving and Salvage Training Center

	<u>Course Length</u>	<u>Class Capacity</u>	<u>Class Convenings</u>	<u>AVG OnBoard</u>	<u>Student Throughput</u>
Current:	26	25	9	16	225
Planned:	40	25	13	36	325

2. Mobile Diving and Salvage Unit Two

	<u>Course Length</u>	<u>Class Capacity</u>	<u>Class Convenings</u>	<u>AVG OnBoard</u>	<u>Student Throughput</u>
Current:	26	18	7	9	126
Planned:	0	0	0	0	0

NOTE: MDSU-2 resource limited to class size of 18.

3. Naval Amphibious School

	<u>Course Length</u>	<u>Class Capacity</u>	<u>Class Convenings</u>	<u>AVG OnBoard</u>	<u>Student Throughput</u>
Current:	26	25	8	15	200
Planned:	0	0	0	0	0

4. Naval Submarine Training Center, Pacific

	<u>Course Length</u>	<u>Class Capacity</u>	<u>Class Convenings</u>	<u>AVG OnBoard</u>	<u>Student Throughput</u>
Current:	26	25	7	13	175
Planned:	40	25	12	33	300

NOTE: Course Length is in calendar days. "Current" course length is frequently extended by several calendar days at all sites due to bottlenecks caused by training sections exceeding the number of authorized instructors.

NAVEDTRA 130A, Volume II

B. JUSTIFICATION:

1. Reference Navy Training Plan: None
2. Reason for revision: A course revision is required to support changes to Team Member/SCUBA Diver procedures including:
 - a. Modifications in sea rescue procedures and equipment needs.
 - b. Increased safety requirements mandated for sea divers and operators/maintainers.
 - c. Requirements to reduce maintenance problems with diving equipment.
 - d. Due to service downsizing annual student throughput will decrease from 726 to 625. This course will be cancelled at:
 - Amphibious School, Coronado
 - Mobile Diving and Salvage Unit Two
 - e. Course length at the two remaining sites will be increased from 26 calendar days to 40 calendar days to support the increased training requirements.
 - f. The current course at all sites has excessive "bottleneck" periods due to instructor shortfalls. Qualified instructors must frequently be borrowed from other courses to minimize bottlenecks. The revised course will support an adequate number of instructors to eliminate bottlenecks in training.
3. Change directives:
 - a. OPNAV ltr Ser 4321 of 1 September 1989.
 - b. NAVSAFECEN bulletin 8790 of 13 October 1989.
 - c. FLETAP report C89-08.
 - d. NETPDTC Training Importance Survey "U.S. Navy Diver"

- C. IMPACT IF COURSE REVISION IS NOT UNDERTAKEN:** Continuation with the existing course, while shorter and with a greater annual throughput, means teaching maintenance of new SCUBA equipments in a cursory manner. Also, less time is spent in the water, lessening the proficiency of graduates. Given the hazardous nature of this occupation, this places graduates at serious risk, and places the burden of expanded training in the unstructured OJT environment. Extended graduation dates due to course bottlenecks will continue to negatively impact the Navy's Individuals Account.

- D. SAFETY RISKS AND HAZARDOUS MATERIALS:** This course will be designated as high risk in accordance with CNETINST 1500.20. Special emphasis must be placed on strict compliance with published safety precautions and on personal awareness of potentially hazardous conditions peculiar to diving. All personnel must have a comprehensive knowledge of emergency procedures which prescribe courses of action to be followed in the event of equipment failure or human error. Strict adherence to approved and verified operating, emergency, and maintenance procedures is MANDATORY. As a minimum, each individual is responsible for knowing, understanding, and observing all applicable precautions.

NAVEDTRA 130A, Volume II

E. CURRICULUM DEVELOPMENT METHOD:

1. Curriculum will be developed in accordance with NAVEDTRA 130A.
2. The documents that will be produced for this course will be as follows:
 - a. Training Project Plan
 - b. Course Training Task List
 - c. Training Course Control Document
 - d. Lesson Plan
 - e. Trainee Guide
 - f. Knowledge/Performance Tests and Administrator's Guides
 - g. Instructional Media Materials
 - h. Testing Plan
3. The primary mode of instruction will be group-paced consisting mainly of lecture, in-water, and land laboratory periods with practical problem solving experiences. The trainees will be guided by the instructors during problem solving sessions to allow maximum acquisition of knowledge and skills.

F. RESOURCE REQUIREMENTS

Site: Naval Diving and Salvage Training Center

CPATS Document #: 91 63190 63190 C108A

Cost Account Code: 5PPQ

Manpower

	<u>Current</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Officer Billets Required	1	1	1	1	1	1
Billets Currently Authorized	1	1	1	1	1	1
Billets Compensated						
Billets Available						
Delta	0	0	0	0	0	0
Enlisted Billets Required	6	6	16	16	16	16
Billets Currently Authorized	6	6	6	6	6	6
Billets Compensated			3	3	3	3
Billets Available						
Delta	0	0	-7	-7	-7	-7

NOTE: Three compensated billets come from redistribution of Mobile Diving and Salvage Unit Two manpower assets upon course cancellation. NAVDIVESALVTRACEN can provide no compensation billets.

Civilian Billets Required	0	0	0	0	0	0
Billets Currently Authorized	0	0	0	0	0	0
Billets Compensated						
Billets Available						
Delta	0	0	0	0	0	0

Site: Naval Diving and Salvage Training Center

Funding

<u>Approp</u>	<u>AG/SAG</u>	<u>Expense</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
OMN	F3/FF						
OPN	F3/FF						

NAVEDTRA 130A, Volume II

Site: Naval Diving and Salvage Training Center

Training Equipment

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00- 058-1609		50	24	26	ea	\$125			NAVSEAINST 10560.2
2.	Gage, depth, Mk 1 non-magnetic		1H-4220-00- 639-8999		50	27	23	ea	\$75			NAVSEAINST 10560.2
3.	Life preserver, Mk 4	4053604	1H-4220-01- 213-3533		50	25	25	ea	\$147			NAVSEAINST 10560.2
4.	Compass, wrist, non-magnetic		1HM-6605-00- 079-0007 ED		50	25	25	ea	\$75			NAVSEAINST 10560.2

NOTE: Training equipment numbers are based on a projected class size of 25, 16 instructors, plus spares. The redistribution of usable equipment made available by the cancellation of this course at Amphibious Base, Coronado, and Mobile Diving and Salvage Unit Two will help reduce shortages.

NAVEDTRA 130A, Volume II

Site: Naval Diving and Salvage Training Center

Training Materials

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Lesson Plan				20	0	20	ea				
2.	Trainee Guide				400	0	400	ea				
3.	Performance Test Administrator's Guide				20	0	20	ea				
4.	Knowledge Test Administrator's Guide				20	0	20					

NOTE: Training Materials numbers are based on 16 instructors, and a student load of 325/yr.

Site: Naval Diving and Salvage Training Center

Visual Information Equipment

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Overhead Projector	Manuf. P/N	Open Purchase		5			ea	\$150			
2.	Slide Projector, 35mm	Manuf. P/N	Open Purchase		5			ea	\$165			
3.	Chalk Board (Portable)	Manuf. P/N	Open Purchase		10			ea	\$38			

NAVEDTRA 130A, Volume II

Site: Naval Diving and Salvage Training Center

Visual Information Aids

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Transparancies, Overhead, "Underwater Hull Cleaning"	Bottom Scratcher Productions	Open Purchase		2	0	2	set	\$850			CNETINST 5290.3
2.	Slides, 35mm, "Underwater Search Equipment"	NAVDIVSALVTR ACEN	Local Production		2	0	2	set	\$1500			CNETINST 5290.3
3.	Film, 16mm "Navy SCUBA Diver Safety"	F0600-AA-PP- 89	NAVIMAGCOM contract		2	0	2	ea	\$105,000			CNETINST 5290.3
4.	Video, VHS, "Charging SCUBA Cylinders"	DP-49	Open Purchase		2	0	2	ea	\$350			CNETINST 5290.3

NOTE TO READER: This is only a representation of the types of equipment and materials which would be listed under Training Equipment and Training Materials.

NAVEDTRA 130A, Volume II

Site: Naval Diving and Salvage Training Center

Training Publications

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Diver's Advisory,	AIG-239			16	6	10	ea				
2.	Diving Log	OPNAVINST 3150.28			400	250	150	ea				U.S. Navy Diving Manual, Vol. 1
3.	U.S. Navy Diving Manual, Vol. 1		NAVSEA 0994- LP-001-9010		30	25	5	ea				
4.	List of Approved Diving Equipment	NAVSEA 10560.2A			30	30	0	ea				
5.	Safety Precautions for Forces Afloat	OPNAV 5100 series			20	25	0	ea				
6.	Technical Manual, Life Preserver, Mk 4	SS-710AA- MMO-010			30	40	0	ea				
7.	Technical Manual, Underwater Work Techniques, Vol. 1		NAVSHIPS 0994-007-8010		30	30	0	ea				

NAVEDTRA 130A, Volume II

Site: Naval Diving and Salvage Training Center

Training Publications

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
8.	Technical Manual, Chapt. 081, Waterborne Underwater Hull Cleaning of Navy Ships	S9086-CQ- STM-010/CH- 081 R2	NAVSHIPS 0901-LP-081- 0010		30	30	0	ea				

Facilities

No additional MILCON requirements, special projects renovations, or base operations support required.

Site: Mobile Diving and Salvage Unit Two
CPATS Document #: None - Non CNET activity
Cost Account Code: None - Non CNET activity

Manpower

	<u>Current</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Officer Billets Required	1		1	0	0	0
Billets Currently Authorized	1		1	1	1	1
Billets Compensated						
Billets Available	1		1	1		
Delta	0		0	+1	+1	+1
Enlisted Billets Required	3		3	0	0	0
Billets Currently Authorized	3		3	3	3	3
Billets Compensated				3	3	3
Billets Available						
Delta	0		0	0	0	0

NOTE: Enlisted billets compensated reflects course cancellation at this site in FY93 and reassignment of instructors to NAVDIVESALVTRACEN.

Civilian Billets Required	0		0	0	0	0
Billets Currently Authorized	0		0	0	0	0
Billets Compensated						
Billets Available						
Delta	0		0	0	0	0

Funding

<u>Approp</u>	<u>AG/SAG</u>	<u>Expense</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
OMN	F3/FF						
OPN	F3/FF						

NAVEDTRA 130A, Volume II

Site: Mobile Diving and Salvage Unit Two

Training Equipment

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00- 058-1609		25	25	0	ea	\$125			NAVSEAINST 10560.2
2.	Gage, depth, Mk 1 non-magnetic		1H-4220-00- 639-8999		25	53	0	ea	\$75			NAVSEAINST 10560.2
3.	Life preserver, Mk 4	4053604	1H-4220-01- 213-3533		25	24	1	ea	\$147			NAVSEAINST 10560.2
4.	Compass, wrist, non-magnetic		1HM-6605-00- 079-0007 ED		25	49	0	ea	\$75			NAVSEAINST 10560.2

NOTE: Currently, this site has adequate equipment to support a class size of 18 plus 3 instructors. Upon cancellation of the course at Mobile diving and Salvage Unit Two all equipment will be available for redistribution to NAVDIVESALVTRACEN and NAVSUBTRACENPAC.

NOTE TO READER: No Training Materials required.
Course will be cancelled at this site before the
revised curriculum is implemented

NAVEDTRA 130A, Volume II

Site: Mobile Diving and Salvage Unit Two

Training Publications

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Diver's Advisory,	AIG-239			25	25	0	ea				
2.	Diving Log	OPNAVINST 3150.28			150	150	0	ea				U.S. Navy Diving Manual, Vol. 1
3.	U.S. Navy Diving Manual, Vol. 1		NAVSEA 0994- LP-001-9010		25	25	0	ea				
4.	List of Approved Diving Equipment	NAVSEA 10560.2A			25	25	0	ea				
5.	Safety Precautions for Forces Afloat	OPNAV 5100 series			3	3	0	ea				
6.	Technical Manual, Life Preserver, Mk 4	SS-710AA- MMO-010			25	25	0	ea				
7.	Technical Manual, Underwater Work Techniques, Vol. 1		NAVSHIPS 0994-007-8010		25	25	0	ea				

NAVEDTRA 130A, Volume II

Site: Mobile Diving and Salvage Unit Two

Training Publications

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
8.	Technical Manual, Chapt. 081, Waterborne Underwater Hull Cleaning of Navy Ships	S9086-CQ- STM-010/CH- 081 R2	NAVSHIPS 0901-LP-081- 0010		25	25	0	ea				

NOTE TO READER: This is a representation of
publications available for redistribution.

Facilities

No additional MILCON requirements, special projects renovations, or base operations support required to cancel this course at MOBDIVSALVU TWO

Site: Naval Amphibious School
 CPATS Document #: 91 63018 63018 S332
 89 63018 63018 2156
 Cost Account Code: 5WBC

Manpower

	<u>Current</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Officer Billets Required	1	1	0	0	0	0
Billets Currently Authorized	1	1	1	1	1	1
Billets Compensated						
Billets Available			1	1	1	1
Delta	0	0	+1	+1	+1	+1
Enlisted Billets Required	5	5	0	0	0	0
Billets Currently Authorized	5	5	5	5	5	5
Billets Compensated			5	5	5	5
Billets Available						
Delta	0	0	0	0	0	0

NOTE: Enlisted billets compensated reflects course cancellation at this site in FY93 and reassignment of instructors to NAVSUBTRACENPAC.

Civilian Billets Required	0	0	0	0	0	0
Billets Currently Authorized	0	0	0	0	0	0
Billets Compensated						
Billets Available						
Delta	0	0	0	0	0	0

Funding

<u>Approp</u>	<u>AG/SAG</u>	<u>Expense</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
OMN	F3/FF						
OPN	F3/FF						

NAVEDTRA 130A, Volume II

Site: Naval Amphibious School

Training Equipment

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00- 058-1609		34	28	6	ea	\$125			NAVSEAINST 10560.2
2.	Gage, depth, Mk 1 non-magnetic		1H-4220-00- 639-8999		34	27	7	ea	\$75			NAVSEAINST 10560.2
3.	Life preserver, Mk 4	4053604	1H-4220-01- 213-3533		34	28	6	ea	\$147			NAVSEAINST 10560.2
4.	Compass, wrist, non-magnetic		1HM-6605-00- 079-0007 ED		34	34	0	ea	\$75			NAVSEAINST 10560.2

NOTE: Currently, with a class size of 25 and 5 instructors there is insufficient equipment. However, class size has not exceeded 18. Upon cancellation of this course all of the Naval Amphibious school training equipment will be available for redistribution to NAVDIVESALVTRACEN and NAVSUBTRACENPAC.

NOTE TO READER: This is only a representation of the equipment available for redistribution.

NOTE TO READER: No Training Materials required. Course will be cancelled at this site before the revised curriculum is implemented

NAVEDTRA 130A, Volume II

Site: Naval Amphibious School

Training Publications

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Diver's Advisory,	AIG-239			1	1	0	ea				
2.	Diving Log	OPNAVINST 3150.28			400	400	0	ea				U.S. Navy Diving Manual, Vol. 1
3.	U.S. Navy Diving Manual, Vol. 1		NAVSEA 0994- LP-001-9010		50	50	0	ea				
4.	List of Approved Diving Equipment	NAVSEA 10560.2A			45	45	0	ea				
5.	Safety Precautions for Forces Afloat	OPNAV 5100 series			1	1	0	ea				
6.	Technical Manual, Life Preserver, Mk 4	SS-710AA- MMO-010			65	65	0	ea				
7.	Technical Manual, Underwater Work Techniques, Vol. 1		NAVSHIPS 0994-007-8010		50	50	0	ea				

NAVEDTRA 130A, Volume II

Site: Naval Amphibious School

Training Publications

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
8.	Technical Manual, Chapt. 081, Waterborne Underwater Hull Cleaning of Navy Ships	S9086-CQ- STM-010/CH- 081 R2	NAVSHIPS 0901-LP-081- 0010		50	50	0	ea				

NOTE TO READER: This is a representation of publications available for redistribution.

Facilities

Special Projects 90-03-801 equipment storage space renovation - \$17.5K.

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific
 CPATS Document #: 90 63154 63154 Y2943
 Cost Account Code: 5PBB

Manpower

	<u>Current</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Officer Billets Required	1	1	1	1	1	1
Billets Currently Authorized	1	1	1	1	1	1
Billets Compensated						
Billets Available						
Delta	0	0	0	0	0	0

Enlisted Billets Required	5	5	14	14	14
Billets Currently Authorized	5		5	5	5
Billets Compensated				5	5
Billets Available					
Delta	0	0	-4	-4	-4

NOTE: Compensated billets come from redistribution of Naval Amphibious School manpower assets upon course cancellation at that site. NAVSUBTRACENPAC can provide no compensation billets.

Civilian Billets Required	0	0	0	0	0
Billets Currently Authorized	0	0	0	0	0
Billets Compensated					
Billets Available					
Delta	0	0	0	0	0

Funding

<u>Approp</u>	<u>AG/SAG</u>	<u>Expense</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
OMN	F3/FF						
OPN	F3/FF						

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

Training Equipment

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00- 058-1609		50	40	10	ea	\$125			NAVSEAINST 10560.2
2.	Gage, depth, Mk 1 non-magnetic		1H-4220-00- 639-8999		50	52	0	ea	\$75			NAVSEAINST 10560.2
3.	Life preserver, Mk 4	4053604	1H-4220-01- 213-3533		50	47	3	ea	\$147			NAVSEAINST 10560.2
4.	Compass, wrist, non-magnetic		1HM-6605-00- 079-0007 ED		50	48	2	ea	\$75			NAVSEAINST 10560.2

NOTE: With a current class size of 25 plus 6 instructors, equipment is adequate. For a projected class size of 25 plus 14 instructors, additional SCUBA cysinders, MK4 life preservers, and wrist compasses are needed. Some equipment will be available from the redistribution of equipments due to the course cancellations at Naval Amphibious School and Mobile Diving and Salvage Unit Two.

NOTE TO READER: This is only a representation of the types of equipment which would be listed under Training Equipment.

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

Training Materials

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Lesson Plan				20	0	20	ea				
2.	Trainee Guide				400	0	400	ea				
3.	Performance Test Administrator's Guide				20	0	20	ea				
4.	Knowledge Test Administrator's Guide				20	0	20					

NOTE: Training Materials numbers are based on 14 instructors, and a student load of 300/yr.

NOTE TO READER: This is only a representation of the types of materials which would be listed under Training Materials.

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

Visual Information Equipment

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Overhead Projector	Manuf. P/N	Open Purchase		5			ea	\$150			
2.	Slide Projector, 35mm	Manuf. P/N	Open Purchase		5			ea	\$165			
3.	Chalk Board (Portable)	Manuf. P/N	Open Purchase		10			ea	\$38			

Site: Naval Submarine Training Center Pacific

Visual Information Aids

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Transparancies, Overhead, "Underwater Hull Cleaning"	Bottom Scratcher Productions	Open Purchase		2			set	\$850			CNETINST 5290.3
2.	Slides, 35mm, "Underwater Search Equipment"	NAVDIVSALVTR ACEN	Local Production		2			set	\$1500			CNETINST 5290.3
3.	Film, VHS, "Navy SCUBA Diver Safety"	F0600-AA-PP-89	NAVIMAGCOM contract		2			ea	\$105,000			CNETINST 5290.3

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

Visual Information Aids

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT	COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
4.	Video, VHS "Charging SCUBA Cylinders	DP-49	Open Purchase		2	0	2	ea		\$350			CNETINST 5290.3

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

Training Publications

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
1.	Diver's Advisory,	AIG-239			15	5	10	ea				
2.	Diving Log	OPNAVINST 3150.28			400	200	200	ea				U.S. Navy Diving Manual, Vol. 1
3.	U.S. Navy Diving Manual, Vol. 1		NAVSEA 0994- LP-001-9010		30	25	5	ea				
4.	List of Approved Diving Equipment	NAVSEA 10560.2A			30	30	0	ea				
5.	Safety Precautions for Forces Afloat	OPNAV 5100 series			15	5	10	ea				
6.	Technical Manual, Life Preserver, Mk 4	SS-710AA- MMO-010			30	30	0	ea				
7.	Technical Manual, Underwater Work Techniques, Vol. 1		NAVSHIPS 0994-007-8010		30	30	0	ea				

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

IV. Training Publications

NO.	TYPE/NOMEN.	PART NUMBER	COG/NIIN/SMIC	A C C	QTY REQ'D	QTY O/H	QTY SHORT	U/I	UNIT COST	CAGE CODE	SM&R CODE	TECHNICAL REFERENCE
8.	Technical Manual, Chapt. 081, Waterborne Underwater Hull Cleaning of Navy Ships	S9086-CQ- STM-010/CH- 081 R2	NAVSHIPS 0901-LP-081- 0010		30	30	0	ea				

NOTE TO READER: This is only a representaton ofthe
types of publications which would be listed under
Publications.

Facilities

No additional MILCON requirements, special projects renovations, or base operation

NAVEDTRA 130A, Volume II

G. COMPENSATION

<u>Manpower</u>	<u>Number/Type Billets</u>	<u>Source of Compensation</u>	<u>Shortfall</u>
NAVDIVESALVTRACEN	3 Enlisted instructor	MOBDIVSALU TWO	7
MOBDIVSALU TWO	3 Enlisted instructor	A-433-0023 cancelled at this site	
NAVPHIBSCOL	5 Enlisted instructor	A-433-0023 cancelled at this site	
NAVSUBTRACENPAC	5 Enlisted instructor	NAVPHIBSCOL	4
Funding	<u>Dollar Amount</u>	<u>Source of Compensation</u>	<u>Shortfall</u>
NAVDIVESALVTRACEN			
NOBDIVSALU TWO			
NAVPHIBSCOL			
NAVSUBTRACENPAC			

H. Milestones

<u>Milestone</u>	<u>Date Start</u>	<u>Date Completed</u>
1. Approval of Training Project Plan		27 April 91*
2. Develop Course Training Task List	26 Mar 91	15 Apr 91
3. Develop Training Course Control Document	15 Apr 91	5 May 91*

NAVEDTRA 130A, Volume II

4. Approval of Training Course Control Document		7 June 91*
5. Develop Curriculum and Support Material	5 May 91	14 December 91
6. Request authorization to conduct pilot		14 December 91*
7. Conduct Pilot	18 March 92	10 May 92
8. Submit Monitoring Report and Red Line Copy		21 June 92
9. Issue Letter of Promulgation		29 July 92*
10. Incorporate changes approved by CNTECHTRA	21 June 92	23 August 92
11. Distribute Print Master to Training Sites		23 August 92
12. Instructor Certification/Personalization	23 August 92	13 September 92
13. Implementation of Training Program Cancel courses at Mobile Diving and Salvage Unit Two and Naval Amphibious School.	16 September 92	

* All follow-on dates assume approval will be granted by this date.

TAB A-2

COURSE TRAINING TASK LIST

NAVEDTRA 130A, Volume II

COURSE TRAINING TASK LIST (CTTL)

NAVY SCUBA DIVER

A-433-0023A

Course Mission Statement

The SCUBA Diver course is designed to provide qualified personnel with the basic training necessary to qualify as a SCUBA diver, perform as a dive team member to plan and conduct open circuit SCUBA diving operations including inspection of major hull components. Diving operations includes underwater searches, underwater maintenance and preparation of records and reports. Conduct initial treatment of diving related injuries. Inspection and maintenance is performed on open circuit SCUBA equipment and accessories along with charging of SCUBA cylinders.

Day and night diving operations will be conducted from a shore installation and open water to a qualification depth of 130 FSW.

<u>No</u>	<u>Source</u>	<u>Duty/Task</u>	<u>Level</u>
1.	Navy Military Personnel Command Manual (BUPERS Manual), Article 1410380, Exhibit 6	QUALIFY AS A SCUBA DIVER	S
2.	BUPERS Manual, Article 1410380, Exhibit 3	MEET SCUBA diver physical conditioning level	S
3.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 4-7	SELECT SCUBA diver equipment for qualification dives	S
4.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010	COMPLY with SCUBA diving safety requirements	S
5.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 4-11	PREPARE DIVING RECORDS	S

NOTE: Statements in **all bold** represent a **DUTY**. All other statements represent supporting tasks.

NAVEDTRA 130A, Volume II

<u>No.</u>	<u>Source</u>	<u>Duty/Task</u>	<u>Level</u>
6.	OPNAVINST 5102.1C, Chapter 8	COMPLETE diving mishap and injury reports	S
7.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. E-4	COMPLETE individual diving log report and diver's personal dive log	S
8.	NAVSEAINST 10560.2C	VERIFY approval for service diving equipment	S
9.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. A-4	PREPARE custody records for diving equipment (NAVPERS Form 601-13)	K
10.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. I	COMPLY WITH DIVING ACTIVITY AIR SAMPLING PROGRAM REQUIREMENTS	K
11.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. I	PREPARE Air Sampling Kit data sheet	S
12.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. I	SUBMIT Air Sampling Kit data sheet	K
13.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. I	COLLECT ambient air samples	S
14.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. I	COLLECT source air samples	S
15.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. I	COMPLY with purity standards for diver's breathing air	K
16.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. I	COMPLY with periodicity and conditions for air source sampling	K
17.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, chapter 4	PLAN OPEN CIRCUIT SCUBA DIVING OPERATIONS	S

NAVEDTRA 130A, Volume II

<u>No.</u>	<u>Source</u>	<u>Duty/Task</u>	<u>Level</u>
18.	U.S. Navy Diving Manual, Volume 1, NAVSEA 0994-LP-001-9010, para. 4.7	SELECT open circuit SCUBA equipment and related underwater accessories	S
19.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 2-6	PLAN for effects of undersea environment on light, heat, and sound	K
20.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 2-3	CONVERT English and Metric systems of measurement	K
21.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 2-4	PLAN for the effect of buoyancy and pressure	K
22.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 2-4.2	PLAN for the effects of waterborne pressure	K
23.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 2-5.2	PLAN for the reaction of gases to changes in temperature, volume, and pressure	K
24.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, chapter 7	CHART decompression dives	K
25.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 7-5.2	CHART repetitive dives	K
26.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 4-5.4	CHART dives in extremely cold environments	K
27.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 4-8.5.8	ESTABLISH minimum personnel required by function	K
28.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 4-6.3	COMPLY with working limits	K
29.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para.4-5.3	UTILIZE tides, depth,, and current information	K

NAVEDTRA 130A, Volume II

<u>No.</u>	<u>Source</u>	<u>Duty/Task</u>	<u>Level</u>
30.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 4-2	IDENTIFY considerations that affect dive planning	K
31.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 4-10.5	PLAN for emergency procedures	K
32.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, chapter 5	PERFORM OPEN CIRCUIT SCUBA DIVE	S
33.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para.5-4.2.1	PERFORM donning gear procedures	S
34.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 5-4.2.3; 5-4.9	PERFORM water entries and exits	S
35.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 5-4.5.7	PERFORM buddy breathing	S
36.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 5-4.2.4	PERFORM buoyancy control	S
37.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 5-4.7	PERFORM ditch and don equipment	S
38.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 5-4.7	PERFORM emergency recovery	S
39.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 5-4.6	PERFORM free and buoyant ascent	S
40.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 5-4.3	PERFORM surface swim with fins	S
41.	Locally prepared job sheets	PERFORM work on mechanical projects	S

NAVEDTRA 130A, Volume II

<u>No.</u>	<u>Source</u>	<u>Duty/Task</u>	<u>Level</u>
42.	Locally prepared job sheets	PERFORM compass swim	S
43.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 6-9.6.3	PERFORM UNDERWATER SEARCH	K
44.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 6-9.6.3 (1); Technical Manual, Underwater Work Techniques Vol. 1, pg 3-2-1 (CONF) NAVSEA 0967-LP-007-8010	PERFORM circling line search	K
45.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 6-9.6.3 (4)	PERFORM linear search	K
46.	Technical Manual, Underwater Work Techniques Vol. 1, pg 3-2-2 NAVSEA 0967-LP-007-8010	PERFORM jackstay search	K
47.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 6-8.2	APPLY pull signals	K
48.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 5-4.5.5	APPLY SCUBA hand signals	K
49.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, appx. M	PERFORM INITIAL TREATMENT FOR DIVING ACCIDENTS AND INJURIES	K
50.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, para. 3-3; 3-4	RECOGNIZE the physiology of the respiratory and circulatory systems	K
51.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP-001-9010, appx. M-3	ADMINISTER adult CPR	K

NAVEDTRA 130A, Volume II

<u>No.</u>	<u>Source</u>	<u>Duty/Task</u>	<u>Level</u>
52.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. M-2.1	REMOVE foreign body airway obstructions	K
53.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 8-3	DIAGNOSE pressure and non-pressure related injuries	K
54.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. G	RECOGNIZE dangerous marine life	K
55.	U.S Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. G	RECOGNIZE injuries caused by specific dangerous marine life	K
56.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. G	APPLY first aid for injuries received from dangerous marine life	K
57.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, appx. G	OBSERVE precautionary procedures for dealing with dangerous marine life	K
58.	Equipment PMS	PERFORM INSPECTION AND MAINTENANCE ON OPEN CIRCUIT SCUBA EQUIPMENT AND RELATED UNDERWATER ACCESSORIES	S
59.	Equipment PMS	PERFORM periodic and/or required inspections and maintenance	S
60.	Equipment technical/maintenance manuals	ASSEMBLE/DISASSEMBLE open circuit SCUBA equipment and related underwater accessories	S
61.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 5-3.4	CHARGE OPEN CIRCUIT SCUBA EQUIPMENT	S

NAVEDTRA 130A, Volume II

<u>No</u>	<u>Source</u>	<u>Duty/Task</u>	<u>Level</u>
62.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 2-5.2	APPLY General Gas Laws when SCUBA charging SCUBA cylinders	K
63.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 5-3.5	APPLY safety procedures	S
64.	U.S. Navy Diving Manual,, Volume 1, NAVSEA 0994-LP- 001-9010, para. 5-3.4	CHARGE SCUBA cylinders	S
65.	NAVSHIPS Technical Manual, and Underwater Work Techniques Manual, Volume 2 NAVSHIPS 0994- 007-8010	CONDUCT INSPECTION OF MAJOR HULL COMPONENTS	S
66.	NAVSHIPS Technical Manual, and Underwater Work Techniques Manual, Volume 2, Parts 4 & 5 NAVSHIPS 0994-007-8010	LOCATE major components of ship's hull	K
67.	NAVSHIPS Technical Manual, Chapt. 081, Waterborne Underwater Hull Cleaning of Navy Ships, para. 081-1.3. NAVSHIPS 0901-LP-081-0010	LOCATE fouling areas of ship's hull	K
68.	NAVSHIPS Technical Manual, Chapt. 081, Waterborne Underwater Hull Cleaning of Navy Ships, para. 081-1.2. NAVSHIPS 0901-LP-081-0010	IDENTIFY progressive fouling patterns of underwater growth on ship's hull	K
69.	NAVSHIPS Technical Manual, Chapt. 081, Waterborne Underwater Hull Cleaning of Navy Ships, para. 081-1.2.6 NAVSHIPS 0901-LP-081-0010	APPLY fouling rating scale	K

NAVEDTRA 130A, Volume II

<u>No.</u>	<u>Source</u>	<u>Duty/Task</u>	<u>Level</u>
70.	NAVSHIPS Technical Manual, and Underwater Work Techniques Manual, Volume 2, Part 5, Sect. 3 NAVSHIPS 0994-007-8010	CONDUCT day inspection of ship's hull	S
71.	NAVSHIPS Technical Manual, and Underwater Work Techniques Manual, Volume 2, Part 5, Sect. 3 NAVSHIPS 0994-007-8010 (Note: Reference does not differentiate between day/night inspections)	CONDUCT night inspection of ship's hull	S
72.	NAVSHIPS Technical Manual, and Underwater Work Techniques Manual, Volume 2, Part 5, Sect. 3 NAVSHIPS 0994-007-8010	PREPARE ship's hull inspection report	S
73.	NAVSHIPS Technical Manual, and Underwater Work Techniques Manual, Volume 2, Part 2	APPLY safety precautions related to ship's hull inspections	S

TAB A-3

TRAINING COURSE CONTROL DOCUMENT

NAVEDTRA 130A, Volume II

TRAINING COURSE CONTROL DOCUMENT

FOR

NAVY SCUBA DIVER

A-433-0023A

PREPARED FOR

DEPUTY FOR SHORE/TECHNICAL TRAINING (CNET T2)
250 DALLAS STREET
PENSACOLA, FL 32508-5220

PREPARED BY

NAVAL DIVING AND SALVAGE TRAINING CENTER
PANAMA CITY, FLORIDA 32407

AUGUST 1990

(APRIL 1991)

LETTER OF PROMULGATION

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*****
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* Note to developer: The Letter of Promulgation will *
* be added after the CCA has approved the course for *
* implementation. *
*
*****
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NAVEDTRA 130A, Volume II

TRAINING COURSE CONTROL DOCUMENT

Foreword

This course is designed to teach the knowledge and skills needed to perform basic SCUBA diver tasks. The course was previously taught at four sites: Naval Amphibious School, Coronado; Naval Submarine Training Center, Pearl Harbor; Mobile Diving and Salvage Unit Two, Little Creek and Naval Diving and Salvage Training Center, Panama City. In FY 93 this course will be canceled at the Amphibious School and Mobile Diving and Salvage Unit Two. Manpower and equipment resources from the canceled sites will be redistributed to the remaining two sites. This TCCD describes the revised training program at Naval Submarine Training Center, Pearl Harbor and Naval Diving and Salvage Training center, Panama City.

Panama City is the only site with a diving tower. This impacts on the number of instructors and course length between the two sites. However, adjustments have been made for periods and ratios, and overall course length is the same for both sites.

TRAINING COURSE CONTROL DOCUMENT

TABLE OF CONTENTS

<u>Contents</u>	<u>Page</u>
Letter of Promulgation	A-3-5
Table of Contents	A-3-9
Foreword	A-3-7
Course Data	A-3-11
Trainee Data	A-3-14
Curriculum Outline of Instruction	A-3-15
ANNEX A: Resource Requirements Changes	
ANNEX B: Course Master Schedule	

COURSE DATA

Course Title:

Navy SCUBA Diver

Course Identification Number (CIN):

A-433-0023A

Course Data Processing Code (CDP) by Site: CDP

- | | |
|---|------|
| 1. Naval Diving and Salvage Training Center | 6419 |
| 2. Naval Submarine Training Center, Pacific | 2114 |

Course Status:

Revision

Course Mission Statement:

The SCUBA Diver course is designed to provide qualified personnel with the basic training necessary to qualify as a SCUBA diver, perform as a dive team member to plan and conduct open circuit SCUBA diving operations including inspection of major hull components. Diving operations includes underwater searches, underwater maintenance and preparation of records and reports. Conduct initial treatment of diving related injuries. Inspection and maintenance is performed on open circuit SCUBA equipment and accessories along with charging of SCUBA cylinders.

Day and night diving operations will be conducted from a shore installation and open water to a qualification depth of 130 FSW.

Occupational Classification:

It is proposed that NEC 5345 be awarded to the Team Member/SCUBA course graduate.

Prerequisites:

There is no prerequisite training
Course Overview

Course content includes:

NAVEDTRA 130A, Volume II

Apply basic diving physics laws and formulas.

Identify diving diseases and injuries, and select the appropriate treatment.

Perform underwater search.

Perform basic underwater hull inspection and search techniques.

Perform as Recorder, Log Keeper, Chartman for SCUBA operations.

Perform as diver's Tender for SCUBA operations.

Qualify to dive, in accordance with U. S. Navy Diving Manual, Volume 1, to designed certification depths in the following equipment:

Open Circuit SCUBA

Perform step-by-step maintenance and repair procedures in accordance with approved technical manuals, Planned Maintenance System (PMS), and the U. S. Navy Diving Manual, Volume 1, on the following equipment:

SCUBA Air Tanks (Steel and Aluminum)

1st and 2nd stage regulators and hoses

Life preserver and buoyancy compensators

Diving operations may be performed from surface or subsurface vessels, or ship repair facilities or other selected shore installations as necessary, dependent upon organizational mission and commander's requirements. Graduates are qualified to a maximum depth of 130 feet.

Course Length:

1. 40 Calendar Days

Training Sites:

1. Naval Diving and Salvage Training Center,
Panama City, Florida 32407
2. Naval Submarine Training Center, Pacific
Pearl Harbor, Hawaii 96860

Site Unique Training Consideration:

NDSTC Panama City is the only site with a diving tower. The distribution of periods and ratios for Naval Submarine Training Center, Pacific are adjusted so the overall course length is the same for both sites.

Number of Convenings By Site:

1. Naval Diving and Salvage Training Center	13
2. Naval Submarine Training Center, Pacific	12

Class Capacity By Site:

1. Naval Diving and Salvage Training Center	
a. Maximum	25
b. Minimum	10
2. Naval Submarine Training Center, Pacific	
a. Maximum	25
b. Minimum	10

Average On-Board By Site:

1. Naval Diving and Salvage Training Center	36
2. Naval Submarine Training Center, Pacific	33

Instructor/Support Manning:

The estimated plan for Instructor/Support Manning is based on the same ratios for all sites. Periods and ratios can be found in the Course Master Schedule.

Training Site:

3. Naval Diving and Salvage Training Center	16
4. Naval Submarine Training Center, Pacific	14

NAVEDTRA 130A, Volume II

TRAINEE DATA

Personnel Physical Requirements:

Students entering the SCUBA Diver Course must be volunteers; be physically qualified in accordance with Article 15-36, Manual of the Medical Department; be qualified swimmers first class in accordance with MILPERSMAN standards; be recommended by their Commanding Officer; be interviewed by a designated Diving Officer; and be screened by a designated diving activity, in accordance with MILPERSMAN.

Security Clearance:

No security clearance is required for entry into the Diver, SCUBA Course.

Obligated Service:

12 Months or as given in current MILSPERSMAN

NOBC/NEC Earned:

5345

CURRICULUM OUTLINE OF INSTRUCTION

UNIT 1: **SCUBA DIVER QUALIFICATIONS**

Terminal Objective(s):

- 1.0 **QUALIFY** as a SCUBA diver in accordance with Navy Military Personnel Command Manual (BUPERS Manual), Article 1410380, Exhibit 6. (CTTL #1)

Lesson Topic 1.1: SCUBA DIVING

Enabling objective(s):

- 1.1 **PERFORM** physical training with the class as a group in accordance with the Course Master Schedule, and successfully **MAINTAIN** diver physical qualification standards throughout the course of training in accordance with BUPERS Manual, Article 1410380, Exhibit 5. (CTTL #2)
- 1.2 **IDENTIFY** the minimum equipment which must be worn by a Navy SCUBA diver in accordance with U. S. Navy Diving Manual, Volume 1. (CTTL # 3)

Only Lesson Topic I of Units 8 and 9 are used as samples in Volume II. Interim units of instruction are intentionally omitted.
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UNIT 8: **OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE**

Terminal Objective(s):

- 6.0 **CHARGE** open circuit SCUBA following a checklist and in accordance with the U. S. Navy Diving Manual, Volume 1. (CTTL #61)

Lesson Topic 8.1: SCUBA CHARGING

Enabling Objective(s):

- 6.1 **APPLY** General Gas Laws when charging SCUBA cylinders in accordance with U. S. Navy Diving Manual, Volume 1. (CTTL #62)

NAVEDTRA 130A, Volume II

CURRICULUM OUTLINE OF INSTRUCTION (CONTINUED)

- 6.2 **FOLLOW** safety precautions applicable to charging Open Circuit SCUBA in accordance with the U. S. Navy Diving Manual, Volume 1. (CTTL #63)
- 6.3 **CHARGE**, as a member of a SCUBA charging team, SCUBA cylinders in accordance with the U. S. Navy Diving Manual, Volume 1, to the accuracy required by the Diving Training Standards following an Open Circuit SCUBA charging checklist for the available system. (CTTL #64)

UNIT 9: **INSPECTION OF MAJOR HULL COMPONENTS**

Terminal Objective(s):

- 7.0 **APPLY** underwater hull search techniques to **CONDUCT** inspection of major hull components in accordance with Underwater Work Techniques Manual, Vol. 2, while performing operations as a SCUBA diver. Observe applicable safety precautions. (CTTL #65)
- 4.0 **PLAN OPEN CIRCUIT SCUBA DIVING OPERATIONS** in accordance with U.S. Navy Diving Manual, Volume 1, NAVSEA 0994-LP-001-9010, chapter 4. (CTTL #17)

Lesson Topic 9.1 UNDERWATER HULL INSPECTION

Enabling Objective(s):

- 7.1 **IDENTIFY** the components of the ship's hull in accordance with the Underwater Work Techniques Manual, Volume 2. (CTTL #66)
- 7.2 **DESCRIBE** the stages of growth commonly found on underwater hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081, and the Underwater Work Techniques Manual, Volume 2. (CTTL #68)
- 7.3 **STATE** the general contents of the Fouling Rating Scale, and the Paint Deterioration Rating Scale, in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081. (CTTL #69)

CURRICULUM OUTLINE OF INSTRUCTION (CONTINUED)

- 7.4 **DESCRIBE** the fouling areas of hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081. (CTTL #67)
- 4.13 **IDENTIFY** considerations that affect dive planning in accordance with U.S. Navy Diving Manual, Volume 1, NAVSEA 0994-LP-001-9010, para. 4-2. (CTTL #30)
- 7.5 **APPLY** the specific safety precautions associated with underwater hull inspections in accordance with the U. S. Navy Diving Manual, Volume 1; the Underwater Work Techniques Manual, Volume 2; and the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081. (CTTL #73)
- 7.6 **PERFORM** day and night underwater hull inspections in accordance with the NAVSHIPS Technical Manual and Underwater Work Techniques Manual, Volume 2. (CTTL #70; 71)
- 7.7 **PREPARE** the ship's hull inspection report in accordance with the Diving Training Standards. (CTTL #72)

NAVEDTRA 130A, Volume II

Site: Naval Diving and Salvage Training Center

Training Equipment

<u>No.</u>	<u>Type/ Nomen.</u>	<u>Part Number</u>	<u>Cog/NIIN/SMIC</u>	<u>Quan. Req'd</u>	<u>U/I</u>	<u>CAGE Code</u>	<u>Technical Reference</u>
1.	Cylinders SCUBA Twin 80	0765-80 (Black)	9C-4220-00-058- 1609	50	ea		NAVSEAINST 10560.2
2.	Gage, Depth, wrist		1H-4220-00-639- 8999	50	ea		NAVSEAINST 10560.2
3.	Life Preserver, MK4	4053604	1H-4220-01-213- 3533	50	ea		NAVSEAINST 10560.2
4.	Compass, wrist, non- magnetic		1HM-6605-00-079- 0007 ED	50	ea		NAVSEAINST 10560.2

NAVEDTRA 130A, Volume II

Site: Naval Diving and Salvage Training Center

VI Equipment

<u>No.</u>	<u>Type/ Nomen.</u>	<u>Model Number</u>	<u>Cog/NIIN/SMIC</u>	<u>Quan. Req'd</u>	<u>U/I</u>	<u>CAGE Code</u>	<u>Remarks</u>
1.	Projector, Overhead	Manuf. model no. or other ident. info.	Open Purchase	5	ea		
2.	Projector, 35mm slide		Open Purchase	5	ea		
3.	Playback unit, VHS		Open Purchase	5	ea		
4.	Video monitor, 35"		Open Purchase	5	ea		
5.	Chalkboard, portable, 60" X 48"		Open Purchase	10	ea		

NOTE: Items 3 & 4 are not on the Training Project Plan RRL. These are items needed to conduct the course that were identified after the Project Plan was approved.

NAVEDTRA 130A, Volume II

Site: Naval Diving and Salvage Training Center

Training Materials

<u>No.</u>	<u>Type/ Nomen.</u>	<u>ID Number</u>	<u>Cog/NIIN/SMIC</u>	<u>Quan. Req'd</u>	<u>U/I</u>	<u>CAGE Code</u>	<u>Remarks</u>
1.	Lesson Plan			20	ea		1 per instructor
2.	Trainee Guide			400	ea		1 per trainee (retained)
3.	Performance Test Administrator Guide			20	ea		1 per instructor
4.	Knowledge Test Administrator Guide			20	ea		1 per instructor

NOTE: Training Materials numbers are based on 16 instructors, and a student load of 325/yr.

NOTE TO READER: This is only a representation of the types of equipment and materials which would be listed under Training Equipment and Training Materials.

NAVEDTRA 130A, Volume II

Site: Naval Diving and Salvage Training Center

Training Publications

<u>Number</u>	<u>Title</u>	<u>Quantity Req'd for Course</u>	<u>Quantity Req'd per Class</u>
AIG-239	Diver's Advisory	16	1 per instructor
OPNAVINST 3150.28	Diving Log	00	1 per trainee (retained)
NAVSEA 0994-SP-001-9010	U.S. Navy Diving Manual Vol. 1	30	1 per instructor; 1 per trainee
NAVSEA 10560.2A	List of Approved Diving Equipment	30	1 per instructor; 1 per trainee
OPNAV 5100 series	Safety Precaution for Forces Afloat	20	1 per instructor; 1 per class
SS-710AA-MMO-010	Technical Manual, Life Preserver MK-4	30	1 per instructor; 1 per trainee
NAVSHIPS 0994-007-8010	Technical Manual, Underwater Work Techniques, Vol. 1	30	1 per instructor; 1 per trainee
S9086-CQ-STM-010/CH-081 R2	Technical Manual, Chapter 081, Waterborne Underwater Hull Cleaning of Navy Ships	30	1 per instructor; 1 per trainee

NAVEDTRA 130A, Volume II

Site: Naval Diving and Salvage Training Center

Films

Designator	Title	Format	Running Time
F0600-AA-PP-89	"Navy SCUBA Diver Safety"	16mm	60 minutes

Videos

Designator	Title	Format	Running Time
	"Charging SCUBA Cylinders"	VHS	40 minutes

Slides

Title	Number in Set	Set ID	Figure Number (x) thru (y)
"Underwater Search Equipment"	35		

Transparencies

Title	Number in Set	Set ID	Figure Number (x) thru (y)
"Underwater Hull Cleaning"	55		

Wall Charts (COLUMN HEADINGS NOT DEFINED AT THIS TIME IN AIM2)

NOTE TO READER: This is only a representation of the types of equipment which would be listed under Training Equipment.

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

Training Equipment

<u>No.</u>	<u>Type/ Nomen.</u>	<u>Part Number</u>	<u>Cog/NIIN/SMIC</u>	<u>Quan. Req'd</u>	<u>U/I</u>	<u>CAGE Code</u>	<u>Technical Reference</u>
1.	Cylinders SCUBA Twin 80	0765-80 (Black)	9C-4220-00-058- 1609	50	ea		NAVSEAINST 10560.2
2.	Gage, Depth, wrist		1H-4220-00-639- 8999	50	ea		NAVSEAINST 10560.2
3.	Life Preserver, MK4	4053604	1H-4220-01-213- 3533	50	ea		NAVSEAINST 10560.2
4.	Compass, wrist,non- magnetic		1HM-6605-00-079- 0007 ED	50	ea		NAVSEAINST 10560.2

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

VI Equipment

<u>No.</u>	<u>Type/ Nomen.</u>	<u>Model Number</u>	<u>Cog/NIIN/SMIC</u>	<u>Quan. Req'd</u>	<u>U/I</u>	<u>CAGE Code</u>	<u>Remarks</u>
1.	Projector, Overhead	Manuf. model number or other ID info.	Open Purchase	5	ea		
2.	Projector, 35mm slide		Open Purchase	5	ea		
3.	Playback unit, VHS		Open Purchase	5	ea		
4.	Video monitor, 35"		Open Purchase	5	ea		
5.	Chalkboard, portable, 60" X 48"		Open Purchase	10	ea		

NOTE: Items 3 & 4 are not on the Training Project Plan RRL. These are items needed to conduct the course that were identified after the Project Plan was approved.

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

Training Materials

<u>No.</u>	<u>Type/ Nomen.</u>	<u>ID Number</u>	<u>Cog/NIIN/SMIC</u>	<u>Quan. Req'd</u>	<u>U/I</u>	<u>CAGE Code</u>	<u>Technical Reference</u>
1.	Lesson Plan			20	ea		1 per instructor
2.	Trainee Guide			400	ea		1 per trainee (retained)
3.	Performance Test Administrator Guide			20	ea		1 per instructor
4.	Knowledge Test Administrator Guide			20	ea		1 per instructor

NOTE: Training Materials numbers are based on 14 instructors, and a student load of 300/yr.

NOTE TO READER: This is only a representation of the types of materials which would be listed under Training Materials.

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

Training Publications

<u>Number</u>	<u>Title</u>	<u>Quantity Req'd for Course</u>	<u>Quantity Req'd per Class</u>
AIG-239	Diver's Advisory	16	1 per instructor
OPNAVINST 3150.28	Diving Log	400	1 per trainee (retained)
NAVSEA 0994-SP-001-9010	U.S. Navy Diving Manual Vol. 1	30	1 per instructor; 1 per trainee
NAVSEA 10560.2A	List of Approved Diving Equipment	30	1 per instructor; 1 per trainee
OPNAV 5100 series	Safety Precaution for Forces Afloat	20	1 per instructor; 1 per class
SS-710AA-MMO-010	Technical Manual, Life Preserver MK-4	30	1 per instructor; 1 per trainee
NAVSHIPS 0994-007-8010	Technical Manual, Underwater Work Techniques, Vol. 2	30	1 per instructor; 1 per trainee
S9086-CQ-STM-010/CH-081 R2	Technical Manual, Chapter 081, Waterborne Underwater Hull Cleaning of Navy Ships	30	1 per instructor; 1 per trainee

NAVEDTRA 130A, Volume II

Site: Naval Submarine Training Center Pacific

Films

Designator	Title	Format	Running Time
F0600-AA-PP-89	"Navy SCUBA Diver Safety"	16mm	60 minutes

Videos

Designator	Title	Format	Running Time
	"Charging SCUBA Cylinders"	VHS	40 minutes

Slides

Title	Number in Set	Set ID	Figure Number (x) thru (y)
"Underwater Search Equipment"	35		

Transparencies

Title	Number in Set	Set ID	Figure Number (x) thru (y)
"Underwater Hull Cleaning"	55		

Wall Charts	Title	Identifier	Source	Description
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NOTE TO READER: This is only a representation of the types of publications which would be listed under Publications.

NAVEDTRA 130A, Volume II

WEEK 1

Length of Period: 50 minutes

Day 1

Topic No.	Type	Period	Topic	Ratio
1.1	Class	1	Physical Conditioning	25:1
1.1	Class	2	Physical Conditioning	25:1
1.1	Test	3	Physical Conditioning	25:1

NOTE TO READER: Only portions of Unit 1, Lesson Topic 1; Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are used as samples in Volume II. Interim units of instruction are intentionally omitted.

WEEK 3

Day 1

Topic No.	Type	Period	Topic	Ratio
8.1	Class	9	SCUBA Charging	25:1
8.1	Class	10	SCUBA Charging	25:1
8.1	Lab	11	SCUBA Charging	4:1
8.1	Test	12	SCUBA Charging	4:1
9.1	Class	13	Underwater Hull Inspection	25:1
9.1	Class	14	Underwater Hull Inspection	25:1
9.1	Class	15	Underwater Hull Inspection	25:1
1.1	Field	16	Physical Conditioning	8:1

Day 2

9.1	Class	17	Underwater Hull Inspection	25:1
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NAVEDTRA 130A, Volume II

9.1	Lab	18	Underwater Hull Inspection	4:1
9.1	Test	19	Underwater Hull Inspection	4:1

NOTE: Physical conditioning is mandated for all divers so is included as part of the 8-hour training day.

NAVEDTRA 130A, Volume II

TAB A-4
LESSON PLAN

LESSON PLAN
FOR
NAVY SCUBA DIVER

A-433-0023A

PREPARED BY
NAVAL DIVING AND SALVAGE TRAINING CENTER
PANAMA CITY, FLORIDA 32407

PREPARED FOR
DEPUTY FOR SHORE/TECHNICAL TRAINING (CNET T2)
250 DALLAS STREET
PENSACOLA, FL, 32508-5220

AUGUST 1987
(JUNE 1991)

A-4-3

LESSON PLAN

A-433-0023A

CHANGE RECORD

Number and Description of Change Entered By Date

Number and Description of Change	Entered By	Date

A-4-5

TABLE OF CONTENTS

<u>Contents</u>	<u>Page</u>
Change Record	3
Security Awareness Notice	7
Safety/Hazard Awareness Notice	8
Terminal Objectives	10
UNIT 1: SCUBA DIVER QUALIFICATION	
Lesson Topic 1.1 - SCUBA Diver Physical Conditioning	
<div style="border: 1px solid black; padding: 10px;">NOTE TO READER: Only those Lesson Topics supporting Units 8 and 9 are included to illustrate the contents of a Lesson Plan.</div>	
UNIT 8: OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE	
Lesson Topic 8.1 - SCUBA Charging	8-1-1
UNIT 9: INSPECTION OF MAJOR HULL COMPONENTS	
Lesson Topic 9.1 - Underwater Hull Inspection	9-1-1

A-4-7

LESSON PLAN

A-433-0023A

SECURITY AWARENESS NOTICE

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*****  
*                                                                 *  
*                                                                 *  
*           This course does not contain any classified material. *  
*                                                                 *  
*                                                                 *  
*****
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LESSON PLAN

A-433-0023A

SAFETY/HAZARD AWARENESS NOTICE

This notice promulgates safety precautions to the staff and trainees of the Navy SCUBA Diver Course in accordance with responsibilities assigned by the Chief of Naval Education and Training.

Trainees may voluntarily request termination of training. Any time the trainee makes a statement such as "I QUIT," or "DOR," (Drop on Request), he or she shall be immediately removed from the training environment and referred to the appropriate division or training officer for administrative action. The trainee must then make a written statement, clearly indicating the desire to DOR.

Any time a trainee or instructor has apprehension concerning his or her personal safety or that of another, he or she shall signal for a "Training Time Out" to clarify the situation or procedure and receive or provide additional instruction as appropriate. "Training Time Out" signals, other than verbal, shall be appropriate to the training environment.

Instructors are responsible for maintaining situational awareness and shall remain alert to signs of trainee panic, fear, extreme fatigue or exhaustion, or lack of confidence that may impair safe completion of the training exercise, and shall immediately stop the training, identify the problem, and make a determination to continue or discontinue training. Instructors shall be constantly alert to any unusual behavior which may indicate a trainee is experiencing difficulty, and shall immediately take appropriate action to ensure the trainee's safety.

The safety precautions contained in this course are applicable to all personnel. They are basic and general in nature. Personnel who operate or maintain equipment in support of Navy SCUBA Diver Course must be thoroughly familiar with all aspects of personnel safety, and strictly adhere to every general as well as specific safety precautions contained in operating and emergency procedures and applicable governing directives.

Special emphasis must be placed on strict compliance with published safety precautions and on personal awareness of potentially hazardous conditions peculiar to diving.

SAFETY/HAZARD AWARENESS NOTICE (CONT.)

All personnel must have a comprehensive knowledge of emergency procedures which prescribe courses of action to be followed in the event of equipment failure or human error as stated in the Pre-Mishap Plan. Strict adherence to approved and verified operating, emergency, and maintenance procedures IS MANDATORY. As a minimum, each individual is responsible for knowing, understanding, and observing all safety precautions applicable to the command, school, course, their work, and their work areas. In addition, you are responsible for observing the following general safety precautions:

- a. Each individual shall report for work rested and emotionally prepared for the tasks at hand.
- b. You shall use normal prudence in all your functions, commensurate with the work at hand.
- c. You shall report any unsafe conditions, or any equipment or material which you consider to be unsafe, and any unusual or developing hazards.
- d. You shall warn others whom you believe to be endangered by known hazards or by failure to observe safety precautions, and of any unusual or developing hazards.
- e. You shall report to the school any **mishap**, injury, or evidence of impaired health occurring in the course of your work or during non-training environment.
- f. You shall wear or use the protective clothing and/or equipment of the type required, approved, and supplied for the safe performance of your work.
- g. All personnel in the immediate vicinity of a designated noise hazardous area or noise hazardous operation shall wear appropriate hearing protective devices. (NDSTC Instruction 6260.6 series)

TERMINAL OBJECTIVES

- 1.0 **QUALIFY** as a SCUBA diver in accordance with Navy Military Personnel Command Manual (BUPERS Manual), Article 1410380, Exhibit 6 (CTTL #1)
- 4.0 **PLAN OPEN CIRCUIT SCUBA DIVING OPERATIONS** in accordance with U.S. Navy Diving Manual, Volume 1, NAVSEA 0994-LP-001-9010, chapter 4. (CTTL #17)

NOTE TO READER: Sample instruction is provided to fully support only Terminal Objectives 6.0 and 7.0. Sample instruction for Terminal Objectives 1.0 through 3.0, and Terminal Objective 5.0 are intentionally omitted. Terminal Objective 4.0 provides one Enabling Objective for Lesson Topic 9.1.

- 6.0 **CHARGE** open circuit SCUBA following a checklist and in accordance with the U. S, Navy Diving Manual, Volume 1. (CTTL #61)
- 7.0 **APPLY** underwater hull search techniques to **CONDUCT** inspections of major hull components in accordance with the Underwater Ship Husbandry Manuals, SO600-AA-010 series while performing as a SCUBA diver observing applicable safety precautions in accordance U. S. Navy Diving Manual, Volume 1. (CTTL #65)

LESSON PLAN

8. OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE

A-433-0023A

Topic 8.1 SCUBA Charging

Class periods: 3

Lab periods: 3

Enabling Objectives

- 6.1 **APPLY** General Gas Laws when charging SCUBA cylinders in accordance with U.S. Navy Diving Manual, Volume 1. (CTTL #62)
- 6.2 **FOLLOW** safety precautions applicable to charging Open Circuit SCUBA in accordance with the U.S. Navy Diving Manual, Volume 1. (CTTL #63)
- 6.3 **CHARGE**, As a member of a SCUBA charging team, SCUBA cylinders in accordance with the U.S. Navy Diving Manual, Volume 1, to the accuracy required by the Diving Training Standards, following an Open Circuit SCUBA checklist for the available system. (CTTL #64)

B. Reference Publications: None

Trainee Preparation:

- A. Trainee Support Materials
1. Outline Sheet 8-1-1
 2. NAVDIVSALVTRACEN SCUBA Charging Checklist

NOTE TO READER: Assignment of Outline Sheet 8-1-1 was made from a previous lesson topic. The outline sheet must be studied prior to presentation of this lesson topic.

8-1-1

LESSON PLAN

8. OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE

A-433-0023A

Topic 8.1 SCUBA Charging

Instructor Preparation:

- | | |
|--|--|
| A. Review Assigned Trainee Material | 2. SCUBA Bottles (1 per trainee) |
| B. Reference Publications: | 3. SCUBA Charging Checklist
(1 per trainee) |
| 1. U. S. Navy Diving Manual, Volume 1 | 4. Hearing protection |
| 2. Diving Training Standards,
NAVDIVSALVTRACEN 433-0023-1 | 5. Trainee Guide |
| 3. NAVDIVSALVTRACEN Instructional
Building Auxiliary Air Operating
Procedures Manual | |
| 4. NAVDIVSALVTRACEN SCUBA Charging Checklist | |
| 5. Transparencies: | |
| a. 8-1-1 | |
| b. 8-1-2 | |
| c. 8-1-3 | |
| C. Training Materials Required: | |
| 1. SCUBA Charging Rack (1 per class) | |

A-4-15

8-1-2

LESSON PLAN

8. OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE

A-433-0023A

Topic 8.1 SCUBA Charging (Continued)

DISCUSSION POINT

1. Introduction

RELATED INSTRUCTOR ACTIVITY

1. Establish Contact.

Introduce yourself and give any background on yourself that might be of interest.

Establish Readiness.

Motivating Statements:

Tell trainees how they will use the course material.

Tell trainees why they need to know the lesson material.

Safety- Review TTO

Refer to Outline Sheet 8-1-1 and review objectives.

LESSON PLAN

8. OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE

A-433-0023A

Topic 8.1 SCUBA Charging (Continued)

DISCUSSION POINT

2. General Gas Laws that affect SCUBA charging
 - a. The factors of temperature, volume and pressure are interrelated such that a change in any of these factors must be balanced by a corresponding change in one or both of the others.
 - b. SCUBA charging increases the pressure in the bottle, which increases the temperature of the gas, which heats the bottle.
 - c. Effect of Temperature
 - (1) Loss of pressure as the bottles cool to ambient temperature (Especially in cold water).
 - (2) Increased possibility of blow-out disc failure if 400 PSI maximum is exceeded.
3. Charge SCUBA Cylinders
 - a. Ensure there is sufficient pressure in the H.P. banks for the type of cylinder to be charged.

RELATED INSTRUCTION ACTIVITY

2. Reference: U.S. Navy Diving Manual, Vol 1, para 2-5.2
 - a. Display Transparency 8-1-1
 - b. Display Transparency 8-1.2
 - c. Display Transparency 8-1.3
- a. Set by command policy (if site specific add note)
Reference: NAVDIVSALVTRACEN Instructional Building Auxiliary Air Operating Procedures Manual

A-4-17

LESSON PLAN

8. OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE

A-433-0023A

Topic 8.1 SCUBA Charging (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

WARNING

DO NOT CHARGE ANY SCUBA CYLINDERS HAVING AN EXPIRED HYDROSTATIC TEST DATE. CHARGING A CYLINDER WITH AN EXPIRED

Reference: U.S. Navy Diving Manual, Volume 1, Table 5-4.

HYDROSTATIS TEST DATE MAY LEAD TO RUPTURE OF THE CYLINDER

Note: Never mix steel and aluminum cylinders in the same charging line.

Caution: Why? Because of the difference charging pressures involved. EMPHASIZE

- b. Ensure that all other personnel are kept away from the immediate civinity of the charging hoses and fittings (for safety reasons - should a hose suddenly disconnect frm the coupling while loaded with H.P. air).

WARNING: NOISE HAZARD
Explain why hearing protection MUST be worn while “bleeding down.”

Note: The charging man will not leave his station for any reason until charging has been secured

Caution - EMPHASIZE
Reference: Diving Training Standards, NAVDIVSALVTRACEN 433-0023-1

4. Summary and Review

- a. General Gas Law
- b. Charge SCUBA cylinders

4. Review the DPs and repeat the EO(s)

LESSON PLAN

8. OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE

A-433-0023A

Topic 8.1 SCUBA Charging (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

5. Assignment

a. Read Assignment Sheet 8-1-3

a. Assignment Sheet 8-1-3 will be reviewed at the beginning of Lesson Topic 9.1

b. Read Outline Sheet 9-1-1 and Information Sheet 9-1-3

b. Homework. Outline Sheet 9-9-1 and Assignment Sheet 9-1-4 will be listed under Trainee Preparation in Lesson Topic 9.1 and discussed at the appropriate place in the lesson.

c. Testing

6. Application

6. Direct Trainees to go to lab room #13 to complete Job Sheet 8-1-2

a. Safety precautions

a. Review TTO/DOR

(1) TTO

(2) DOR

A-4-19

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection

Class period 3

Class periods 3

Enabling Objectives:

- 7.1 **IDENTIFY** the components of the ship's hull in accordance with the Underwater Work Techniques Manual, Volume 2. (CTTL #66)
- 7.2 **DESCRIBE** the stages of growth commonly found on the underwater hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Surface Ships, Chapter 081, and the Underwater Work Techniques Manual, Volume 2, (CTTL #68)
- 7.3 **STATE** the general contents of the Fouling Rating Scale, and the Paint Deterioration Rating Scale, in accordance with NAVSHIPS Technical Manual and Waterborne Underwater Hull Cleaning of Surface Ships, Chapter 081. (CTTL #69)
- 7.4 **DESCRIBE** the fouling areas of ship's hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Surface Ships, Chapter 081, and the Underwater Work Techniques Manual, Volume 2. (CTTL #67)
- 4.13 **IDENTIFY** considerations that affect dive planning in accordance with U.S. Navy Diving Manual, Volume 1, NAVSEA 0994-LP-001-9010, para. 4-2. (CTTL #30)
- 7.5 **APPLY** the specific safety precautions associated with underwater hull inspections in accordance with the U.S. Navy Diving Manual, Volume 1; the Underwater Work Techniques Manual, Volume 2; and the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Surface Ships, Chapter 081. (CTTL #73)
- 7.6 **PERFORM** day and night underwater hull inspections in accordance with the NAVSHIPS Technical Manual and Underwater Work Techniques Manual, Volume 2. (CTTL #70, #71)
- 7.7 **PREPARE** the ship's hull inspection report in accordance with the Diving Training Standards. (CTTL #72)

A-4-20

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection

Trainee Preparation:

- A. Trainee Support Materials
 - 1. Outline Sheet 9-1-1
 - 2. Assignment Sheet 9-1-4

B. Reference Publications: None

NOTE TO READER:

Transparencies may also be listed individually, with titles.

Instructor Preparation:

- A. Review Assigned Trainee Materials
- B. Reference Publications
 - 1. NAVSHIPS Technical Manual and Underwater Work Techniques Manual, Volume 2
 - 2. NAVSHIPS Technical Manual, Chapter 081, Waterborne Underwater Hull Cleaning of Navy Ships
 - 3. U.S. Navy Diving Manual, Volume 1
- C. Training Materials Required
 - 1. Trainee Guide
 - 2. Transparencies
 - a. 9-1-1 to 9-1-10
 - 3. NAVSHIPS Technical Manual, Chapter 081 Waterborne Underwater Hull Cleaning of Navy Ships

A-4-21

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

NOTE: Review Assignment Sheet 8-1-3 and answer study questions before beginning this lesson topic.

1. Introduction

Underwater hull inspection involves the examination of the entire exterior underwater hull and components to determine the condition and needs for maintenance and repair. Stress safety.

RELATED INSTRUCTOR ACTIVITY

Answers to Assignment Sheet 8-1-3 study questions:

1. _____

2. _____

1. Establish contact

Introduce yourself and give any background on yourself that might be of interest.

Establish Readiness

Motivating Statements:

Tell trainees how they will use the course material.

Tell trainees why they need to know the lesson material.

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

Refer to Outline Sheet 9-1-1 and review objectives.

2. Safety Reminder

2. Review verbal commands and hand signals for TTO.
Review TTO/DOR policy.

3. Various Ship's Hull Components

a. Surface Ships

(1) Various types of rudders

(1) Display Transparency 9-1-1

(2) Various types of propellers

(2) Display Transparency 9-1-2

(a) Numbering system

(a) Refer to Diagram Sheet 9-1-2

(b) Fixed Pitch

(b) Explain fixed pitch, variable pitch

(c) Variable Pitch

(3) Different shafting and strut arrangements

(3) Display Transparency 9-1-3 and 9-1-4

(4) Cathodic Protection

(4) Display Transparency 9-1-5 Zinc, Electrical Systems.

A-4-23

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

(5) Sonar domes

(5) Display Transparency 9-1-6

(6) Suction and discharge

(6) Display Transparency 9-1-7

b. Submarines

(1) Single propeller, 7 blade

(1) Display Transparency 9-1-8

(a) Numbering system

(2) Rudder

(2) Display Transparency 9-1-9

(3) Stern Planes and stabilizers

(4) Torpedo tube doors

(5) Transducer and hydrophones

(6) Main Ballast Tank Grate

A-4-24

LESSON PLAN

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- (7) Sonar dome
- (8) Flush mounted anchors

4. Stages of Sea Growth

- a. Slime - Formation of slime is the first consists of bacteria, fungi, protozoa, and algae. The presence of slime may be confirmed by the generation of a cloud of debris when the surface is wiped by the diver's hand.
- b. Grass - Grass is a form of multicellular green algae. It forms most heavily near the surface. It is less evident as depth increases, and its color changes from green to brown.

- a. Reference: NAVSHIPS Technical Manual Waterborne Underwater Hull Cleaning of Navy Ships, Rev. 2 Chapter 081, para. 081-1.2.2
- b. Para. 081-1.2.3

A-4-25

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- c. Hard fouling - the dominant organisms in this stage of fouling are barnacles (usually acorn) and tubeworms. Acorn barnacles have conical hard shells with jagged tops. tubeworms form intertwined/tubes lying along, or projecting out from, the hull.
- d. Composite - In advanced stages of fouling, the ship will be affected by slime, grass, barnacles, and tubeworms. In addition, fouling will include soft, shell-less animal forms, such as hydroids, anemones, and tunicates (sea squirts).
- e. Amount of sea growth depends on the following:
 - (1) Ship location, duration of ship's movement, hull protection, and hull cleaning periodically.

- c. Para 081-1.2.4
- d. Reference: NAVSHIPS Technical Manual Waterborne Underwater Hull Cleaning of Navy Ships, Rev. 2 Chapter 081, para. 081-1.2.5

A-4-26

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

5. Fouling Rating Scales

- a. Fouling Rating Scale - The Fouling Rating Scale describes the ten most frequently encountered fouling patterns in order of increasing severity. A number has been assigned to each of the ten fouling patterns on a scale of 0 to 100, in ten point increments. The lowest number represents a clean hull and the higher numbers represent fouling organism populations of increasing density and variety.
- b. Paint Deterioration Rating Scale - The Paint Deterioration Scale describes the deterioration Of the anti-fouling paint on the waterborne hull. A number has been assigned to each of the ratings, ranging from PDR-10 to PDR-100, in ten point Increments. The lowest number represents paint Intact and the higher numbers represent Deteriorated areas of paint.

Refer to: NAVSHIPS Technical Manual
Waterborne Underwater Hull Cleaning of
Navy Ships, Rev. 2 Chapter 081, para.
081-1.4; photos, pgs. 2 thru 15

Refer to Information Sheet 9-1-3.

- b. Refer to: NAVSHIPS Technical Manual
Waterborne Underwater Hull Cleaning of
Navy Ships, Rev. 2 Chapter 081, para.
081-1.4; photos, pgs. 19 thru 27

A-4-27

LESSON PLAN

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- 6. Critical fouling surfaces
 - a. Propellers:
Growth causes severe reduction on propeller efficiency.
 - b. Sonar Dome:
Performance decreased rapidly when fouling progresses past hard fouling.
 - c. Docking block bearing surfaces:
Does not get painted in dry dock, therefore hard fouling is common in these areas.
 - (4) Sea Chest:
Hard fouling is common at perimeter and interior of grating. Composite often occurs inside sea chest and is difficult to clean without removing grate.

- 6. Reference: Para 081-1.3
 - a. Reference: Para. 081-1.3.2
 - b. Reference: NAVSHIPS Technical Manual Waterborne Underwater Hull Cleaning of Navy Ships, Rev 2 Chapter 081, para 081-1.3.3
 - c. Reference para 081-1.3.4
 - (4) Ref. para. 081-1.3.5

A-4-28

LESSON PLAN

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

7. Planning (Assignment Sheet 9-1-4 was assigned as homework in Lesson Topic 8.1)

7. Review Assignment Sheet 9-1-4 and answer study questions

Answer 1 _____

Answer 2 _____

Answer 3 _____

a. Each dive should be completely planned and discussed with ship's personnel and dive team Prior to water entry.

a. Reference: U.S. Navy Diving Manual, Volume 1, Chapter 4

b. Review last hull inspection.

c. Discuss damage, if any, with dive team

- (1) Question ship's personnel
 - Sonar - loss in performance increased noise level.
 - Engineering - shaft vibrations

(2) Explain UDATS

(2) Review past UDATS tapes.

(3) Review ship's docking plans.

A-4-29

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- 8. Use Ship Repair Safety Checklist
 - a. Locate dive boat or platform in close proximity of work.
 - b. Fly International Code Alpha.
 - c. Pass correct word, public address system.
 - d. Have Engineering Department representative available topside.
 - e. Know what ship's machinery is running.
 - f. Ensure vessel is steady in moor or tied up properly.
 - g. Ensure safe diving distance between pier and vessel, and between ships.

- 8. Reference NAVSHIPS Underwater Work Techniques Manual, Volume 2, Part 2, Section 2

- g. Explain separators/camels.

A-4-30

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

9. Perform underwater hull inspection (day)

a. Safety Precautions

- (1) TTO/DOR
- (2) Specific precautions
- (3) Review specific safety precautions for Job Sheet 9-1-5

(1) Review TTO/DOR

b. Surface Vessel Hull Inspection

b. Refer to Job Sheet 9-1-5

- (1) Rudder:
 - (a) Clearances
 - (b) Rudder Plugs
 - (c) Overall physical conditions
 - (d) Sound

A-4-31

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

(2) Propellers

(a) Dunce

(b) Cover Plates

WARNING:

DO NOT BUMP BLADES WITH SCUBA CYLINDERS

Explain Warning - Can damage blades, SCUBA cylinders or manifold, and can accidentally activate reserve.

(c) Blades

(d) Inspect facing for cavitation effects

(e) Rope Guards (forward of propeller)

(3) Struts to Stern Tube

(a) External primary strut housing and primary strut

(b) Conditions of zincs

(c) Fairwaters

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- (d) Shaft
- (e) Secondary strut (if applicable)
- (f) Stern tube
- (g) Dead lights (if applicable)
- (h) Repeat inspection as per number of propellers.
- (4) Engineering Spaces - Safety precautions
 - (a) Ensure diver can surface safely.
 - (b) Ensure suctions and discharges are secure.
 - (c) Never dive on any engineering spaces if machinery is running.
- (5) Bilge Keel

A-4-33

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- (6) Zinc
- (7) Main scoop injection pump suction
- (8) Main circulation pump suction
- (9) Other suctions and discharges
- (10) Anchor (if applicable)
- (11) Secondary propulsion motor (SPM)
(as applicable)
- (12) Sonar dome (as applicable)
- (13) Keel and Stem

c. Submarine Hull Inspection

- (1) Propeller
 - (a) Dunce cap
 - (b) Cover plate
 - (c) Blades

A-4-34

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- (d) Inspect facing for cavitation effects
- (e) Rope guards (forward of propeller)
- (f) Zincs
- (2) Rudder and Stern Plane areas
 - (a) Overall appearance
- (3) Struts, Stern Tubes, and Fairwaters
 - (a) External main strut housing and strut
 - (b) Fairwater halves forward of main strut
 - (c) Shaft
 - (d) Stern Tube fairwater

A-4-35

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

(4) Anchor

- (a) Check housing for marine growth and obstructions.

(5) Safety

- (a) Ensure diver can surface easily
- (b) Ensure suction/discharges are secure
- (c) Never dive on any engineering spaces if machinery is running

(6) Zinc

(7) Torpedo tube shutters

(7) "Barn Doors"

(8) Underwater Hull Openings

(8) Display Transparency 9-1-10

- (a) After ballast tank group

A-4-36

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

(b) Check suction and discharges

(b) Trash Disposal Unit (TDU)

(c) Format ballast tank group

(d) BQH sensors

(e) Sonar

(9) Ship's keel and bow

(10) Secondary Propulsion Motor (SPM)
(if applicable)

d. Perform Underwater Hull inspection (day)

d. Perform Job Sheet 9-1-5

10. Hull Inspection Report

a. List items to be inspected.

b. Include diagrams to show damage.

c. Include photographs to show damage, deterioration, etc.

A-4-37

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

- d. Include UDATS cassettes.
- e. Developed locally (specifically for)
 - (1) Surface ships
 - (2) Submarines
- f. Diving divisions should retain hull inspection report copies for units within their cognizance as a ready reference, since past history tells us that units tend to misplace their original copies. To avoid in-water duplication of your effort, maintain a correct administration file (by UIC) of all waterborne inspections completed by your divers.

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

11. Summary and Review - The objective of this topic was to teach the knowledge and skills required to conduct underwater hull inspection. To accomplish this, trainees must know the different part of the ship, recognize fouling, prepare reports, and understand safety procedures. The following subtopics were discussed:

- a. Ship hull configurations
- b. Stages of sea growth
- c. Planning for inspection
- d. Fouling rating scales
- e. Fouling areas of ship's hull
- f. Diving safety
- g. Surface ship and submarine hull inspection
- h. Performance of underwater hull inspection
- I. Hull inspection report

LESSON PLAN

9. INSPECTION OF MAJOR HULL COMPONENTS

A-433-0023A

Topic 9.1 Underwater Hull Inspection (Continued)

DISCUSSION POINT

RELATED INSTRUCTOR ACTIVITY

12. Assignments - The following assignments should be completed:

- a. Complete Assignment Sheet 9-2-1. Trainees are to read Information Sheet 9-2-2 and 9-2-3 and review Diagram Sheets 9-2-4 and 9-2-5.

- a. Assignment Sheet 9-2-1 is to be completed prior to beginning Lesson Topic 9.2

TAB A-5
TRAINEE GUIDE

NAVEDTRA 130A, Volume II

TRAINEE GUIDE
FOR
NAVY SCUBA DIVER

A-433-0023A

PREPARED BY

NAVAL DIVING AND SALVAGE TRAINING CENTER
PANAMA CITY, FLORIDA 32407

PREPARED FOR

DEPUTY FOR SHORE/TECHNICAL TRAINING (CNET T2)
250 DALLAS STREET
PENSACOLA, FLORIDA, 32508-5220

JUNE 1991

TABLE OF CONTENTS

<u>Contents</u>	<u>Page</u>
Change Record	3
Security Awareness Notice	7
Safety/Hazard Awareness Notice	9
How To Use Your Trainee Guide	11
Terminal Objectives	15
Course Master Schedule	16
Unit 1 - QUALIFY AS SCUBA DIVER	
Lesson Topic 1.1 - SCUBA Diver Physical Conditioning	
Outline Sheet 1-1-1	

NOTE TO READER: Only those instruction sheets supporting Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

Unit 8 - CHARGE OPEN CIRCUIT SCUBA EQUIPMENT

Lesson Topic 8.1 - SCUBA Charging
Outline Sheet 8-1-1
Job Sheet 8-1-2
Assignment Sheet 8-1-3

Unit 9 - CONDUCT INSPECTION OF MAJOR HULL COMPONENTS

Lesson Topic 9.1 - Underwater Hull Inspection
Outline Sheet 9-1-1
Diagram Sheet 9-1-2
Information Sheet 9-1-3
Assignment Sheet 9-1-4
Job Sheet 9-1-5

SECURITY AWARENESS NOTICE

This course does not contain any classified material.

SECTION 1.0 SAFETY/HAZARD AWARENESS NOTICE

This notice promulgates safety precautions for trainees of the Navy SCUBA Diver Course in accordance with responsibilities assigned by the Chief of Naval Education and Training.

You may voluntarily request termination of training. Any time you make a statement such as "I QUIT," or "DOR," (Drop on Request), you shall be immediately removed from the training environment and referred to the appropriate division or training officer for administrative action. You must then make a written statement, clearly indicating the desire to DOR.

Any time you have apprehension concerning your personal safety or that of another, you should signal for a "Training Time Out" to clarify the situation or procedure and receive additional instruction as appropriate. "Training Time Out" signals other than verbal, such as forming a "T" using both hands, can be used.

The safety precautions contained in this course are applicable to all personnel. They are basic and general in nature. Personnel who operate or maintain equipment in support of Navy SCUBA Diver Course must be thoroughly familiar with all aspects of personnel safety, and strictly adhere to every general as well as specific safety precaution contained in operating and emergency procedures and applicable governing directives.

Special emphasis must be placed on strict compliance with published safety precautions and on personal awareness of potentially hazardous conditions peculiar to diving. All personnel must have a comprehensive knowledge of emergency procedures which prescribe courses of action to be followed in the event of equipment failure or human error as stated in the Pre-Mishap Plan. Strict adherence to approved and verified operating, emergency, and maintenance procedures IS MANDATORY. As a minimum, you are responsible for knowing, understanding, and observing all safety precautions applicable to the command, school, course, your work, and your work areas. In addition, you are responsible for observing the following general safety precautions:

- a. Each individual shall report for work rested and emotionally prepared for the tasks at hand.
- b. You shall use normal prudence in all your functions, commensurate with the work at hand.
- c. You shall report any unsafe conditions, or any equipment or material which you consider to be unsafe, and any unusual or developing hazards.

- d. You shall warn others whom you believe to be endangered by known hazards or by failure to observe safety precautions, and of any unusual or developing hazards.
- e. You shall report to the school staff any **mishap**, injury, or evidence of impaired health occurring in the course of your work.
- f. You shall wear or use the protective clothing and/or equipment of the type required, approved, and supplied for the safe performance of your work.
- g. All trainees in the immediate vicinity of a designated noise hazardous area or noise hazardous operation shall wear appropriate hearing protective devices. (NDSTC Instruction 6260.6 series)
- h. You must always observe appropriate safety precautions when working around electrical circuits and equipment to avoid injury or death from electric shock and short circuits (NDSTC Instruction 5101.2 series).

SECTION 2.0 HOW TO USE YOUR TRAINEE GUIDE

This publication has been prepared for your use while under instruction. It is arranged in accordance with the topics taught, and is in sequence with those topics. By using the table of contents you should be able to locate the lesson topics easily. By following the enclosed course schedule, you should be able to follow the course of instruction in a logical manner.

Under each topic there may be the following instruction sheets:

- OUTLINE SHEETS: Provide a listing of major teaching points. The outline is consistent with the outline of the discussion points contained on the DDA pages in the lesson plan. It allows the trainee to follow the progress of lesson topic, to take notes as desired, and to retain topic information for future reference.
- INFORMATION SHEETS: Amplify supplemental information from the reference materials for the course, from technical manuals, or from instruction books. You may be tested on this material during the course.
- PROBLEM SHEETS: Normally used for paperwork troubleshooting when the equipment is not available. Can also be used for drill-and-practice problems related to the topic.
- JOB SHEETS: Provide step-by-step instructions for developing your skills in performing assigned tasks and maintaining the equipment when and where the work is assigned, in the laboratory or practical areas.
- ASSIGNMENT SHEETS: To assist you in being prepared for the lesson topics and laboratory/practical exercises BEFORE they are presented by the instructor or occur in the course.
- DIAGRAM SHEETS: These are used as necessary to simplify the instruction. They are to aid you in understanding the systems, equipment, or topics presented.

All of the instruction sheets are identified by their unit and lesson topic number. They are listed in the order of their use. Each lesson topic will contain at least one Enabling Objective.

The Enabling Objectives listed in this Guide specify the knowledge and/or skills that you will learn during the course, and reflect the performance expected of you on the job. The Enabling Objectives specify the knowledge and/or skills you will learn in a specific lesson topic. You should thoroughly understand the Enabling Objectives for a lesson topic and what these objectives mean to you before you start each lesson topic. Each learning objective contains behavior(s), conditions, and standards.

They are defined as follows:

The behavior is a description of the performance and/or knowledge that you will learn in that lesson topic;

The conditions under which you will be able to perform or use the knowledge;

The standard(s) to which you will be able to perform or use the knowledge.

The objectives provide a means by which you can check your progress during training. The objectives also enable you to evaluate your training when you have finished, so you can ensure that you have satisfied the goals of the course. Your instructor will explain the objectives to you at the start of the course. Feel free to ask for additional information during training if you feel that you are not learning as you should.

■ STUDY TECHNIQUES:

Classroom and laboratory sessions will be conducted by one or more instructors. You will be responsible for completing the material in this guide, some of it before class time. Prior to starting to use this guide, read through the front matter and become familiar with the organization of the material, then follow directions below for each lesson topic:

1. READ the Enabling Objectives for the lesson topic and familiarize yourself with what will be expected of you.
2. STUDY each reading assignment.

3. WRITE any written assignment.

■ EXAMINATIONS AND QUIZZES

Exams and quizzes will be administered as required by the Course Master Schedule. A blitz is an informal test used to check for understanding, and may be given by your instructor at any time. These quizzes do not count toward your final grade. In any event, only the material covered will be tested. All written tests will be in the form of multiple choice, completion, or true/false items. Performance tests will be provided to test job skills as appropriate. Success on exams is dependent upon an understanding of the objectives, involvement in class activities, and good study habits.

SECTION 3.0 TERMINAL OBJECTIVES

- 1.0 **QUALIFY** as a SCUBA diver in accordance with Navy Military Personnel Command Manual (BUPERS Manual), Article 1410380, Exhibit 6

NOTE TO READER: Sample instruction is provided to support only Terminal Objectives 6.0 and 7.0. Sample instruction for Terminal Objective 1.0 is intentionally omitted.

- 6.0 **CHARGE** open circuit SCUBA following a checklist and in accordance with the U. S, Navy Diving Manual, Volume 1.
- 7.0 **APPLY** underwater hull search techniques to **CONDUCT** inspection of major hull components in accordance with Underwater Work Techniques Manual, Vol. 2, while performing operations as a SCUBA diver. Observe applicable safety precautions.

COURSE MASTER SCHEDULE

WEEK 1

Length of Period: 50 minutes

Day 1

Topic No.	Type	Period	Topic	Ratio
1.1	Class	1	Physical Conditioning	25:1
1.1	Class	2	Physical Conditioning	25:1
1.1	Test	3	Physical Conditioning	25:1

NOTE TO READER: Only Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are used as samples in Volume II. Interim units of instruction are intentionally omitted.

WEEK 3

Day 1

Topic No.	Type	Period	Topic	Ratio
8.1	Class	9	SCUBA Charging	25:1
8.1	Class	10	SCUBA Charging	25:1
8.1	Lab	11	SCUBA Charging	4:1
8.1	Test	12	SCUBA Charging	4:1
9.1	Class	13	Underwater Hull Inspection	25:1
9.1	Class	14	Underwater Hull Inspection	25:1
9.1	Class	15	Underwater Hull Inspection	25:1
1.1	Field	16	Physical Conditioning	8:1

Day 2

9.1	Class	17	Underwater Hull Inspection	25:1
9.1	Lab	18	Underwater Hull Inspection	4:1
9.1	Test	19	Underwater Hull Inspection	4:1

OUTLINE SHEET 1-1-1

Sheet 1 of 1

SCUBA DIVER QUALIFICATIONS

A. Introduction

To qualify as SCUBA divers trainees must go through rigorous physical conditioning. A diver's ability to perform underwater is dependent on the physical conditioning of the diver. The benefits of good physical conditioning are increased self confidence and increased underwater endurance. As a diver, your life depends on the selection and use of the proper, approved equipments. And, although diver work is hazardous, your safety is paramount.

B. Enabling Objectives

- 1.1 **PERFORM** physical training with the class as a group in accordance with the Course Master Schedule, and successfully **MAINTAIN** diver physical qualification standards throughout the course of training in accordance with BUPERS Manual, Article 1410380, Exhibit 5.
- 1.2 **IDENTIFY** the minimum equipment which must be worn by a Navy SCUBA diver in accordance with U. S. Navy Diving Manual, Volume 1.

C. Topic Outline

1. Introduction
2. Overview
3. Requirements
4. Goals of the Physical Conditioning Program
5. Summary and Review
6. Assignment
7. Application

FOR TRAINING USE ONLY

OUTLINE SHEET 8-1-1
SCUBA CHARGING

Sheet 1 of 1

A. Introduction

Open circuit SCUBA cylinders must be refilled or "topped off" when the pressure in the cylinder is not sufficient to complete the planned dive. The procedure for doing this is called "charging." In this lesson topic, you will be given the charging air system and charging checklist for use at this command.

B. Enabling Objectives

- 6.1 **APPLY** General Gas Laws when charging SCUBA cylinders in accordance with U. S. Navy Diving Manual, Volume 1.
- 6.2. **FOLLOW** safety precautions applicable to charging Open Circuit SCUBA in accordance with the U.S. Navy Diving Manual, Volume 1.
- 6.3. **CHARGE**, as a member of a SCUBA charging team, SCUBA cylinders in accordance with U.S. Navy Diving Manual, Volume 1, to the accuracy required by the Diving Training Standards following an Open Circuit SCUBA charging checklist for the available system.

C. Topic Outline

1. Introduction
2. General Gas Law that Affects SCUBA Charging
3. Charge SCUBA Cylinders
4. Safety
5. Summary and Review
6. Assignment
7. Application

NOTE TO READER: Only those instruction sheets supporting Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are included to illustrate the contents of a

FOR TRAINING USE ONLY

1

CHARGE SCUBA CYLINDERS

A. Introduction

SCUBA cylinders must contain sufficient pressure in order to effectively and safely complete dives. This Job Sheet will allow you to practice the step-by-step procedures required to charge SCUBA cylinders. A major benefit of this exercise is that you will have the opportunity to make the same decisions that will be required to perform this task in your duty assignment.

B. Equipment The following equipment is required:

1. SCUBA charging checklist
2. SCUBA cylinders
3. SCUBA charging station including equipment
4. Hearing protection

C. References

1. U. S. Navy Diving Manual, Volume 1
2. Diving Training Standards, NAVDIVSALVTRACEN 433-0023-1
3. NAVDIVSALVTRACEN Instructional Building Auxiliary Air Operating Procedures Manual
4. NAVDIVSALVTRACEN SCUBA Charging Checklist

D. Safety precautions:

Review TTO/DOR procedures in the Safety/Hazard Awareness Notice.

E. Job Steps:

Perform SCUBA cylinder charging in accordance with NAVDIVSALVTRACEN checklist 40-8.

F. Self Test Questions:

Note: To be developed.

NOTE TO READER: Only those instruction sheets supporting Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

FOR

ASSIGNMENT SHEET 8-1-3

SCUBA CHARGING

A. Introduction

This assignment is to be completed prior to the material being covered in class.

B. Enabling Objectives

Refer to enabling objectives in the Outline Sheet 8-1-1.

C. Study Assignment

1. Read U. S. Navy Diving Manual, Volume 1, para. 5-3.4; 5-3.5

D. Study Questions

1. What are the safety requirements for charging SCUBA cylinders?
2. How often should cylinders be charged?

NOTE TO READER: Only those instruction sheets supporting Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

FOR TRAINING USE ONLY

OUTLINE SHEET 9-1-1

UNDERWATER HULL INSPECTION

A. Introduction

Underwater hull inspection involves the examination of the exterior underwater hull and components to determine the condition and needs for maintenance and repair. In this topic, you will be taught the components to be inspected and the procedures for inspection.

B. Enabling Objectives

- 7.1 **IDENTIFY** the components of the ship's hull in accordance with the Underwater Work Techniques Manual, Volume 2.
- 7.2 **DESCRIBE** the stages of growth commonly found on underwater hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081, and the Underwater Work Techniques Manual, Volume 2.
- 7.3 **STATE** the general contents of the Fouling Rating Scale, and the Paint Deterioration Rating Scale, in accordance with NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081.
- 7.4 **DESCRIBE** the fouling areas of hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081.
- 4.13 **IDENTIFY** considerations that affect dive planning in accordance with U.S. Navy Diving Manual, Volume 1, NAVSEA 0994-LP-001-9010, para. 4-2.
- 7.5 **APPLY** the specific safety precautions associated with underwater hull inspections in accordance with the U. S. Navy Diving Manual, Volume 1; the Underwater Work Techniques Manual, Volume 2; and the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081.
- 7.6 **PERFORM** day and night underwater hull inspections in accordance with the NAVSHIPS Technical Manual and Underwater Work Techniques Manual, Volume 2.
- 7.7 **PREPARE** the ship's hull inspection report in accordance with the Diving Training Standards.

NOTE TO READER: Only those instruction sheets supporting Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

Sheet 2 of 2

OUTLINE SHEET 9-1-1 (CONT)

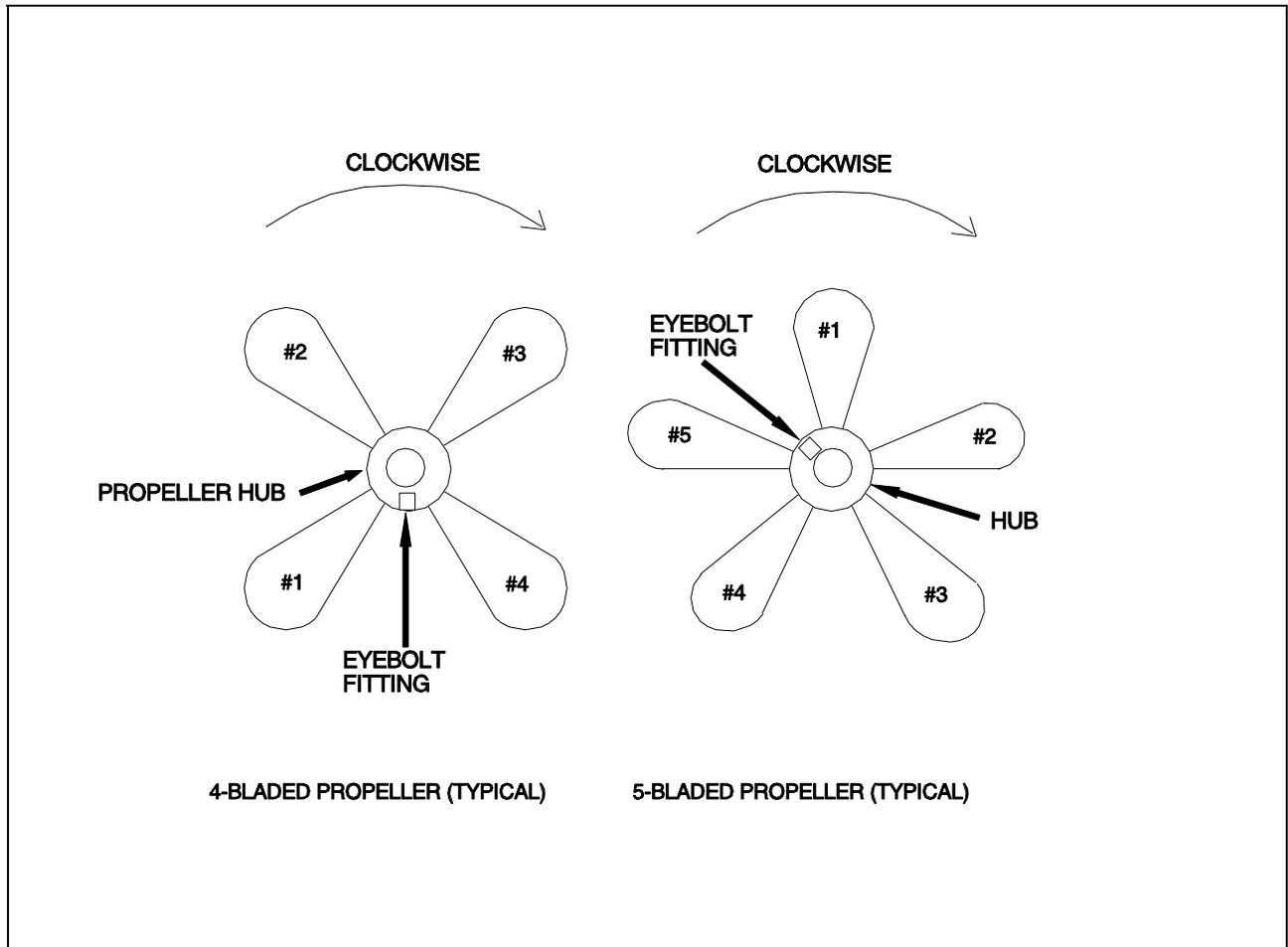
C. Topic Outline

1. Introduction
2. Safety Reminder
3. Ship Hull Components
4. Stages of Sea Growth
5. Fouling Rating Scales
6. Critical Fouling Surfaces
7. Dive planning
8. Use Repair Safety Checklist
9. Perform Underwater Hull Inspection (day)
10. Hull Inspection Report
11. Summary and Review
12. Assignment

FOR TRAINING USE ONLY

DIAGRAM SHEET 9-1-2

BLADED PROPELLERS
(Looking from Stern toward Bow)



4-BLADED PROPELLER (TYPICAL)

5-BLADED PROPELLER (TYPICAL)

NOTE TO READER: Only those instruction sheets supporting Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

FOR TRAINING USE ONLY

INFORMATION SHEET 9-1-3

Sheet 1 of

2

FOULING RATING SCALE

INTRODUCTION

This information describes each of the Fouling Ratings.

REFERENCE

NAVSHIPS Technical Manual, Chapter 081, Waterborne Underwater Hull Cleaning of Navy Ships

INFORMATION

Fouling Rating, (FR)	Description
0	A clean, foul-free surface; red AF paint (for a ship out of dry-dock).
10	Continuous graduations of shades of red and green (incipient) slime.
20	Slime as dark green patches with yellow or brown colored areas (advanced slime).
30	Grass as filaments up to 3 inches (76 mm) in length, projections up to 1/4 inch (6.4 mm) in height; or a flat network of filaments, green, yellow, or brown in color.
40	Calcareous fouling on edges, welded seams, corners, or as discrete patches covering flat areas roughly 9 to 10 inches (229 to 254 mm) in diameter.
50	Random and scattered tubeworms or barnacles (or both) on slightly curved or flat surfaces.
60	Area distribution of tubeworms or barnacles, 1/4 inch (6.4 mm) in diameter or less; fouling does not completely cover or blank out surface.

NOTE TO READER: Only those instruction sheets supporting Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

FOR TRAINING USE ONLY

INFORMATION SHEET 9-1-3 (CONT)

- 70 Tubeworms and barnacles completely cover surface in patches exceeding 9 to 10 inches (229 to 254 mm) in diameter. Tubeworms lying flat with radiating fringes of growth or branches 1/4 inch (6.4 mm) in diameter or less.
- 80 Tubeworms closely packed together and growing upright away from surface. Barnacles growing one on top of another. Calcareous shells appear clean or white in color.
- 90 Dense growth of tubeworms with barnacles 1/4 inch (6.4 mm) or greater. Calcareous shells brown in color or with slime or grass overlay.
- 100 All forms of fouling present, particularly soft sedentary animals without calcareous covering (tunicates).

FOR TRAINING USE ONLY

ASSIGNMENT SHEET 9-1-4

PLANNING UNDERWATER HULL INSPECTION

A. Introduction

This assignment is to be completed prior to the material being covered in class.

B. Enabling objectives

Refer to enabling objectives in Outline Sheet 9-1-1.

C. Study Assignment

1. Read U. S. Navy Diving Manual, Volume 1, Chapter 4.

D. Study Questions

1. What are the inspection materials?
2. How many people inspect at a time?
3. How often should inspections be conducted?

NOTE TO READER: Only those instruction sheets supporting Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

FOR TRAINING USE ONLY

INSPECTION STEPS

A. Introduction

Underwater hull inspection requires a thorough knowledge of the components and conditions peculiar to underwater operations. This Job Sheet will allow you to practice the step-by-step procedures required to conduct underwater hull inspections. A major benefit of this exercise is that you will have the opportunity to make the same decisions that will be required to perform this task in your duty assignment.

B. Equipment The following equipment is required:

1. Open circuit SCUBA outfit
2. 12" rule
3. Tending lines
4. Hull inspection report
5. Underwater lights (night dives)
6. Chem-lite; one per buddy team (night dives)

C. References

1. NAVSHIPS Technical Manual Chapter 081, Waterborne Underwater Hull Cleaning of Navy Ships
2. Underwater Work Techniques Manual, Volume 2
3. U. S. Navy Diving Manual, Volume 1

D. Safety precautions

Review TTO/DOR procedures in the Safety/Hazard Awareness Notice.

E. Job Steps

NOTE TO READER: Only those instruction sheets supporting Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

Sheet 2 of 2

JOB SHEET 9-1-5 (CONT)

1. At Diving supervisor's direction, dress in open circuit SCUBA following donning sequence in U.S. Navy Diving Manual, Volume 1, para. 5-4.2.1. Report to the Diving Supervisor for final pre-dive inspection.
2. Review safety checklist in the Underwater Work Techniques Manual, Vol. 2, Part 2 Section 4 before entering water. At Diving supervisor's direction, make proper water entry.
3. At Diving supervisor's direction, descend on craft and make an underwater inspection of the craft's hull.
4. Upon surfacing, sound off, "Maximum Depth_____, Bottom Time_____." Failure to report this information will result in a failing grade for this Job Sheet.
5. At Diving supervisor's direction, make proper water exit.
6. Await further instructions from Diving supervisor.
7. Complete an underwater hull inspection report (one per buddy team).

NOTE: Two percent will be deducted for each line pull signal not given or given incorrectly.

FOR TRAINING USE ONLY

TAB A-6

TEST ADMINISTRATOR'S GUIDES

NAVEDTRA 130A, Volume II

**NAVY SCUBA DIVER
A-433-0023A**

SECTION 1.0 PERFORMANCE TEST ADMINISTRATOR'S GUIDE

**PERFORMANCE TEST 2-1-1
Life Preserver Familiarization, Mask and Snorkel Technique
and Drown Proofing**

May 1990

A-6-1-1

NAVEDTRA 130A, Volume II

INSTRUCTIONS TO THE ADMINISTRATOR

General Description of performance test:

Students will be evaluated on their ability to:

1. Maintain buoyancy control.
2. Clear mask utilizing using two methods.
3. Demonstrate proper usage of snorkel both with and without a mask.
4. Stay on the surface while participating in drown proofing.

Safety Precautions:

1. When hands are joined together with line, do not tie the line in a knot.
2. When feet are secured with line, do not tie a knot in such a fashion that it cannot be readily untied.
3. NEVER have both hands AND feet tied at one time.
4. Only put as many trainees in the water as can be safely monitored by the number of instructors present. 25:4 ratio.
5. Instructors refer to Job Sheet 2-1-1 for safety precautions pertaining to the area of which the diving will be conducted.

Environment: Swimming Pool

Equipment per trainee: Mask, Fins, Life Preserver, Snorkel, Wet Suit (as required), short piece of line

Special Instructions:

Trainees may voluntarily request termination of training. Any time the trainee makes such a statement such as "I Quit," or "DOR," (Drop on Request), he or she shall be immediately removed from the training environment and referred to the appropriate division or training officer for administrative action. The trainee must then make a written statement, clearly indicating the desire to DOR.

Any time a trainee or instructor has apprehension concerning their personal safety or that of another, they shall signal for a "Training Time Out" to clarify the situation as appropriate. "Training Time Out" signals shall be appropriate to the training environment. "Training Time Out" signals for this unit are a verbal "**HELP**", or the hand signals for "**HOLD**" (Clinched fist), "**4 FINGERS HELD UP**", or the "**T SIGNAL**" (one hand laid across the end of the other).

Instructors are responsible for maintaining situational awareness and shall remain alert to signs of trainee panic, fear, extreme fatigue or exhaustion, or lack of confidence that may impair safe completion of the training exercise. Instructors shall immediately stop training, identify the problem, and make a determination whether to continue or discontinue training. Instructors shall be constantly alert to any unusual behavior which may indicate a trainee is experiencing difficulty, and shall immediately take appropriate action to ensure the trainee's safety.

EVALUATION INSTRUMENT

Job Sheet Number: Job Sheet 2-1-1

Steps:

LIFE PRESERVER

1. Swim to deep end of pool.
- *2. Inflate Life Preserver with oral inflator until positive buoyancy is achieved.
3. Swim circles on back until told otherwise by instructor.

MASK/SNORKEL

4. In shallow end of pool, take a breath and submerge until snorkel fills with water.
5. Surface and exhale through snorkel, blowing water out while keeping face in water.
6. Continue to breathe through snorkel until comfortable.
7. Don mask.
8. Fill mask with water.
- *9. Demonstrate two methods of clearing mask.
 - a. Push with palm of hand on top front of mask and exhale through nose with head titled back.
 - b. Tilt head to one side, push in on high side of mask and exhale through nose.
- *10. Using snorkel, trainee should sit in shallow end of pool without mask and breathe through snorkel for a minimum of three minutes.
- *11. Using snorkel and fins, swim circles around the pool with face in the water for two laps without lifting head out of water.
- *12. Throw mask in water and let it sink to the bottom. Swim underwater, retrieve mask, and don and clear mask of water prior to surfacing.

NAVEDTRA 130A, Volume II

DROWN PROOFING

- *13. Enter water and use basic survival stroke for 5 minutes.
- *14. Enter water with ankles tied and use modified basic survival stroke for 5 minutes.
- *15. Enter water, holding a line in both hands. With hands touching behind back, use the modified basic survival stroke for 5 minutes.

* = CRITICAL STEP

Step Description:

1. A Checklist will be used to evaluate trainee performance.
2. Steps 2 and 9 through 15 are critical.
3. A counseling sheet will be filled out, concerning areas of deficiency and ways of improvement, each time trainee fails to meet the objectives of this Job Sheet.
4. Mandatory night study will be conducted in the form of practice during evening pool hours.
5. Failure to meet the objectives of this Job Sheet three times will institute a counseling sheet being filled out on the trainee recommending an Academic Review Board (ARB).

Common Errors:

1. Failure to maintain positive buoyancy.
2. Failure to successfully clear mask.
3. Failure to swim while breathing through a snorkel.
4. Failure to maintain composure while drown proofing.

GRADING CRITERIA

1. Satisfactory: A grade of 80 or more and completion of all critical items.
2. Unsatisfactory: A grade of less than 80 or failure to complete any critical item.
3. There are eight critical steps associated with this Job Sheet. All eight critical steps, when successfully completed equate to a passing score of 80.
4. The remaining seven steps are not individually evaluated, but collectively, their successful performance in accordance with instructions is assigned a value of 0 to 20 points.

The Administrator will provide a numeric grade based on the trainee's quality of performance and composure while in the water.

For scores of less than 20 points awarded, comments will be provided to aid the trainee in improvement.

INSTRUCTIONS TO THE TRAINEE:

1. Use of Job Sheet 2-1-1 is not feasible in the pool environment. Prior to allowing any trainee to enter the pool, review with the trainees as a group, all the tasks they are to demonstrate. After the trainee enters the water, the instructor will pace the trainee through each step using the Job Sheet as a guide.
2. Review DOR and TTO procedures with trainees.
3. Point out time requirements for Steps 10, 13, 14 and 15.
4. Successful completion of this Job Sheet is mandatory prior to breathing compressed air during pool phase of SCUBA.

NAVEDTRA 130A, Volume II

JOB SHEET 2-1-1

Life Preserver Familiarization, Mask and Snorkel Technique and Drown Proofing

Introduction: The purpose of the Performance Test is to assess your skill at maintaining buoyancy control; clearing your mask utilizing both head tilt methods; using a snorkel both with and without a mask; and staying on the surface while participating in drown proofing.

Equipment: Mask, Fins, Life Preserver, Snorkel, Wet-Suit (as required), short piece of line

Job Steps:

LIFE PRESERVER

1. Swim to deep end of pool.
2. Inflate Life Preserver with oral inflator until positive buoyancy is achieved.
3. Swim circles on back until told otherwise by instructor.

MASK/SNORKEL

4. In shallow end of pool, take a breath and submerge until snorkel fills with water.
5. Surface and exhale through snorkel, blowing water out while keeping face in water.
6. Continue to breathe through snorkel until comfortable.
7. Don mask.
8. Fill mask with water.
9. Demonstrate two methods of clearing mask.

10. Using snorkel, trainee should sit in shallow end of pool without mask and breathe through snorkel for a minimum of 3 minutes.
11. Using snorkel and fins, swim circles around the pool with face in the water for two laps without lifting head out of water.
12. Throw mask in water and let it sink to the bottom. Swim underwater, retrieve mask, and don and clear mask of water prior to surfacing.

DROWN PROOFING

13. Enter water and use basic survival stroke for 5 minutes.
14. Enter water with ankles tied and use modified basic survival stroke for 5 minutes.
15. Enter water, holding a line in both hands. With hands touching behind back, use the modified basic survival stroke for 5 minutes.

NAVEDTRA 130A, Volume II

JOB SHEET 2-1-1 CHECKLIST

Life Preserver Familiarization, Mask and Snorkel Technique
and Drown Proofing

TRAINEE NAME/RATE _____ SSN _____
INSTRUCTOR/EVALUATOR _____ DATE _____

Evaluation Instructions Critical Steps: Observe trainee performing each step. Watch for correct use of equipment and adherence to safety regulations. Indicate trainee's performance by circling either SAT or UNSAT. Ten points will be awarded for each step performed satisfactorily. _____

SAFETY - Failure to adhere to all safety requirements will result in automatic failure of this Performance test.

LIFE PRESERVER

2. Inflate Life Preserver with oral inflator SAT UNSAT
until positive buoyancy is achieved.

MASK/SNORKEL

9. Demonstrate two methods of clearing mask. SAT UNSAT
10. Using snorkel, trainee should sit in SAT UNSAT
shallow end of pool without mask and
breathe through snorkel for a minimum
of 3 minutes.
11. Using snorkel and fins, swim circles SAT UNSAT
around the pool with face in the water
for two laps without lifting head out
of water.
12. Throw mask in water and let it sink to SAT UNSAT
bottom. Swim underwater, retrieve mask,
and don and clear mask of water prior to
surfacing.

DROWN PROOFING

- | | | |
|--|-----|-------|
| 13. Enter water and use basic survival stroke for 5 minutes. | SAT | UNSAT |
| 14. Enter water with ankles tied and use modified basic survival stroke for 5 minutes. | SAT | UNSAT |
| 15. Enter water, holding a line in both hands. With hands touching behind back use the modified basic survival stroke for 5 minutes. | SAT | UNSAT |

Evaluation Instructions for Non-Critical Steps: Observe overall trainee performing and composure when executing each step. Assign an overall rating of 0 to 20 points. _____

LIFE PRESERVER

1. Swim to deep end of pool.
3. Swim circles on back until told otherwise by instructor.

MASK/SNORKEL

4. In shallow end of pool, take a breath and submerge until snorkel fills with water.
5. Surface and exhale through snorkel, blowing water out while keeping face in water.
6. Continue to breathe through snorkel until comfortable.
7. Don mask.
8. Fill mask with water.

Comments:

NAVEDTRA 130A, Volume II

Navy SCUBA Diver
A-433-0023A

SECTION 2.0 KNOWLEDGE TEST ADMINISTRATOR'S
GUIDE

Test for Units 1 through 9

MAY 1990

A-6-2-1

NAVEDTRA 130A, Volume II

INSTRUCTIONS TO ADMINISTRATOR

Prior to the start of testing:

1. Cover or remove all training aids that could assist the trainees in answering test items.
2. Have trainees clear their desks of all unrelated testing material.
3. Inform trainees that they have 50 minutes for the test.
4. Provide pencils and scratch paper as necessary.
5. Read the test instructions to the trainees.
6. Provide pertinent diving reference documentation.
7. Comply with local instruction pertinent to testing as applicable.

After completing the test:

1. Collect and inventory all testing material.
2. Check test for marks made by trainees.
3. Review test with trainees.
4. Evaluate any test challenged by trainees.
5. Apply local instructions as necessary.

Test Instructions to the Trainee

- A. Complete the administrative section of the answer sheet by entering your name, Social Security number, and class number.
- B. Trainees caught cheating will be given a zero on the test and remanded to the Training Officer for disciplinary action.
- C. The Test booklet and answer sheet will be turned in to the administrator at the completion of the Test.

The following test items have been compiled for illustrative purposes to assess trainees' knowledge of Units 8 and 9 of the SCUBA Course:

UNIT 8: CHARGE OPEN CIRCUIT SCUBA EQUIPMENT

Lesson Topic 8.1: SCUBA Charging

A. SCUBA Charging

- EO6.1 1. While charging SCUBA cylinders with high pressure air, the cylinders become hot to the touch. The cause of the increase in temperature is explained by the _____ **General Gas Law**
(CTTL #62) (U.S. Navy Diving Manual, Vol. 1, para. 2-5.2.4)
- EO6.2 2. (True/False) When charging SCUBA cylinders you should place your face close to the gage to avoid getting a false reading. **False**
(CTTL #63) (U.S. Navy Diving Manual, Vol. 1, Table 5-4, #3)
- EO6.3 3. Name the two accepted methods of charging SCUBA cylinders. _____ and _____
Cascading and High Pressure Air Compressor
(CTTL #64) (U.S. Navy Diving Manual, Vol. 1, para. 5-3.4)

UNIT 9: CONDUCT INSPECTION OF MAJOR HULL COMPONENTS

Lesson Topic 9.1: Underwater Hull Inspection

- EO7.1 1. On an illustration of a typical SSBN underwater hull, label each of the indicated components. **Underwater Work Techniques Manual, Vol. 2, Fig. 4-1.**
(CTTL #66)
- EO7.2 2. Name four factors that determine the amount of sea growth a ship will have: **Ship location, Duration of ship's movement, Hull protection and Hull cleaning periodicity**
(CTTL #68) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-2.1.1)
- EO7.4 3. Name three possible effects on a propeller which can be caused by use of improper cleaning tools: **Change acoustic signature, induce singing, induce cavitation**
(CTTL #67) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-3.7.2.1)

NAVEDTRA 130A, Volume II

EO7.2 4. Of the four stages of sea growth, which of the following would be the first stage?

- a. Grass
- b. Tubeworms
- c. **Slime**
- d. Barnacles

(CTTL #68) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.2.1)

EO7.2 5. What stage of sea growth is common on the docking block bearing surface areas of a ship?_____

Stage 3

(CTTL #68) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.3.4)

EO7.2 6. Barnacles and tubeworms would identify which of the following stages of sea growth?

- a. Slime
- b. Grass
- c. **Hard fouling**
- d. Composite

(CTTL #68) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.2.4)

EO7.2 7. Which of the following stages of sea growth is most likely to be found inside a sea chest of a ship taken from dry dock and then set in port for a year?

- a. One
- b. Two
- c. Three
- d. **Four**

(CTTL #68) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.2.5)

EO7.4 8. Why is the docking block bearing surface area of a ship's hull considered to be more susceptible to fouling? _____ **Unpainted in dry dock**

(CTTL #68) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.3.4)

EO7.3 9. On the Fouling Rating Scale, the lowest number represents _____ **a clean hull.**

(CTTL #69) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.2.7)

EO7.3 10. On the Paint Deterioration Rating Scale, the first three ratings represent

- a. the highest level of paint deterioration.
- b. **appearance associated with normal wear.**
- c. blistering, due to paint system failure.

d. cavitation scouring.
(CTTL #69) (NAVSHIPS Technical Manual, Waterborne Underwater
Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.4)

EO4.13 11. Name the manual and chapter in the manual where the
procedures for diving operations planning are found?

U.S. Navy Diving Manual, Vol. 1, Chapter 4
(CTTL #31)

NOTE: For the purposes of this
sample, questions for EOs 7.5, 7.6,
and 7.7 are omitted.

TAB A-7
MONITORING REPORT

NAVEDTRA 130A, Volume II

MONITORING REPORT

Navy SCUBA Diver

A-433-0023A

I. Course Identification

- A. LOCATION: NAVDIVSALVTRACEN, Panama City
- B. TITLE: Navy SCUBA Diver
- C. CIN: A-433-0023A
- D. PILOT PERIOD: 18 March through 10 May, 1991
- E. MONITORS: HTCM (DV) Monday (Pilot Team Chairman)
NAVDIVSALVTRACEN, Panama City; Mr. L. T. Tuesday (Course
Monitor) CNET Pensacola

II. Administration

A. Facilities

The class capacity is 35. The facilities are adequate for this trainee load.

A. Safety

Safety policies and procedures are in place and are being practiced. Trainees are aware of Training Time Out (TTO) and Drop on Request (DOR) procedures, and appear comfortable in utilizing these procedures as needed. Instructors maintain situational awareness and constantly strive to maintain a safe training environment.

B. Security

Course is not classified; therefore, security not applicable.

C. Allocation

This course is 40 calendar days long with 30 instructional days. The trainee/instructor ratio is 12 to 1. This is required due to an increase in planned input and will be adequate.

E. Critique Sheet Summary(s)

1. Trainees' comments are generally favorable toward course content and instructors.
2. Many trainees felt that more time was needed on Gas Laws in Unit 8. Future test performance for this unit will be analyzed to determine if reinforcement is needed.
3. Most junior trainees felt the study questions were helpful; senior trainees less so.

III. Curriculum Validation

- A. Lesson Plan. Objectives reflect the tasks to be performed in the job assignment. The objectives are properly structured and clear. Trainees had no problem understanding concepts and ideas stated by the objectives.
- B. Trainee Guide. The Trainee Guide is well organized. Safety is addressed in great depth and guidance is provided on how to use the Guide. Suggestions for study and instruction sheets directly support the learning process.
- C. Equipment/Tools. Proper equipment is provided to support training. Items such as swim fins, diving watches, strobe lights, diver's lights, snorkels, weight belts, etc. are available and in adequate supply.
- D. Support Materials. The course has various Support Materials available and in adequate supply. There are 5 overhead projectors, 5 slide projectors, 13 chalkboards, 8 transparencies, 15 slides, and 9 films.
- E. Instruction. The instructors were well prepared and the lessons were well presented. The instructional materials, methods, and devices all serve to support the attainment of course objectives.
- F. Testing. Tests are administered as reflected in the Course Master Schedule. However, the instructor administers an occasional pop quiz which does not impact course grade. Tests items are randomly chosen from a test bank.

NAVEDTRA 130A, Volume II

IV. Instructional Accuracy/Adequacy

The yardstick of instructional accuracy was the Curriculum Outline of Instruction (COI) in the TCCD. In this pilot course the COI was followed, but some "backtracking" to earlier topics was done for reinforcement of weak points. Because all trainees passed all objectives by testing, adequacy of objectives is accepted. External evaluation by Naval Training Requirements Review (NTRR) and direct fleet feedback will determine if the objectives and their achievement continue to meet the fleet's needs.

V. Minority Reports

None.

VI. Other

None.

TAB A-8
TESTING PLAN

NAVEDTRA 130A, Volume II

TESTING PLAN
FOR
NAVY SCUBA DIVER COURSE

A-433-0023A

AUGUST 1991

NAVEDTRA 130A, Volume II

Tests and Methods

This testing plan establishes procedures to use when evaluating the trainees' performance in attaining course objectives. Progress through the course is measured by Progress Tests, Within-course Comprehensive Tests, and Practical Work. Progress and Within-course Comprehensive Tests are both knowledge and performance. Lesson Topics are logically grouped and make up a unit. Instruction is presented at the lesson topic level. Tests are as follows:

Physical Screening Test - A physical fitness test administered on the second day of the course.

Unit 1 Progress Test - A knowledge test administered at the 3rd period of Unit 1.

Unit 2 Progress Test - A knowledge test administered at the end of the first section of Unit 2.

Physical Fitness Test - A physical fitness test administered in the second week of training.

Unit 2 Progress Test - A knowledge test administered at the end of unit 2.

Within-course Comprehensive Test 1 - A knowledge test administered at the end of Unit 2.

Within-course Comprehensive Test 2 - A performance test administered at the end of Unit 2.

Unit 3 Progress Test - A two-part knowledge test administered at the end of Unit 3.

Within-course Comprehensive Tests 3 and 4 - Knowledge tests administered at the end of Unit 3.

Within-course Comprehensive Test 5 - A performance test administered at the end of Unit 3.

Unit 8 Progress Test - Performance test for charging SCUBA cylinders.

Unit 9 Progress Test - Performance test for underwater hull inspection.

Physical Fitness Test - A physical fitness test administered in the fifth week of training.

Knowledge Test Procedures. Knowledge tests are administered to the entire class. Normally, this consists of written and/or oral examinations. Results of the tests are used to diagnose problem areas of the class as a whole and specific problems of the individual trainee prior to continuing with the course.

Performance Test Procedures. Performance tests are administered to the entire class. Normally, this consists of diving charts which require trainees to accurately perform the steps in the process. Instructors evaluate the decisions and behaviors of the trainee. Failure to meet the standard constitutes failure of the test. The instructor will provide specific feedback to the trainee as to his/her performance on the first test to allow the trainee to correct any problems. Additional practice may be required for the trainee prior to retaking the test.

Testing Constraints

The NAVDIVSALVSCOL compressed air and filter systems are scheduled for major overhaul. Work should be completed prior to the implementation date. If work is not completed prior to the first class convening, this will preclude achievement of Terminal Objective 2.0, Charge SCUBA Cylinders. The alternatives are:

1. An attachment to the trainee's record of course completion stating that Terminal Objective 2.0, SCUBA Cylinder Charging, was not achieved due to local constraints and that this training must be accomplished through On-the-Job-Training (OJT) prior to granting the NEC.
2. Contracting use of civilian diving facilities for this training.

Performance Test Numerical Grade

The standard for performance test grades is pass/fail or a minimum of 80 points out of a possible 100. Practical work grades are based on laboratory sessions in which trainees complete job sheets. The instructor will observe and grade the laboratory sessions. All critical steps must be performed without error.

Minimum Passing Grade

The minimum passing grade for the U.S. Navy SCUBA Diver Course is 80. Evaluation of the course objectives and the inherent dangers of diving operations require the minimum passing grade be set above the average level of understanding.

NAVEDTRA 130A, Volume II

Final Grade

A final course grade reflects the trainee's scores on progress tests and comprehensive tests. Scores for practical work are not averaged since it is graded on a pass/fail basis and trainees must pass all such work to graduate. Knowledge progress tests and the knowledge component of comprehensive tests add a maximum of 10 points each to the final grade of 80. Physical fitness testing is not assigned a grade since it is a course prerequisite.

Remediation

Remediation for trainees is initially performed at the class level. Answers to all progress test items are available to the trainees during the examination review while the instructor provides explanations for the correct responses. Specific problem areas that the general class experiences will be explained at this time. Trainees who pass the test will be remediated immediately on any questions/problem missed. Trainees who score below the minimum passing score will be subject to instructor oral remediation and night study. Trainees who fail the retake of both knowledge and performance tests will be recommended for an Academic Review Board (ARB).

Test Schedule

See Course Master Schedule