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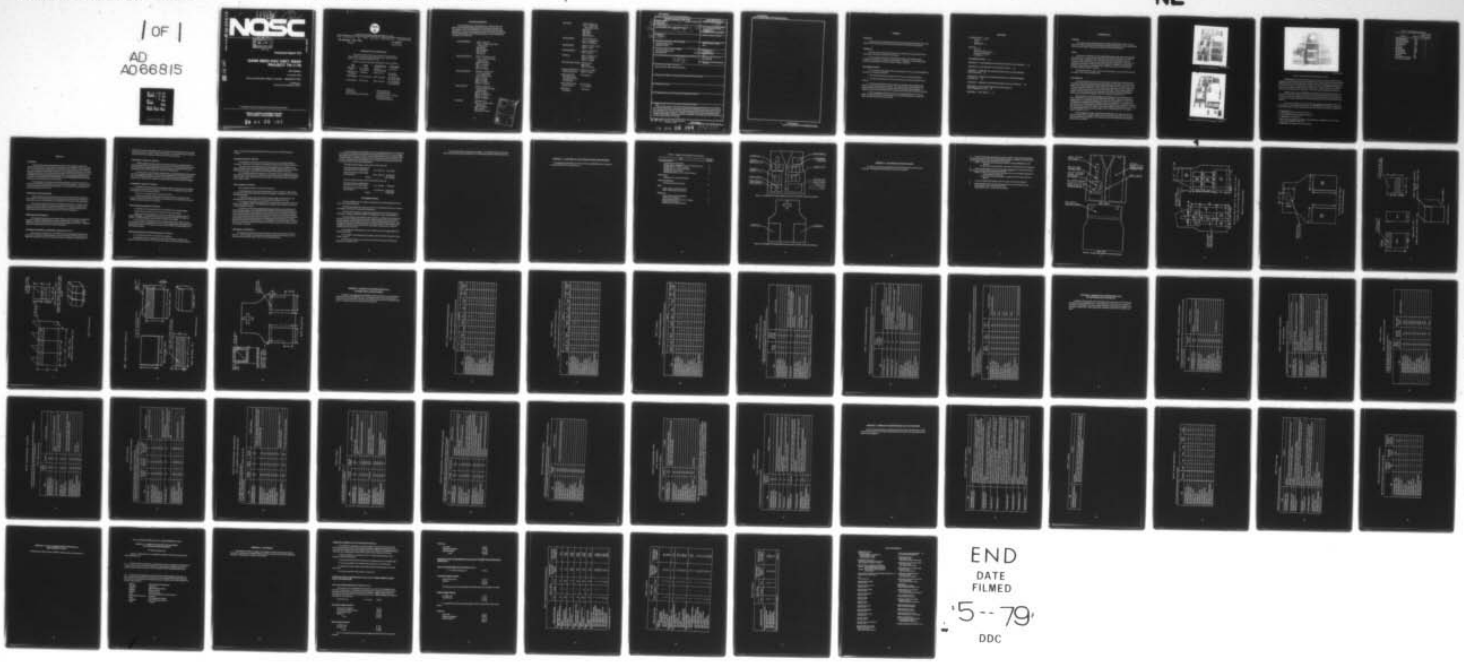

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GANN MEDI-PAC UNIT: NSAP PROJECT TH-1-78

RW Kataoka

15 January 1979

Test and Evaluation Report: January - September 1978

Prepared for
Naval Surface Weapons Center

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The work described in this report was performed under project number FN09 for the Naval Surface Weapons Center. Work was done from 3 January through 30 September 1978.

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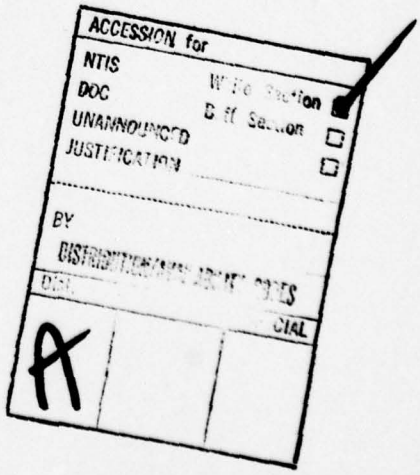

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USS ROANOKE	CAPT P. Asmus, CO LT C. G. Freeman, MC HM2 G. M. Williams
USS PLUNGER	CDR D. R. Oliver, III, CO HMC P. J. Ivory
USS BRONSTEIN	LCDR L. Seaquist, CO HM1 J. Wehunt
USS HULL	CDR G. Flanagan, CO HM1 M. C. Hayes HN M. J. Jennings
USS JOHN PAUL JONES	CDR Clark, CO HMC Taylor HM3 R. W. Walker
SEARCH AND RESCUE, MCAS, Beaufort, SC	CAPT P. Fay, USMC HM3 K. E. Fuller
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NOSC NSAP Coordinator	J. Beauchane

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report is a summary of the operational effectiveness and operational suitability of the Gann Medi-Pac Unit; data were collected from 11 ships and one search and rescue (SAR) unit during a 3-month test period from May to September 1978. The Unit's operational effectiveness was evaluated as a life preserver and as a medical kit in all situations pertinent to ship type. Its operational suitability was evaluated in the following categories: availability, maintainability, reliability, supportability, compatibility, human engineering, technical documentation, personnel training, durability, and safety.

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SUMMARY

PROBLEM

Assess the potential operational effectiveness and operational suitability of the Gann-Medi-Pac Unit for various classes of ships and its readiness for full-scale development.

APPROACH

The Gann Unit's operational effectiveness was evaluated as a life preserver and as a medical kit in all situations pertinent to ship types.

It was evaluated in terms of its operational suitability in the following areas: availability, maintainability, reliability, supportability, compatibility, human engineering, technical documentation, personnel training, durability, and safety.

RECOMMENDATIONS

1. It is strongly recommended that the Gann Medi-Pac Unit be used during flight-deck operations by corpsmen aboard ship.

2. The Gann Unit should not replace the Unit One in all shipboard situations.

3. The Gann Unit should not be used where inherently buoyant life preservers are required.

4. The Gann Unit should be made available as a modified, white, flight-deck life preserver cover with appropriate red crosses. The medical supplies, distress marker, life preserver bladder, and life preserver inflation device should be purchased separately. A suggested inventory list and instructions on operating the inflation device should be included.

5. Some modifications should be made on the original flight-deck life preserver design: increase the length of the drawstring, use a material less absorbent to oil and dirt stains, and replace the front snaps or add ties.

CONTENTS

INTRODUCTION

PURPOSE

The purpose of Navy Science Assistance Program (NSAP) Project TH-1-78 was to assess the potential operational effectiveness and operational suitability of the Gann Medi-Pac Unit for various classes of ships and its readiness for full-scale development.

SCOPE

This report is a summary of the operational effectiveness and operational suitability data collected from 11 ships and one search and rescue (SAR) unit during a 3-month test period from May to September 1978. The Gann Unit's operational effectiveness was evaluated as a life preserver and as a medical kit in all situations pertinent to ship type. Its operational suitability was evaluated in specific categories: availability, maintainability, reliability, supportability, compatibility, human engineering, technical documentation, personnel training, durability, and safety.

Recommendations are made on the use and development of the Gann Unit based on an analysis of the test and evaluation data.

BACKGROUND

The Gann Medi-Pac Unit concept was developed by observing the special problems of moving medical supplies through the restrictive spaces of a ship. HM2 Larry Gann, while assigned to the Medical Department of the USS CORAL SEA (CV 43), recognized the need for a better organized medical kit. While working on the flight deck, first aid corpsmen are routinely called upon to function in a hazardous environment. These working conditions together with the necessity for speed in assessment and treatment of injuries highlighted definite shortcomings of the standard "Unit One" medical kit currently in use.

The Gann Unit is a modified, standard, white, flight-deck, vest life preserver cover (FSN 4220-926-9472, medium, and FSN 4220-926-9479, large). It has been modified by adding pockets to carry medical supplies of the Unit One kit (see figures 1, 2, and 3). The configuration and suggested medical supplies are shown in appendix A. This modified vest still retains its use as a life preserver with either carbon dioxide or manual inflation. The Gann Unit modification increases the weight of the standard, flight-deck life preserver by 4 lb, 13 oz. The standard flight-deck life preserver weighs 2 lb, 3 oz, and the Gann Unit with medical supplies weighs 6 lb, 15 oz.

The advantages of the Gann Unit include the following: (1) corpsmen are able to carry more items that are readily accessible; (2) the unit is less bulky than a Unit One and therefore provides more mobility to the corpsmen; and (3) the life preserver and shipboard medical kit are combined.

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Figure 1. Gann Medi-Pac Unit.

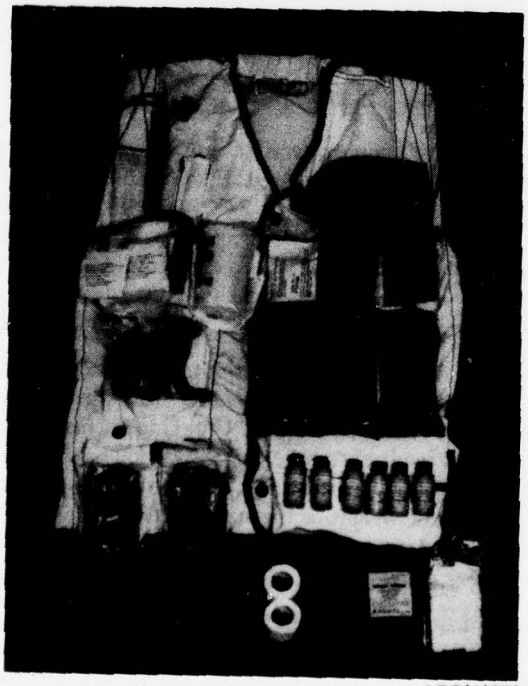

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Figure 2. Gann Medi-Pac Unit medical supplies: front view.

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Figure 3. Gann Medi-Pac Unit medical supplies: rear view.

COMTHIRDFLT provided a full description of this concept and requested that its development and evaluation be funded through the Navy Science Assistance Program (NSAP).[1] NSAP Project TH-1-78 was established to develop the Gann Unit, and it was requested that the Naval Ocean Systems Center (NOSC) undertake the task.[2] COMTHIRDFLT assigned 11 ships of various classes to participate in the evaluations.[3] NOSC also invited a search-and-rescue unit to participate in the evaluation. Table 1 lists the participating organizations.

NOSC personnel worked with HM2 Gann to produce the specifications for the test units (see appendix B). Eighteen Gann Units were fabricated from these specifications by a contractor. A test-and-evaluation plan, which included a questionnaire to be completed by the head of the medical department and evaluating corpsmen of each participating ship, was written.[4]

Test-and-evaluation plans and Gann Units were distributed during April 1978. The questionnaires were completed and returned to COMTHIRDFLT at the end of August after a 3-month test period. These questionnaires were then forwarded to NOSC for evaluation.[5]

1. COMTHIRDFLT ltr 6700 ser 01T/1220 of 5 Oct 77.
2. NAVSURFWPNCEN Silver Springs MD 151632Z Dec 77.
3. COMTHIRDFLT 141946Z Apr 78.
4. NOSC TN-445, Test and Evaluation Plan for Gann Medi-Pac Unit: NSAP Project TH-1-78, by R. W. Kataoka, UNCLASSIFIED, 17 May 1978.
5. COMTHIRDFLT ltr 6700 ser 01T/1192 of 18 Sep 78.

Table 1. Gann Medi-Pac Evaluators.

Evaluators	Ship Class	Number of Gann Units Evaluated
USS ENTERPRISE	CVN	2
USS NEW ORLEANS	LPH	2
USS LONG BEACH	CGN	2
USS TRUXTUN	CGN	1
USS PYRO	AE	1
USS MARS	AFS	1
USS ROANOKE	AOR	1
USS PLUNGER	SSN	1
USS BRONSTEIN	FF	1
USS HULL	DD	1
USS JOHN PAUL JONES	DDG	1
SAR, MCAS, Beaufort SC	–	1

RESULTS

OVERVIEW

The Gann Units were enthusiastically endorsed by the evaluating corpsmen and medical personnel both as a valid and safe concept and as a well designed unit (see appendix E). Five evaluating ships recommended a Gann Unit for each corpsman on board their class ship, and all evaluators unanimously endorsed the unit for flight-deck operations. A majority would also use the units in other situations aboard ship. Only the medical department of the USS HULL (DD) did not recommend the Gann Unit for their class ship, although medical personnel on the USS JOHN PAUL JONES (DDG) and the USS BRONSTEIN (FF), similar size ships, did recommend the units for their ships.

The operational effectiveness and operational suitability of the Gann Unit are summarized from tabulated questionnaire results in the following paragraphs. An estimate of the cost to implement the Gann Unit is also summarized. The results of the questionnaires are tabulated in appendices C, D, and E.

OPERATIONAL EFFECTIVENESS

In actual operations, the Gann Unit proved to be more than adequate in treating minor injuries. Tests conducted showed that the life preserver functions of the flight-deck life preserver were not compromised by the modification of pockets and first-aid supplies.

The unit was unanimously endorsed for flight-deck operations. A majority of the evaluators would also assign or did assign corpsmen with Gann Units to general quarters, fueling, mass casualty drills, and man overboard situations. A tabulated summary of the questionnaire data on operational effectiveness can be found in appendix C.

OPERATIONAL SUITABILITY

This section summarizes the operational suitability of the Gann Unit in the following categories: availability, maintainability, reliability, supportability, compatibility, human engineering, technical documentation, personnel training, durability, and safety. A tabulated summary of questionnaire data can be found in appendix D.

Availability, Maintainability, and Reliability (Appendix D, Table D1)

The Gann Unit was used both as a first-aid kit and as a life preserver during the test period with no failures or problems reported. Since the Gann Unit modifies the standard, flight-deck life preserver cover only, it did not decrease the reliability or availability of the

life preserver from the unmodified version. The pockets and flaps added to the cover may increase maintenance. However, minor tears that may occur are easily repaired and should not affect the unit functioning as either a first-aid kit or life preserver.

Supportability (Appendix D, Table D2)

Medical supplies routinely stocked by the ship to support the present Unit Ones provide the majority of items suggested for the Gann Unit. The medical departments unanimously supported including distress light markers, which are not included in Unit Ones, although they are relatively expensive at $25.00 each with batteries.

The Gann Unit concept should be implemented as a modified flight-deck life preserver cover with a suggested inventory. The stocking and arrangement of the contents should be left to the individual medical departments. The specific contents and arrangement may depend on the training of the corpsmen and the situation for which the units are assigned.

Compatibility (Appendix D, Table D3)

Corpsmen wearing Gann Units found passages, ladders, and most hatches accessible. It was reported, however, that corpsmen more than 6 ft tall or weighing more than 200 lb had difficulty with 18-in-diameter hatches.

There were no stowage problems with the Gann Unit.

Corpsmen wearing cold weather gear and buoyancy-filled life preservers, where required, are the only situations in which the Gann Units may not be compatible with other clothing or equipment used by the corpsmen.

Human Engineering (Appendix D, Table D4)

No problems were encountered with the accessibility of the medical supplies.

Mobility was not hampered by the Gann Unit except as noted above.

All pockets were found adequate to hold the recommended supplies except the suggested flashlight. The flashlight extended outside the pocket and became caught on scuttles. A smaller flashlight is recommended to eliminate this problem.

The Gann Unit is comfortable to wear for short periods of time. However, when the unit was worn for a prolonged period of time, some complaints about the weight on the shoulders were reported. The weight of the units could be reduced by eliminating some of the redundant supplies.

Technical Documentation and Training (Appendix D, Table D5)

The Gann Unit will require an inventory list of supplies.

The training required to implement the Gann Unit is minimal. Corpsmen will require training in the operation of the life preserver's manual and carbon dioxide inflation

device. They will also require familiarization with the location of medical supplies in the unit.

Durability (Appendix D, Table D6)

No damage was reported to any Gann Unit because of use or washing during the test period. The units were required to be washed at least three times during the evaluation.

The David Taylor Naval Ship Research and Development Center, designers of the flight-deck life preserver, are planning to increase the weight of the material used to fabricate the life preserver covers. This modification will improve the durability of the cover.

The USS NEW ORELANS, contacted on 15 December 1978, reported that the Gann Units have been used every day since they were received 8 months ago. Other than becoming dirty, no tears or other damage has occurred. The life cycle for the Gann Units is estimated to be at least 1½ years.

Safety (Appendix D, Table D7)

Four potential hazards were cited by the evaluators:

- The drawstring on the carbon dioxide inflation device was hidden. This problem is associated with the original flight-deck life preserver design. A possible solution is to make the drawstring longer.
- Adjusting straps on the back of the unit can get caught in small openings. The adjusting straps can be eliminated without reducing the effectiveness of the unit.
- The suggested flashlight (6230-223-4547) extended outside the pocket and became caught on the edges of scuttles. This flashlight will be replaced with a smaller one that does not extend outside the pocket.
- Attached to a Gann Unit test-and-evaluation questionnaire was a memorandum from the weapons officer of the USS JOHN PAUL JONES. This memorandum pointed out that according to NWP-14, Replenishment at Sea, life jackets worn by personnel in replenishment at-sea situations should be inherently buoyant (see appendix F): the hazard being that a man could be knocked unconscious by a parting line or a piece of gear and swept overboard. Another stated hazardous situation was that a corpsman must ride a lifeboat as it is being lowered into heavy seas and pitched about or the possibility of davit wires parting. The Gann Unit is not an inherently buoyant life preserver and, therefore, should not be used when such life preservers are required.

COST IMPACT (APPENDIX G)

The estimated number of Gann Units required for fleet use is from 834 to 1356 (see table G1). These estimates were determined by assuming a high and low number of Gann Units for each class of ship, based in part on the evaluators' responses.

Two cost estimates were calculated. The cost of implementing the unit on ships that do not already have flight-deck life preservers is approximately $93.00. The cost for ships with flight-deck life preservers is $61.00. These estimates include the Gann-modified, flight-deck life preserver, a bladder and inflation device, a distress light marker and battery, and air splints. Miscellaneous medical supplies are not included in these estimates because they can be taken from the Unit Ones being replaced.

The high estimated number of Gann Units (1356) would cost:

Gann Units per ship with flight-deck operations (CVN, CV, LPH, LHA)	324 X $61.00 =	$19,764.00
Gann Units per ship without flight-deck operations	1,032 X $93.00 =	$95,976.00
TOTAL		$115,740.00

The lower estimated number of Gann Units (834) would cost:

Gann Units per ship with flight-deck operations (CVN, CV, LPH, LHA)	162 X $61.00 =	$9,882.00
Gann Units per ship without flight-deck operations	672 X $93.00 =	$62,496.00
TOTAL		$72,378.00

RECOMMENDATIONS

The Gann Medi-Pac Unit is strongly recommended for use during flight-deck operations by corpsmen aboard ship.

The Gann Unit should not replace the Unit One in all shipboard situations. It should be assigned as determined by each medical department.

The Gann Unit should not be used where inherently buoyant life preservers are required, for example, as specified in NWP-14, Replenishment at Sea. (See appendix F.)

The Gann Medi-Pac Unit should be made available as a modified, white, flight-deck life preserver cover with appropriate red crosses. Medical supplies, distress marker, life preserver bladder, and life preserver inflation device should be purchased separately. This will allow the individual medical departments to configure the Gann Units for their needs. A suggested inventory list and instructions on operating the inflation device should be included with each Gann Unit.

The following recommendations concern modifications to the original flight-deck life preserver design:

- The length of the drawstring on the inflation device should be increased to make it easier to locate.
- A material less absorbent to oil and dirt stains should be used to fabricate the flight-deck life preserver cover.

- Front snaps should be replaced or ties added. It was reported that the front snaps did not hold when tests were conducted with a 12-ft drop into the water with the Gann Unit.

APPENDIX A. GANN MEDI-PAC UNIT CONFIGURATION AND CONTENTS

The suggested configuration and contents of the Gann Medi-Pac Unit are included in this appendix (table A1 and figure A1).

Table A1. Suggested Gann Medi-Pac Unit Contents.

Item	Quantity
Dressings and Bandages	
Ace wrap, 4 in (6510-200-2400)	1
Bandage, muslin, compressed, 37 X 37 X 52 in (6510-201-1755)	3
Dressing, field, 4 X 7 in (6510-159-4883)	6
Dressing, field, 7½ X 8 in (6510-201-7430)	2
Head dressing (6510-201-7680)	3
Bandage, gauze, elastic, 2 in X 5 yd (6510-913-7906)	6
Adhesive Tapes	
Adhesive tape, 1 in, roll (6510-526-0162)	2
Solutions and Medications	
Ammonia inhalant (6505-106-0875)	10
Splints	
Ready, air splint, arm (6515-935-6592)	1
Ready, air splint, leg (6515-935-6593)	1
Miscellaneous	
Airway, Guedet type (6515-300-2900)	1
Tourniquet (6515-383-0565)	1
Scissors, bandage, angular, 7-¼ in (6515-363-8840)	1
Flashlight (6230-125-5528)	1
Lightmarker, distress (6230-067-5209)	1

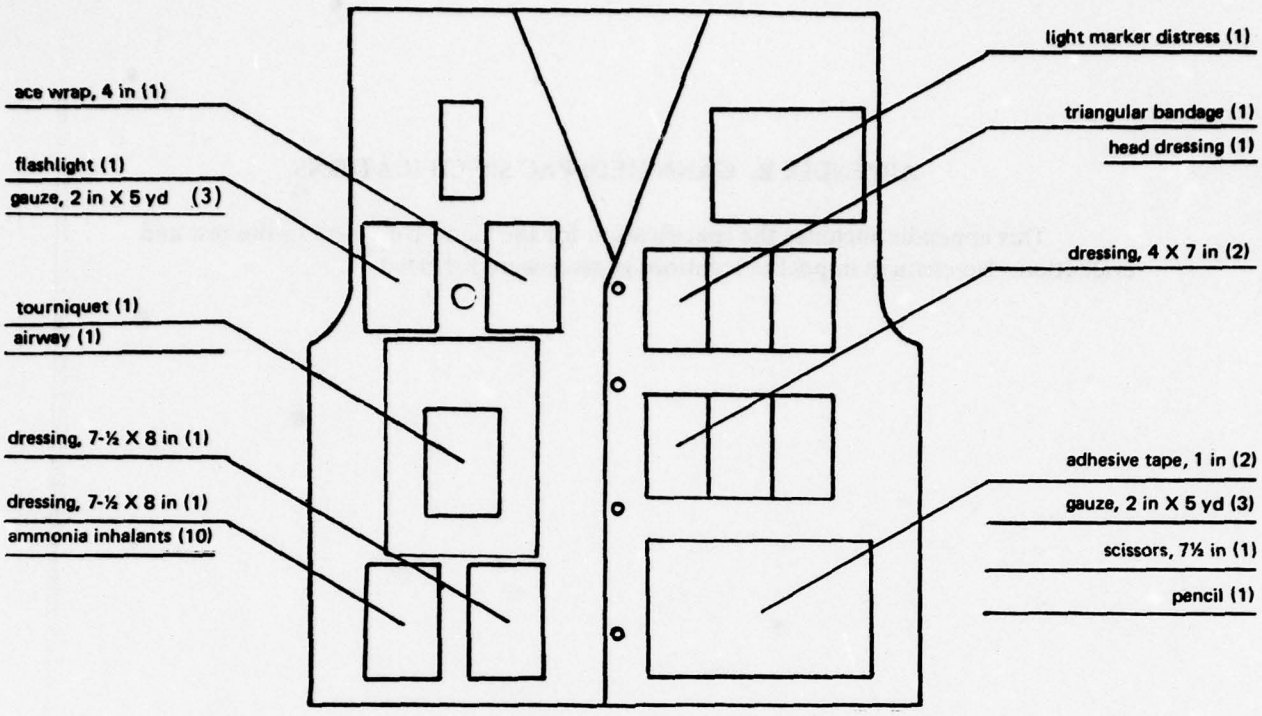


Figure A1. Gann Medi-Pac Unit medical supply locations, front side (quantity indicated in parentheses).

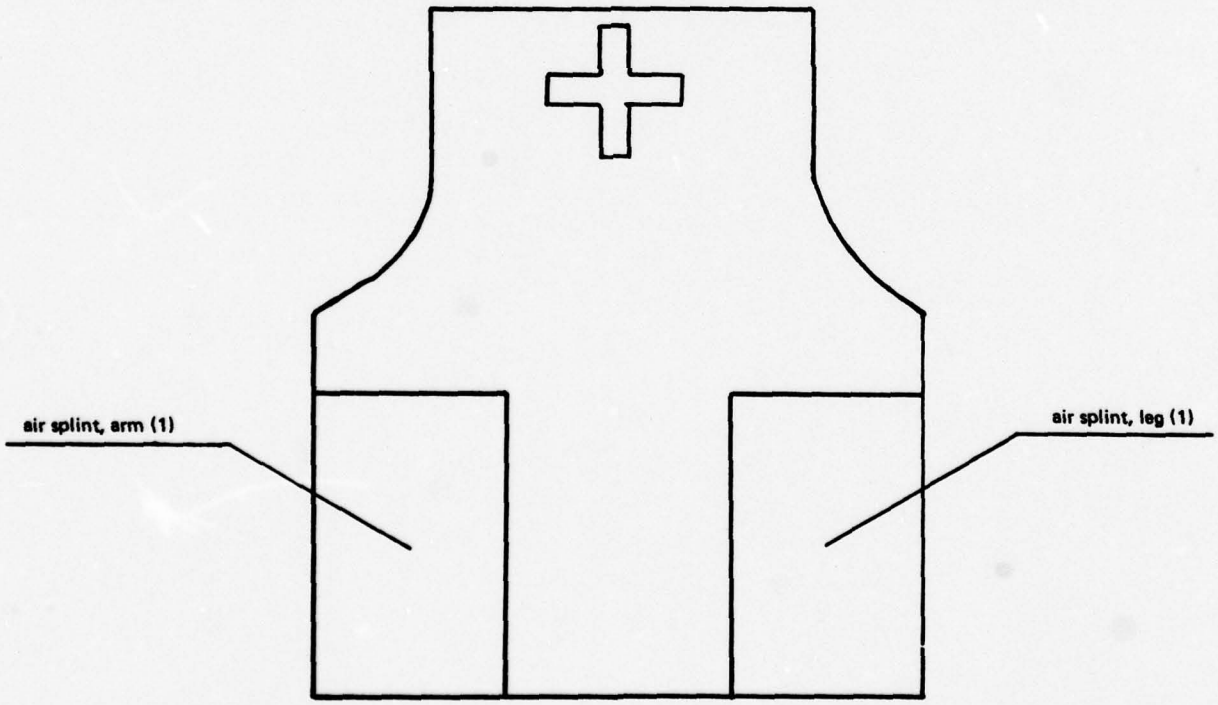


Figure A2. Gann Medi-Pac Unit medical supply locations, back side (quantity indicated in parentheses).

APPENDIX B. GANN MEDI-PAC SPECIFICATIONS

This appendix includes the specification for the Gann Unit used in the test and evaluation. No changes in pocket locations or sizes were reported.

A. Pockets and pocket flaps; sizes shown in figures B1 through B7. All dimensions shown indicate the finished pocket size required. All seams shall be finished leaving no rough edges. Pocket flaps and top corners of pockets (sewn to life preserver) shall be double-stitched.

NOTE: (1) One type A pocket will require an eyelet for securing a flashlight lanyard. See figure B4.

(2) Both type E pockets will require a nylon strap for opening the pocket. See figure B7.

B. Pockets and pocket flaps are to be sewn to the outer front panel in the locations shown in figure B2. Pockets on back panel locations are shown in figure B3.

NOTE: (1) One type A pocket is sewn to the padded cover of the CO_2 inflation device and not to the front panel. See figure B2.

(2) One type D pocket will be provided to contractor and sewn in place as shown in figure B2.

C. A red cross outlined in black shall be located on the back panel, as shown in figure B3.

D. Pockets and flaps should be of similar material and color to that of the life preserver cover.
Velcro should be 1 or 2 in wide, olive drab or black.
Strap(s) should be nylon, 1 in wide, olive drab or black.

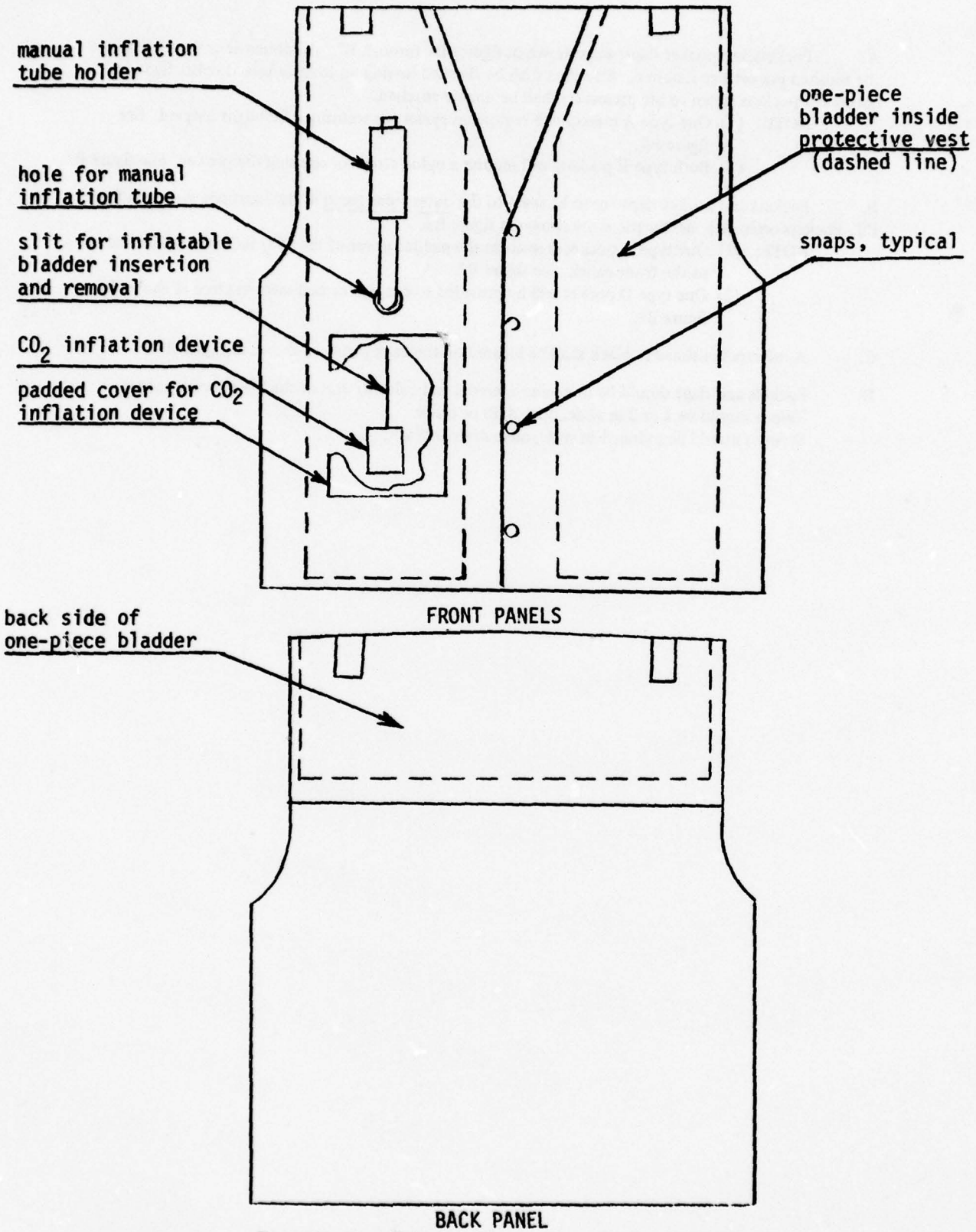
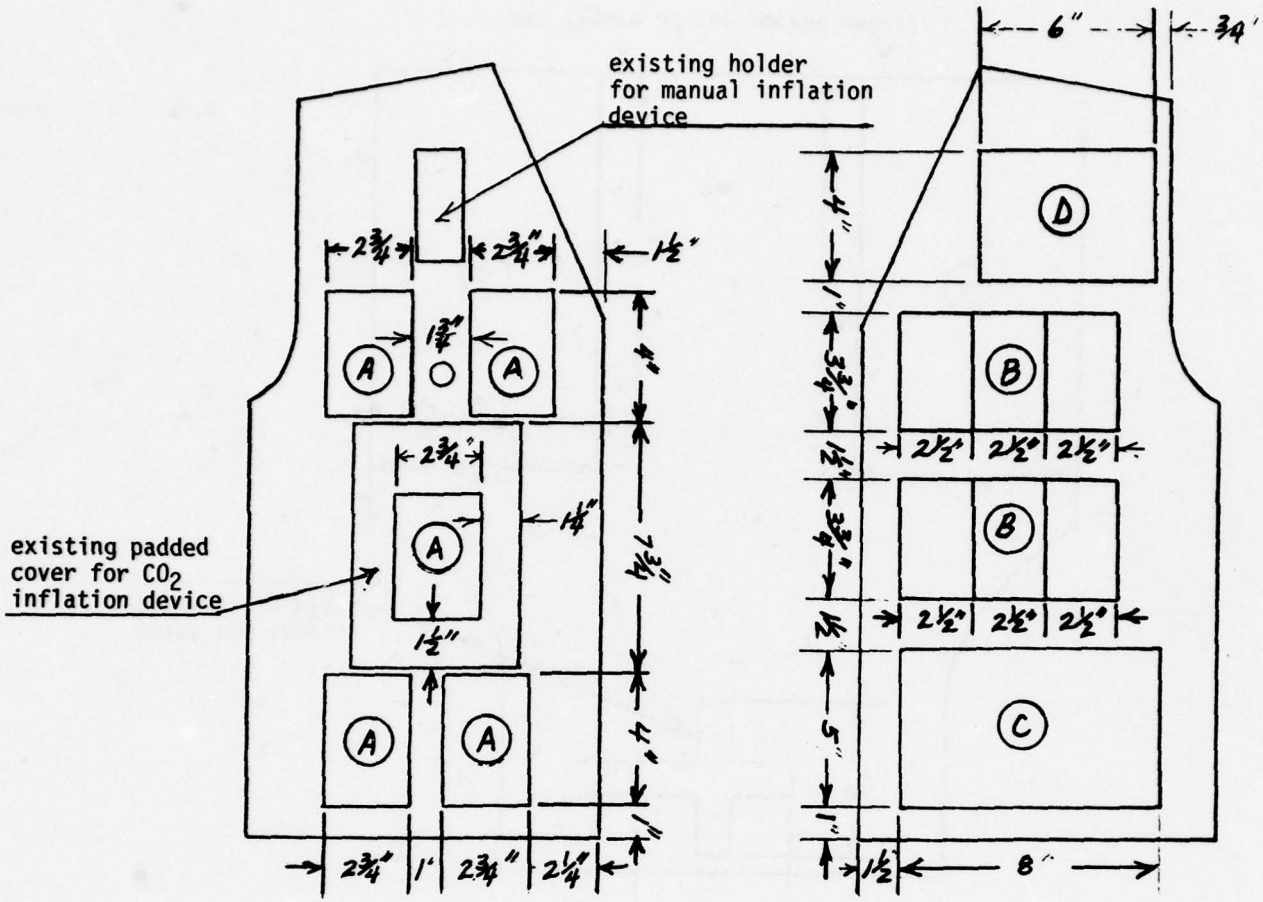


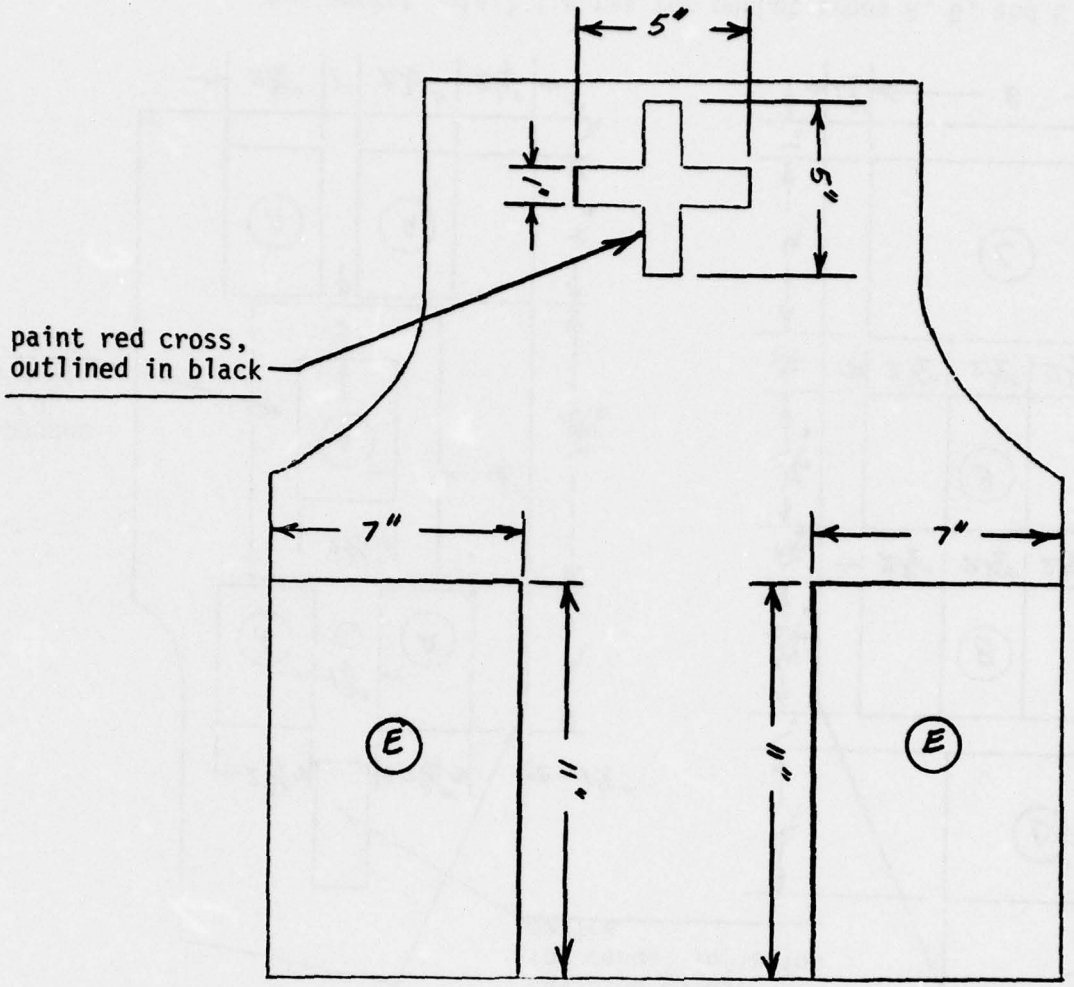
Figure B1. Navy flight-deck life preserver with inflatable bladder.



See pocket detail figures for pocket types A, B, and C

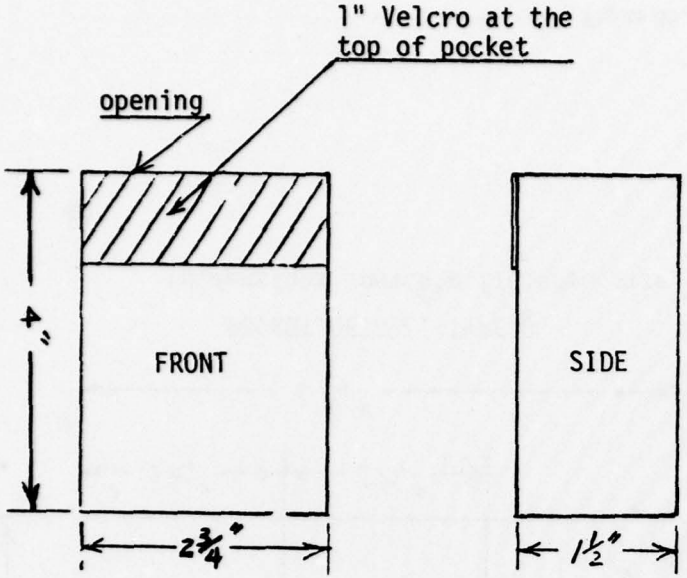
*Pocket Type D will be furnished to contractor

Figure B2. Front panel pocket locations.



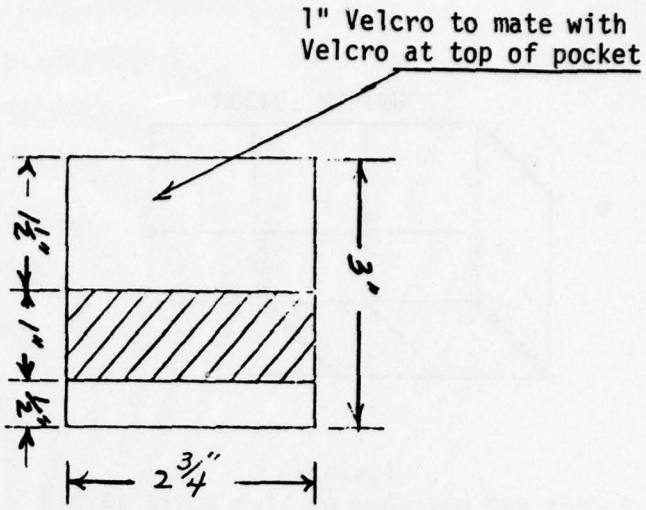
see figure B2 for pocket detail

Figure B3. Back panel pocket locations.

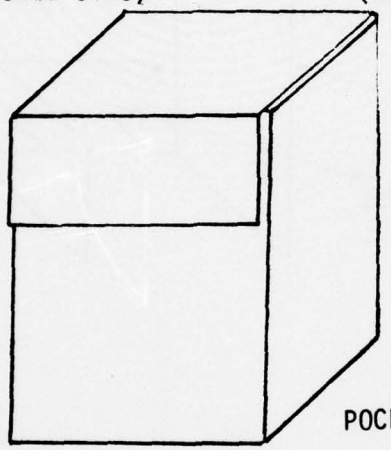


POCKET DETAIL TYPE A

(dimensions indicate finished size)

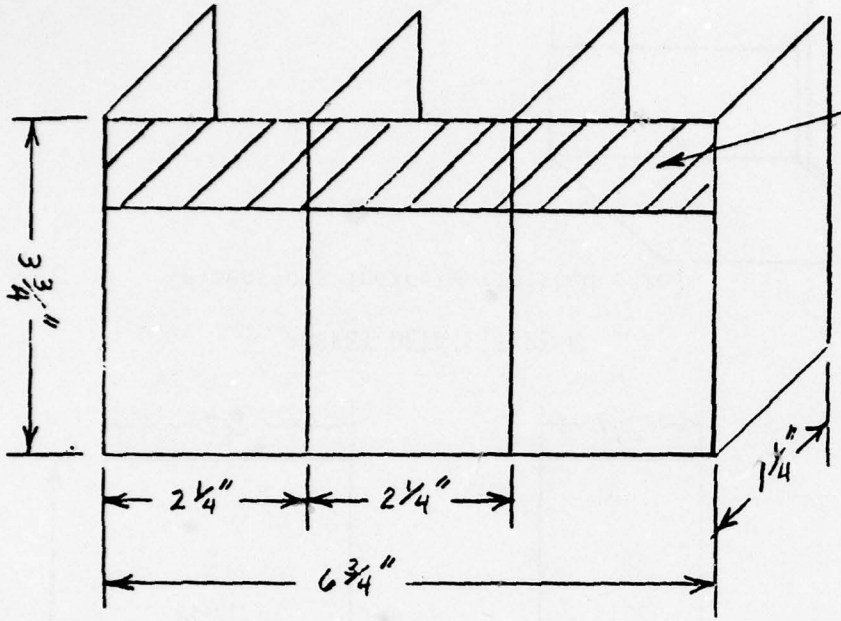


POCKET FLAP DETAIL (Underside)
TYPE A
(dimensions indicate finished size)



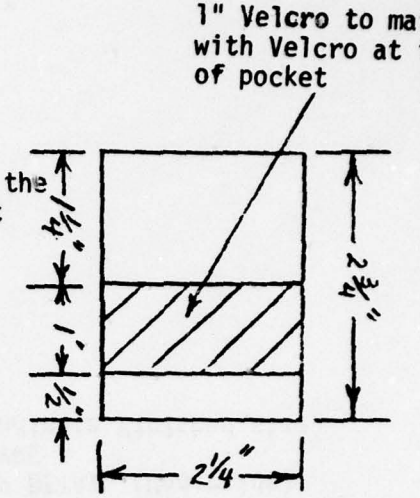
POCKET ASSEMBLY

Figure B4. Pocket detail, type A.



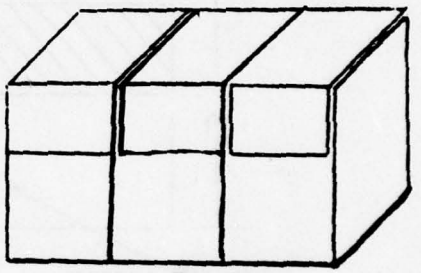
POCKET DETAIL, TYPE B

(dimensions indicate finished size)



POCKET FLAP DETAIL, TYPE B

(dimensions indicate finished size; three pocket flaps will be required per Type B pocket)



POCKET ASSEMBLY

Figure B5. Pocket detail, type B.

NOTE: Dimensions indicate finished size

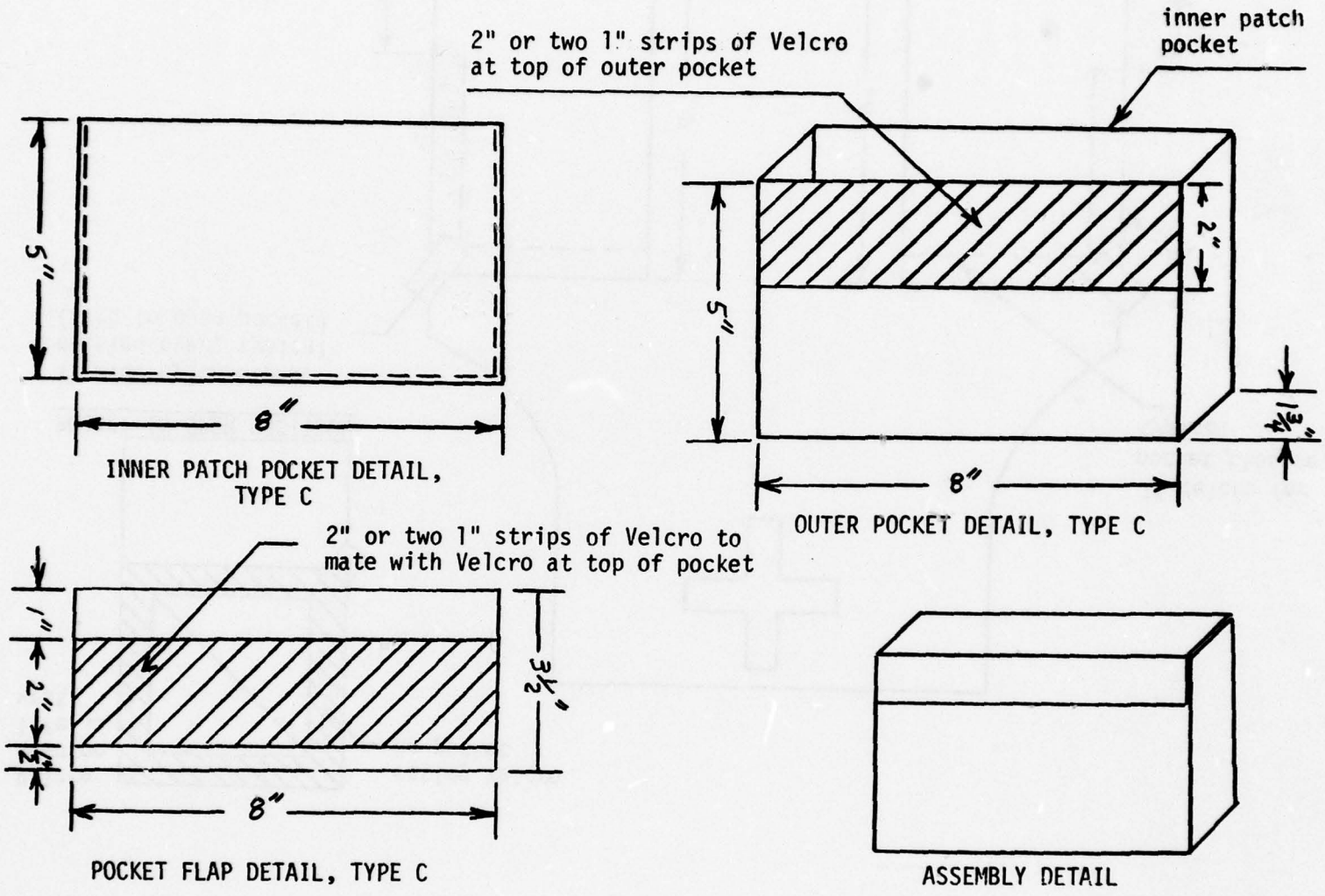


Figure B6. Pocket detail, type C.

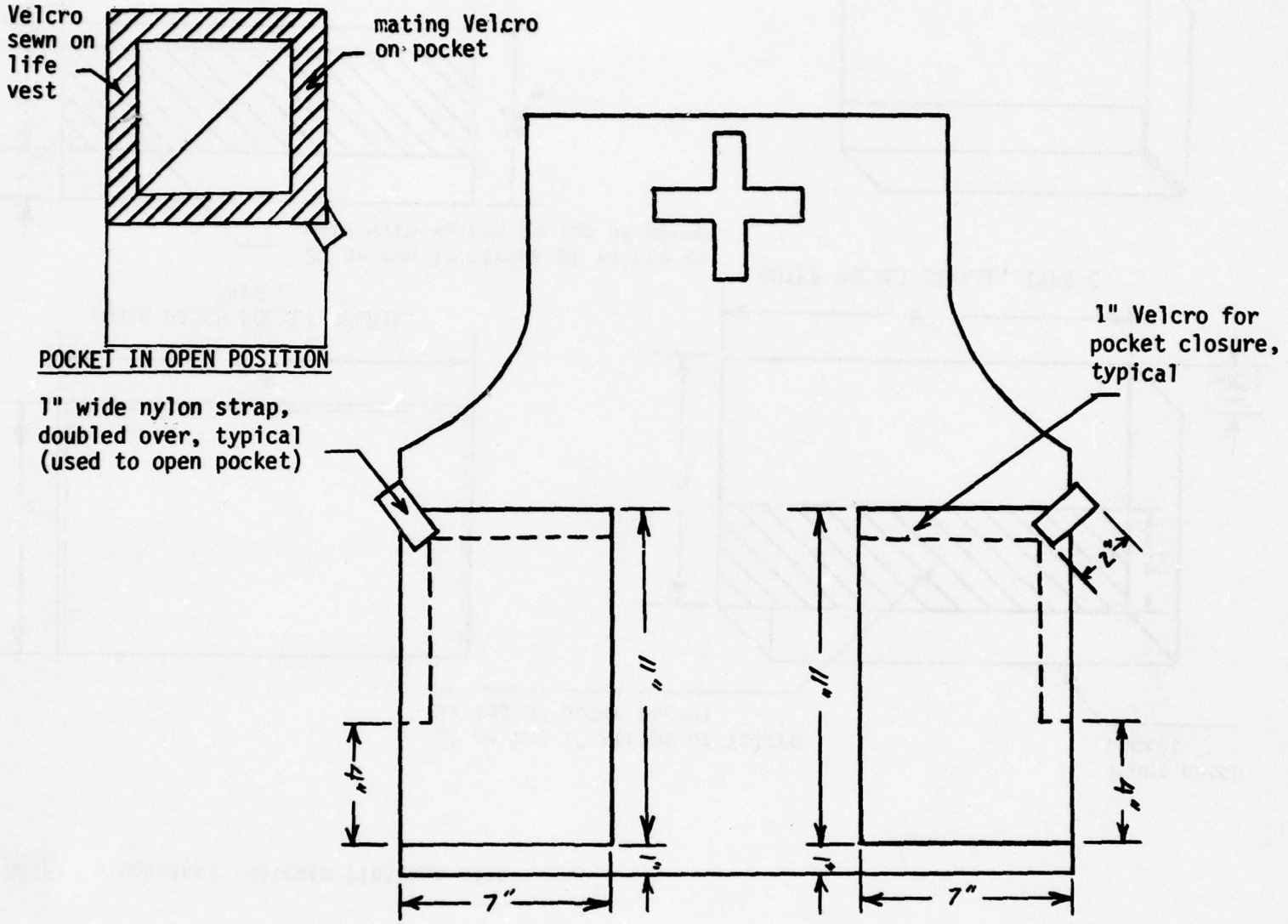


Figure B7. Pocket detail, type E.

APPENDIX C. SUMMARY OF QUESTIONNAIRE DATA ON OPERATIONAL EFFECTIVENESS

Included in this appendix are the tabulated results of questions on the operational effectiveness of the Gann Medi-Pac Unit. The questions asked in the questionnaire are stated at the top of each table. The operational effectiveness of the unit in shipboard situations as a life preserver and as a trauma kit is documented.

Table C1. Operational Effectiveness In Shipboard Situations.

Part A. Corpsmen with Unit Ones only.

1. Indicate the number of corpsmen assigned with Unit Ones only in these situations.

Ship	Location									
	General Quarters	Fire Parties	Flight Deck	Fueling	Repair Parties	Mass Casualties	Man Overboard	Trauma Calls	Rescue and Assistance	Crash and Guard Detail
USS ENTERPRISE, CVN-65	11	2			11	11		2		
USS NEW ORLEANS, LPH-11		1				4		1	1	
USS LONG BEACH, CGN-9	9				3	9	1	1		1
USS TRUXTUN, CGN-35	4									
USS PYRO, AE-24		4						4		
USS MARS, AFS-1		1				4		1		
USS ROANOKE, AOR-7		4				4		4		
USS PLUNGER, SSN-595	1	1				1	1	1		
USS BRONSTEIN, FF-1037	1					1		1		
USS HULL, DD-945		1				2	1	2		
USS JOHN PAUL JONES, DDG-32						2	1	2		
SAR, MCAS Beaufort SC										

Table C1. Continued.

Part B. Corpsmen with Unit Ones and life preservers.

2. Indicate the number of corpsmen assigned with Unit Ones and life preservers in these situations.

Ship	Location									
	General Quarters	Fire Parties	Flight Deck	Fueling	Repair Parties	Mass Casualties	Man Overboard	Trauma Calls	Rescue and Assistance	Crash and Guard Detail
USS ENTERPRISE, CVN-65	1		2	4		2	2			
USS NEW ORLEANS, LPH-11	12		1	1	10		1			
USS LONG BEACH, CGN-9	11		2	2	5	11	3			2
USS TRUXTUN, CGN-35			1	1			1			
USS PYRO, AE-24	4		1	1		4	4			
USS MARS, AFS-1	4		1	4			1			
USS ROANOKE, AOR-7	4		4	4			4			
USS PLUNGER, SSN-595										
USS BRONSTEIN, FF-1037			1	1			1			
USS HULL, DD-945			2	2			1			
USS JOHN PAUL JONES, DDG-32				2			1			
SAR, MCAS Beaufort SC			5							

Table C1. Continued.

Part C. Corpsmen with Gann Medi-Pac Units.

3. Indicate the number of Gann Medi-Pac Units you would substitute in these situations.

Ship	Location									
	General Quarters	Fire Parties	Flight Deck	Fueling	Repair Parties	Mass Casualties	Man Overboard	Trauma Calls	Rescue and Assistance	Crash and Guard Detail
USS ENTERPRISE, CVN-65	2		2			2				
USS NEW ORLEANS, LPH-11	12	1	1	1	10	4	1	1	1	
USS LONG BEACH, CGN-9	9	2	2	2	3	9	3	1		2
USS TRUXTUN, CGN-35			1	1			1			
USS PYRO, AE-24	4	4	1	1	1	4	4	4		
USS MARS, AFS-1			1							
USS ROANOKE, AOR-7	2	1	2	2			1	2		
USS PLUNGER, SSN-595	1	1				1	1	1		
USS BRONSTEIN, FF-1037	1		1	1		1	1	1		
USS HULL, DD-945			1				1			
USS JOHN PAUL JONES, DDG-32				2		2	2			
SAR, MCAS Beaufort SC			5							

Table C1. Continued.

Part D. Unit Ones in peacetime versus combat.

4. What is the approximate number of Unit Ones carried by your ship?
5. Changes in the number of Gann Units or contents for peacetime versus combat situations?

Ship	Unit Ones Per Ship	Changes in Content, Peacetime vs Combat	Evaluator's Comments
USS ENTERPRISE, CVN-65	6*	No	
USS NEW ORLEANS, LPH-11	35	No	
USS LONG BEACH, CGN-9	21	No	
USS TRUXTUN, CGN-35	6	No	
USS PYRO, AE-24	8	Yes	Combat situations – life sustaining medicants, i.e., IV, blood volume expanders, respiratory stimulants, and administering supplies
USS MARS, AFS-1	5	Yes	Combat situations – field medical cards, minor surgical set, morphine injections
USS ROANOKE, AOR-7	5	No	
USS PLUNGER, SSN-595	1	Yes	Combat situations – flak jacket versus life preserver
USS BRONSTEIN, FF-1037	5	Yes	More battle dressings
USS HULL, DD-945	5	No	
USS JOHN PAUL JONES, DDG-32	4	Yes	Mass casualties – Gann Unit can be used with Unit One
SAR, MCAS Beaufort SC	5	Yes	

*This question was misinterpreted; it is estimated that 30 to 40 Unit Ones are required for this class ship.

Table C2. Operational Effectiveness as a Shipboard Trauma Kit.

1. Document all occasions where the Gann Unit is used to respond to injuries aboard the ship on the Gann Medi-Pac Log. Type of injury, adequacy of the unit, and items that could have been used but were not in the Gann Unit should be detailed.

Ship	Was Gann Unit Used to Treat Shipboard Casualties?	Evaluator's Comments
USS ENTERPRISE, CVN-65	Yes	Vest used every day. Injuries ranged from small lacerations to broken ankle. No problems were encountered.
USS NEW ORLEANS, LPH-11	No	Not used for trauma during test period, but would be an effective unit to respond to shipboard injuries.
USS LONG BEACH, CGN-9	No	Unit was used for all shipboard evolutions; no injuries or accidents treated.
USS TRUXTUN, CGN-35	Yes	Boat rescue – minor injuries; boat rescue – no injuries; explosion injuries – treated at scene; Gann Unit adequate.
USS PYRO, AE-24	Yes	Hand trauma; unit adequate.
USS MARS, AFS-1	No	No injuries during test period.
USS ROANOKE, AOR-7	No	
USS PLUNGER, SSN-595	No	Unit used in drill situation.
USS BRONSTEIN, FF-1037	No	Safety conscious crew.
USS HULL, DD-945	No	
USS JOHN PAUL JONES, DDG-32	No	
SAR, MCAS Beaufort SC	No	

Table C3. Operational Effectiveness as a Life Preserver.

1. The Gann Unit should be inflated manually and by CO_2 cartridge at least once during the test period. To determine if the flotation characteristics of the flight-deck life preserver have been changed by the modification, a corpsman wearing a Gann Unit with medical supplies should test it in the water.
   a. Manual inflation problems?
   b. CO_2 cartridge inflation problems?
   c. Was flotation test conducted?Problems?

Ship	Manual Inflation Problems?	CO_2 Inflation Problems?	Flotation Test Conducted?	Evaluator's Comments
USS ENTERPRISE, CVN-65	No	Yes	No	Draw string on inflator hidden
USS NEW ORLEANS, LPH-11	No	No	Yes	None
USS LONG BEACH, CGN-9	No	No	No	
USS TRUXTUN, CGN-35	No	No	Yes	None
USS PYRO, AE-24	No	No	No	
USS MARS, AFS-1	No	No	Yes	None
USS ROANOKE, AOR-7	No	No	Yes	None
USS PLUNGER, SSN-595	No	No	No	
USS BRONSTEIN, FF-1037	No	No	Yes	None
USS HULL, DD-945	No	No	No	
USS JOHN PAUL JONES, DDG-32	No	No	No	
SAR, MCAS Beaufort SC	No	No	Yes	Found that snaps would not hold upon impact

APPENDIX D. SUMMARY OF QUESTIONNAIRE DATA ON THE OPERATIONAL SUITABILITY

Included in this appendix are the tabulated results of questions on the operational suitability of the Gann Medi-Pac Unit. The questions are stated at the top of each table. The operational suitability evaluation includes availability, maintainability, reliability, supportability, compatibility, human engineering, technical documentation, durability, and safety.

Table D1. Operational Suitability: Availability, Maintainability, and Reliability.

1. Document on the Gann Medi-Pac Log all problems, failures, causes, and the time the Gann Unit was not available as a trauma kit or life preserver.

Ship	Documented Problems	Evaluator's Comments
USS ENTERPRISE, CVN-65	None	No failures
USS NEW ORLEANS, LPH-11	None	There were no problems encountered in maintaining Gann Medi-Pac during the test period
USS LONG BEACH, CGN-9	None	
USS TRUXTUN, CGN-35	None	
USS PYRO, AE-24	None	
USS MARS, AFS-1	None	
USS ROANOKE, AOR-7	None	
USS PLUNGER, SSN-595	None	
USS BRONSTEIN, FF-1037	None	
USS HULL, DD-945	None	No problems noted
USS JOHN PAUL JONES, DDG-32	None	
SAR, MCAS Beaufort SC	None	

Table D2. Operational Suitability: Supportability.

Part A. Medical supplies.

1. Indicate on the following table the items you would not stock to support the Gann Unit.

Ship	Items in Suggested Gann Unit Inventory That Would Not be Stocked
USS ENTERPRISE, CVN-65	Ready air splints, foot and ankle
USS NEW ORLEANS, LPH-11	Ready air splints, foot and ankle; flashlight 6230-00-125-5528 stocked instead of 6230-223-4547
USS LONG BEACH, CGN-9	Would add sphygmomanometer (6516-371-3100) and stethoscope, Marshall (6515-374-2220)
USS TRUXTUN, CGN-35	Splints not on AMAL for our ship; if we keep Gann Pac we would prefer to purchase these splints to maintain the Gann Pac
USS PYRO, AE-24	Betadine solution, ½ oz
USS MARS, AFS-1	1-in paper tape; betadine solution, ½ oz
USS ROANOKE, AOR-7	1-in paper tape; betadine solution, ½ oz
USS PLUNGER, SSN-595	
USS BRONSTEIN, FF-1037	1-in adhesive tape; betadine solution, ½ oz; flashlight 6230-223-4547
USS HULL, DD-945	Flashlight; light marker distress; light marker battery; CO_2 cartridges; inflation assembly; Mark 1 bladder
USS JOHN PAUL JONES, DDG-32	
SAR, MCAS Beaufort SC	Betadine solution, ½ oz; ready air splint, leg; light marker distress; light marker battery

Table D2. Continued.

Part B. Distress light marker and dye marker.

2. Should a distress light marker be included in the Gann Unit?
3. Should a dye marker be included in the Gann Unit?
4. Do you use minor surgical kits or are they stored?

Ship	Distress Markers Included in Gann Unit?	Dye Marker Included in Gann Unit?	Minor Surgical Kit Used or Stored?	Evaluator's Comments
USS ENTERPRISE, CVN-65	Yes	No	No(?)	
USS NEW ORLEANS, LPH-11	Yes	Yes	Stored	
USS LONG BEACH, CGN-9	Yes	Yes	Used	
USS TRUXTUN, CGN-35	Yes	Yes	Stored	
USS PYRO, AE-24	Yes	Yes	Stored	
USS MARS, AFS-1	Yes	Yes	Used	
USS ROANOKE, AOR-7	Yes	Yes	Stored	
USS PLUNGER, SSN-595	Yes	No	Stored	
USS BRONSTEIN, FF-1037	Yes	Yes	Used	
USS HULL, DD-945	Yes	Yes	Stored	
USS JOHN PAUL JONES, DDG-32	Yes	–	–	
SAR, MCAS Beaufort SC	Yes	Yes	Stored	

Table D3. Operational Suitability: Compatibility.

1. Does the Gann Unit allow the wearer access through 18-in hatches, 24-in hatches, ladders, and passageways?
2. Is there adequate stowage for the Gann Unit in the Medical Department?

Part A. Ship access and stowage.

Ship	Access Through Ship?	Stowage?	Evaluator's Comments
USS ENTERPRISE, CVN-65	Yes	Yes	
USS NEW ORLEANS, LPH-11	Yes	Yes	
USS LONG BEACH, CGN-9	Yes	Yes	Corpsmen over 6-ft tall or 180 lb have difficulty with 18-in scuttles
USS TRUXTUN, CGN-35	No	Yes	6-ft, 203-lb and 6-ft 1-in, 223-lb corpsmen will not fit through 18-in hatch; okay in other areas
USS PYRO, AE-24	Yes	Yes	
USS MARS, AFS-1	Yes	Yes	
USS ROANOKE, AOR-7	Yes	Yes	It was found that it would be easier at times to drop a Unit One through a scuttle than go through with a Gann Pac
USS PLUNGER, SSN-595	Yes	Yes	
USS BRONSTEIN, FF-1037	Yes	Yes	
USS HULL, DD-945	Yes	Yes	6-ft, 158-lb
USS JOHN PAUL JONES, DDG-32	Yes	Yes	5-ft, 8-in; 145-lb
SAR, MCAS Beaufort SC	Yes	Yes	

Table D3. Continued.

Part B. Clothing, equipment, and recognition.

3. Does the Gann Unit allow other clothing (such as jackets) to be worn with the unit?
4. Is the Gann Unit compatible with other equipment required to be carried by the corpsmen?
5. Is the white vest with red cross compatible with your ship's requirement for corpsmen recognition?

Ship	Allow Other Clothing To Be Worn?	Allow Other Equipment To Be Carried?	White Vest and Red Cross Corpsmen Recognition?	Evaluator's Comments
USS ENTERPRISE, CVN-65	Yes	Yes	Yes	Ship's identification in place of Gann advertisement
USS NEW ORLEANS, LPH-11	Yes	Yes	Yes	
USS LONG BEACH, CGN-9	Yes	Yes	Yes	
USS TRUXTUN, CGN-35	Yes	Yes	Yes	
USS PYRO, AE-24	Yes	Yes	Yes	
USS MARS, AFS-1	Yes	No	Yes	Flotation wear in most evaluations must have a collar flotation device
USS ROANOKE, AOR-7	Yes	Yes	Yes	Crosses could be larger but should in all cases be outlined in black due to red light being used at night
USS PLUNGER, SSN-595	Yes	Yes	Yes	
USS BRONSTEIN, FF-1037	Yes	Yes	Yes	
USS HULL, DD-945	No	Yes	Yes	Cold weather gear is bulky
USS JOHN PAUL JONES, DDG-32	Yes	Yes	Yes	
SAR, MCAS Beaufort SC	Yes	Yes	No	Material absorbs oil and gas too easily

Table D4. Operational Suitability: Human Engineering.

Part A. Accessibility, mobility, and pocket design.

1. Are the supplies easily accessible and in a functional location?
2. Is the mobility of the wearer hampered by the Gann Unit as compared to the Unit One?
3. Are the pockets and flaps adequate?

Ship	Supplies Accessible?	Mobility Hampered?	Pockets Adequate?	Evaluator's Comments
USS ENTERPRISE, CVN-65	Yes	No	Yes	
USS NEW ORLEANS, LPH-11	Yes	No	No	Flashlight pocket inadequate for flashlight (6230-00-223-4547); it extends outside pocket and becomes a hazard to the wearer when ascending through scuttle
USS LONG BEACH, CGN-9	Yes	No	Yes	
USS TRUXTUN, CGN-35	Yes	No	Yes	
USS PYRO, AE-24	Yes	No	Yes	
USS MARS, AFS-1	Yes	No	Yes	
USS ROANOKE, AOR-7	Yes	No	Yes	
USS PLUNGER, SSN-595	Yes	No	Yes	
USS BRONSTEIN, FF-1037	Yes	No	Yes	
USS HULL, DD-945	Yes	Yes	Yes	Becomes heavy after wearing it for prolonged periods, i.e., plane guard; not waterproof
USS JOHN PAUL JONES, DDG-32	Yes	No	Yes	
SAR, MCAS Beaufort SC	Yes	No	No	Too many pockets given to just battle dressing

Table D4. Continued.

Part B. Comfort and configuration.

4. Is the Gann Unit comfortable to wear (weight, balance, etc.)?
5. Note recommended changes to the configuration?

Ship	Comfortable To Wear?	Configuration Changes?	Evaluator's Comments
USS ENTERPRISE, CVN-65	Yes	None	Gets heavy after a while
USS NEW ORLEANS, LPH-11	Yes	Yes	Add flashlight 6250-00-125-5528 and child's airway 6515-00-299-8748
USS LONG BEACH, CGN-9	Yes	Yes	Add skin pencil, sphygmomanometer, and stethoscope
USS TRUXTUN, CGN-35	Yes	None	
USS PYRO, AE-24	Yes	None	
USS MARS, AFS-1	No	None	Corpsmen complain of weight on shoulders
USS ROANOKE, AOR-7	Yes and No	None	All supplies are in front, making the front heavier, and causes some discomfort until you are used to it
USS PLUNGER, SSN-595	Yes	None	
USS BRONSTEIN, FF-1037	Yes	None	
USS HULL, DD-945	No	None	Places too much weight on shoulders
USS JOHN PAUL JONES, DDG-32	Yes	Yes	Rearrangement of supplies
SAR, MCAS Beaufort SC	Yes	Yes	Add blood pressure cuff

Table D5. Operational Suitability: Technical Documentation and Training.

1. Do you recommend training for corpsmen in the use of the Gann Unit as a trauma kit or as a life preserver?
2. What documentation should be included with the Gann Unit (inventory list, instruction manual, etc.)?

Ship	Training	Documentation	Evaluator's Comments
USS ENTERPRISE, CVN-65	Yes	No	Familiarization
USS NEW ORLEANS, LPH-11	Yes	Yes	Instruction on use of medical supplies contained in unit and flotation mechanism; inventory list
USS LONG BEACH, CGN-9	Yes	No	Instructions on use as life preserver and first-aid kit
USS TRUXTUN, CGN-35	No	Yes	Inventory list
USS PYRO, AE-24	Yes	Yes	Instructions on use as life preserver and first-aid kit; inventory list
USS MARS, AFS-1	Yes	Yes	How to inflate and locate medical items; inventory list with location
USS ROANOKE, AOR-7	Yes	Yes	Enough to show how the inflation gear works and basic uses of the unit; basic inventory; maintenance recommendations; operating procedures
USS PLUNGER, SSN-595	No	Yes	Inventory list and instructions for inflatable splints
USS BRONSTEIN, FF-1037	Yes	Yes	Familiarization training; inventory list
USS HULL, DD-945	Yes	Yes	No more than what you would train with a Unit One; inventory list
USS JOHN PAUL JONES, DDG-32	No	Yes	Inventory list
SAR, MCAS Beaufort SC	Yes	Yes	Should know what each pocket contains; documentation should be left to unit NCO

Table D6. Operational Suitability: Durability.

1. The Gann Unit (without medical supplies and bladder) should be washed at least three times during the test and evaluation period. All tears and damage due to normal use and washing should be documented.

Ship	Documented Damage?	Evaluator's Comments
USS ENTERPRISE, CVN-65	None	
USS NEW ORLEANS, LPH-11	None	"The Gann Unit was washed three times with no apparent problems"
USS LONG BEACH, CGN-9	None	
USS TRUXTUN, CGN-35	None	
USS PYRO, AE-24	None	
USS MARS, AFS-1	None	
USS ROANOKE, AOR-7	None	
USS PLUNGER, SSN-595	None	
USS BRONSTEIN, FF-1037	None	
USS HULL, DD-945	None	
USS JOHN PAUL JONES, DDG-32	None	
SAR, MCAS Beaufort SC	None	

Table D7. Operational Suitability: Safety.

Part A. Potential hazards.

1. Are there any potential hazards caused by the Gann Unit configuration?

Ship	Hazards?	Comments
USS ENTERPRISE, CVN-65	Yes	Draw string on inflator; adjusting strap on back hangs up
USS NEW ORLEANS, LPH-11	Yes	Flashlight (6230-223-4547) extends outside of pocket and becomes caught on edge of scuttles while ascending through
USS LONG BEACH, CGN-9	No	
USS TRUXTUN, CGN-35	No	
USS PYRO, AE-24	No	
USS MARS, AFS-1	No	
USS ROANOKE, AOR-7	No	
USS PLUNGER, SSN-595	No	
USS BRONSTEIN, FF-1037	No	
USS HULL, DD-945	No	
USS JOHN PAUL JONES, DDG-32	Yes	See note below.
SAR, MCAS Beaufort SC		

NOTE: Gann Unit does not meet criteria of NWP-14 which requires that lifejackets worn by personnel on replenishment at-sea station be inherently buoyant-filled, versus inflatable, vest type. The hazard: The inherent danger of a man being knocked unconscious by a parting line or a piece of gear and being swept overboard. The same is also applicable to a ready lifeboat where the corpsman must ride a lifeboat as it is being lowered into possibly heavy seas and being pitched about or the case in which a davit wire parts.

Table D7. Continued.

Part B. Gann Unit versus Unit One.

2. Is the Gann Unit safer to use aboard ship than the Unit One?

Ship	Is Gann Unit Safer Than Unit One?	Evaluator's Comments
USS ENTERPRISE, CVN-65	Yes	
USS NEW ORLEANS, LPH-11	Yes	
USS LONG BEACH, CGN-9	Yes	"The Gann Unit is safer in that the corpsman's hands are free at all times. The white color and reflective striping enhance visibility."
USS TRUXTUN, CGN-35	Yes	"Leaves corpsman's hands free to use; when leaving accident, doesn't have to worry about leaving Unit One behind."
USS PYRO, AE-24	No	"It is easier to coordinate your moves with all first aid equipment when it's molded to your body instead of involving your hands and eyes."
USS MARS, AFS-1	No	
USS ROANOKE, AOR-7	Yes and No	"Depending on situation, the Gann's gear is readily accessible but at times the Unit One would be more practical in hard to get at areas due to getting snagged in equipment and protruding objects."
USS PLUNGER, SSN-595	Yes	"Because it frees both hands and there is less chance of unit getting caught on valves like the strap on the Unit One tends to do."
USS BRONSTEIN, FF-1037	Yes	"Definitely safer. Does not get caught on scuttles as my Unit One does."
USS HULL, DD-945	No	"The Gann Unit should not be used aboard a destroyer."
USS JOHN PAUL JONES, DDG-32	–	
SAR, MCAS Beaufort SC	–	

APPENDIX E. SUMMARY OF QUESTIONNAIRE DATA ON OVERVIEW

General comments, numbers of medical personnel per ship, estimated usage of Gann Unit, and the number of Gann Units recommended for each class of ship evaluated are documented in this appendix.

Table E1. Overview: General Comments.

Ship	Comments
USS ENTERPRISE, CVN-65	"A welcome improvement."
USS NEW ORLEANS, LPH-11	"The Gann Medi-Pac is a well designed and viable unit. It could easily replace the "Unit One" for shipboard operations. The Gann Medi-Pac was used daily onboard USS NEW ORLEANS for fire party drills, flight operations, general quarters, underway replenishment, and when responding to medical emergencies. There were no significant problems encountered with the unit during the test period. All corpsmen in the medical department had the opportunity to use the Gann Medi-Pac and there were no adverse comments."
USS LONG BEACH, CGN-9	No comment.
USS TRUXTUN, CGN-35	"For flight quarters this is a most convenient method of having supplies and equipment at hand. Very comfortable. White color although essential for visibility is very difficult to keep clean in a shipboard environment. A more resistant to stain material might be an asset."
USS PYRO, AE-24	"The Gann Medi-Pac is an exceptionally outstanding device and should be utilized to its fullest potential. The medical field and certain given situations require immediate action. The ability to provide that expediency is the difference between the loss or saving of life or limb."
USS MARS, AFS-1	"The Gann Medi-Pac appears to be a well designed first-aid unit. Its design allows the user free use of his hands as he moves from one patient to the next. The compartments cut down on spillage. The best use of the Gann is manning flight quarters. Most of the other evolutions on board require a collar on the flotation device. The Unit One is more easily grabbed and ran with in an emergency situation. It is felt that the Unit One is the best suited for all shipboard uses except flight deck operations."
USS ROANOKE, AOR-7	"The Gann Pac is a good idea because of the idea of everything being at hand and not having to hunt for what you need. Also you don't have to worry about being separated from your gear or dropping everything at a critical time."
USS PLUNGER, SSN-595	"The Gann Medi-Pac is a good piece of equipment with wide use potential on board submarines. If converted to a flack jacket for field use, it could make movements easier and help provide protection for the corpsman wearing it."
USS BRONSTEIN, FF-1037	"Personal Opinion: The Gann Unit should replace the Unit One throughout the Navy. It is much easier to quickly locate P/A supplies and is a much more comfortable unit. With modifications in its construction and color, it should be tested in field use."
USS HULL, DD-945	No comment.

Table E1. Continued.

Ship	Comments
USS JOHN PAUL JONES, DDG-32	No comment.
SAR, MCAS Beaufort SC	"Basically I feel the Gann Unit superior to the Unit One in design and comfort. It is compact and easily available to find specific objects. However lacking is large enough space for a BP cuff and carries too much betadine solution, space that could hold extra airways (incl peds) and tourniquet."

Table E2. Overview, Medical Personnel.

How many medical personnel are assigned to your class ship?

Ship	Physicians	HMC	HM1	HM2	HM3	HN and Below	Total Corpsmen
USS ENTERPRISE, CVN-65	4	5	8	7	21	6	47
USS NEW ORLEANS, LPH-11	1	1	3	2	2	4	12
USS LONG BEACH, CGN-9	1	2	1	4	3	1	11
USS TRUXTUN, CGN-35	1	1	1		2		4
USS PYRO, AE-24			1	1	1	1	4
USS MARS, AFS-1	1	1		1	1	2	5
USS ROANOKE, AOR-7	1		1	3		1	5
USS PLUNGER, SSN-595		1					1
USS BRONSTEIN, FF-1037			1				1
USS HULL, DD-945			1			1	2
USS JOHN PAUL JONES, DDG-32		1			1		2
SAR, MCAS Beaufort SC				1	4		5

Table E3. Overview: Usage.

Estimate the approximate usage of the Gann Unit aboard your class ship.

Ship	Comments
USS ENTERPRISE, CVN-65	"Frequently."
USS NEW ORLEANS, LPH-11	"When and if available would substitute the Gann Medi-Pac for all 'Unit Ones.' Plan to continue to use the Gann Medi-Pac on all shipboard operations requiring a corpsman."
USS LONG BEACH, CGN-9	No comment.
USS TRUXTUN, CGN-35	"Two-four hours per day flight quarters; two-four hours when UNREPing."
USS PYRO, AE-24	"Approximation of said unit is somewhat difficult, due to inability to accumulate required statistics reflecting some percentile of usage aboard this vessel. It is safe to say that this unit could very easily be used for the majority of this ship's evolutions."
USS MARS, AFS-1	No comment.
USS ROANOKE, AOR-7	"The approximate amount of usage would be constant during VERTREPS and as a first line of use item during mass casualties. Otherwise a Unit One would be just as useful for small or one-person injuries."
USS PLUNGER, SSN-595	"Primarily it would be used in all trauma type casualties throughout the ship. The necessity of use as a life preserver is slim."
USS BRONSTEIN, FF-1037	"Average twice a week."
USS HULL, DD-945	"After the evaluation it will not be used."
USS JOHN PAUL JONES, DDG-32	"Helo details, UNREPS."
SAR, MCAS Beaufort SC	No comment.

Table E4. Recommended Gann Units per Ship Class.

How many Gann Units would you recommend for your class ship?

Ship	Total Number of Corpsmen Assigned To Ship	Total Number of Unit Ones Aboard	Recommended Number of Gann Units per Ship Class
USS ENTERPRISE, CVN-65	47	6(?)	4
USS NEW ORLEANS, LPH-11	12	35	35
USS LONG BEACH, CGN-9	11	21	12
USS TRUXTUN, CGN-35	4	6	2
USS PYRO, AE-24	4	8	4
USS MARS, AFS-1	5	5	1
USS ROANOKE, AOR-7	5	5	2
USS PLUNGER, SSN-595	1	1	1
USS BRONSTEIN, FF-1037	1	5	2
USS HULL, DD-945	2	5	0
USS JOHN PAUL JONES, DDG-32	2	4	2
SAR, MCAS Beaufort SC	5	5	–

APPENDIX F. NAVAL WARFARE PUBLICATION (NWP) 14, REPLENISHMENT AT SEA

This appendix includes sections of NWP-14 which pertain to personnel safety.

NAVAL WARFARE PUBLICATION 14, REPLENISHMENT AT SEA

CHAPTER 2: COMMON PROCEDURES AND EQUIPMENT FOR UNDERWAY REPLENISHMENT

2.9 Safety Requirements

A primary consideration in every shipboard evolution is the safety precautions and safety equipment used.

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4. Except for fork truck operators, topside personnel who are engaged in handling stores or lines or who are in the transfer area shall wear orange colored, inherently buoyant, vest type life jackets, properly secured. Fork truck operators will wear inflatable life jackets.

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23. Personnel in the immediate area of the transfer station/landing area shall wear construction type (safety) helmets. These helmets are to be equipped with quick-acting breakaway devices, and chin straps shall be fastened and worn under the chin. Safety helmets will be color coded as follows:

WHITE	Officers/CPOs and supervisors
YELLOW	Rig captain
GREEN	Signalmen/phone talkers
BROWN	Winch operators
PURPLE	Repair personnel
RED	Line-throwing gunners (or bolo heavers)
WHITE (with red cross)	Corpsman
BLUE	Deck riggers/line handlers
ORANGE	Checkers/supply personnel
GREY	All others

APPENDIX G. COST IMPACT

This appendix includes an estimate of the number of Gann Units required for fleet use and the cost estimates of implementing Gann Units on ships with and without flight-deck operations. Assumptions are detailed in each section.

ESTIMATED NUMBER OF GANN UNITS FOR FLEET USE

It was difficult to determine an estimated number of Gann Units per class of ship from the questionnaire results. Some medical departments suggested providing at least one Gann Unit per corpsman, while others suggested much lower numbers. The following assumptions were used in attempting to estimate the number of units required for fleet use:

1. Ships with flight deck operations (CVN, CV, LPH, and LHA classes) would request six to twelve Gann Units.

2. Cruiser class (CGN and CG) would request a minimum of four to six Gann Units.

3. Escort classes (DDG, FF, and DD) would request one to two Gann Units.

4. Amphibious warfare classes (except LHA and LPH) would request one to three Gann Units.

5. All other categories would request one Gann Unit.

ESTIMATED COST OF IMPLEMENTING GANN UNIT TO SHIPS WITHOUT FLIGHT-DECK LIFE PRESERVERS

Gann Unit (Modified Flight-Deck Life Preserver Cover)

The present price of a flight-deck life preserver cover is $12.73 for a large size and $15.29 for a medium size. The average price is $14.01 each. Personnel at the David Taylor Naval Ship Research and Development Command (NSRDC) roughly estimate Gann Unit modifications will double the cost of the life preserver cover. NSRDC designed the presently used flight deck life preservers.

Gann Unit Cost	2 X $14.01 =	$28.02

Nonmedical Supplies Required

Life preserver bladders	$22.36
Life preserver inflation device	$10.00
Distress light marker	$22.56
Batteries	$ 2.50
Total	$57.42

Medical Supplies Required

Air splint, arm	$ 3.81
Air splint, leg	$ 3.61
Total	$ 7.42

Note: It is assumed that Unit One medical supplies will stock Gann Unit except for air splints.

Total Cost

Gann Unit	$28.02
Nonmedical supplies	$57.42
Medical supplies	$ 7.42
Total	$92.86

ESTIMATED COST OF IMPLEMENTING GANN UNIT TO SHIPS WITH FLIGHT-DECK OPERATIONS

Gann Unit (Modified Flight-Deck Life Preserver Cover)

2 X $14.01 (average cost) =	$28.02

Nonmedical Supplies Required

Distress light marker	$22.57
Batteries	$ 2.50
	$25.07

The assumption here is that bladders and inflation device are available on the ship.

Medical Supplies Required

Air splint, arm	$ 3.81
Air splint, leg	$ 3.61
	$ 7.42

It is assumed that Unit One medical supplies will stock Gann Units except for air splints.

Total Cost

Gann Unit	$28.02
Nonmedical supplies	$25.07
Medical supplies	$ 7.42
	$60.51

Table G1. Estimated Number of Gann Units for Fleet Use.

Category and Type of Ship	Number of Ships[1]			Estimated Number of Gann Units per Ship per Class, high/low	Estimated Number of Gann Units per Class, high/low
	Active	Building	Total		
Strategic Missile Submarines					
SSBN, ballistic missile submarines	39	4	43	1/1	43/43
Submarines					
SSN, submarines (nuclear)	65	27	92	1/1	92/92
SS, attack submarines (diesel)	10	–	10	1/1	10/10
Aircraft Carriers					
CVN, aircraft carriers (nuclear)	2	2	4	12/6	48/24
CV, aircraft carriers	11	–	11	12/6	132/66
Cruisers					
CGN, guided missile cruisers (nuclear)	5	3	8	6/4	48/32
CG, guided missile cruisers	20	–	20	6/4	120/80
Destroyers					
DDG, guided missile destroyers	38	–	38	2/1	76/38
DD, destroyers	53	25	78	2/1	156/78
Frigates					
FFG, guided missile frigates	6	10	16	2/1	32/16
FF, frigates	58	–	58	2/1	116/58
Amphibious Warfare Forces					
LCC, amphibious command ships	2	–	2	3/1	6/2
LHA, amphibious assault ships (GP)	1	4	5	12/6	60/30
LPH, amphibious assault ships	7	–	7	12/6	84/42
LKA, amphibious cargo ships	6	–	6	3/1	18/6
LPA, amphibious transports	2	–	2	3/1	6/2
LPD, amphibious transport docks	14	–	14	3/1	42/14
LSD, landing ships dock	13	–	13	3/1	39/13
LST, landing ships tank	20	–	20	3/1	60/20

1. Jane's Fighting Ships, 1977-1978

Table G1. Continued.

Category and Type of Ship	Number of Ships			Estimated Number of Gann Units per Ship per Class, high/low	Estimated Number of Gann Units per Class, high/low
	Active	Building	Total		
Light Forces					
PHM, patrol combatants – missile (hydrofoil)	–	6	6	1/1	6/6
PCH, patrol craft (hydrofoil)	1	–	1	1/1	1/1
PG, patrol combatants	8	–	8	1/1	8/8
PTF, fast patrol craft	4	–	4	1/1	4/4
Mine Warfare Forces					
MSO, minesweepers – ocean	25	–	25	1/1	25/25
Service Forces (underway replenishment)					
AE, ammunition ships	13	–	13	1/1	13/13
AF, store ships	1	–	1	1/1	1/1
AFS, combat stores ships	7	–	7	1/1	7/7
AO, oilers	8	2	10	1/1	10/10
AOE, fast combat stores ships	4	–	4	1/1	4/4
AOR, replenishment fleet oilers	7	–	7	1/1	7/7
Service Forces (auxiliaries)					
AD, destroyer tenders	9	3	12	1/1	12/12
AG, miscellaneous	3	–	3	1/1	3/3
AGDS, auxiliary deep submergence support ship	1	–	1	1/1	1/1
AGEH, hydrofoil research ship	1	–	1	1/1	1/1
AGF, miscellaneous command ship	1	–	1	1/1	1/1
AGFF, frigate research ship	1	–	1	1/1	1/1
AGP, patrol craft tender	1	–	1	1/1	1/1
AGSS, auxiliary submarines	2	–	2	1/1	2/2
AR, repair ships	5	–	5	1/1	5/5
ARS, salvage ships	12	–	12	1/1	12/12
AS, submarine tenders	11	2	13	1/1	13/13

Table G1. Continued.

Category and Type of Ship	Number of Ships			Estimated Number of Gann Units per Ship per Class, high/low	Estimated Number of Gann Units per Class, high/low
	Active	Building	Total		
Service Forces (auxiliaries) (continued)					
ASR, submarine rescue ships	8	–	8	1/1	8/8
ATF, fleet ocean tugs	16	–	16	1/1	16/16
ATS, salvage and rescue ships	3	–	3	1/1	3/3
AVM, guided missile ship	1	–	1	1/1	1/1
CVT, training aircraft carrier	1	–	1	1/1	1/1
Estimated Number of Gann Units For Fleet Use, high/low					1355/833

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