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AN INSURV/EIC DICTIONARY

by

J. E. Hamilton

Serial T-212

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THE GEORGE WASHINGTON UNIVERSITY
Logistics Research Project

Abstract
of
Serial T-212

AN INSURV/EIC DICTIONARY

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This paper presents a dictionary wherein each "line element" in the U. S. Navy Board of Inspection and Survey (INSURV) inspection report is related to specific "systems" of the Equipment Identification Code (EIC) catalog. The approach is to list, for each INSURV line element, all EIC systems that pertain to entities inspected in order to assign a grade to the line element. There are 609 line elements but only 245 are appropriate as entries in the dictionary. Since we limit our attention to the DD type of ship, only 21 of the 27 EIC system codes need be considered. Our objective is to clarify the nature of the problem of relating INSURV inspector data and data such as those from the Maintenance Data Collection System where EIC codes are used. In addition to this clarification, the present dictionary will form the basis for the next study wherein INSURV line elements will be related to EIC "subsystems".

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AN INSURV/EIC DICTIONARY

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0. Introduction

This paper deals with U. S. Navy Board of Inspection and Survey (INSURV) line elements and Equipment Identification Code (EIC) system codes. Our objective is to clarify the nature of the problem of relating INSURV inspection data and data employing EIC codes as, for example, Maintenance Data Collection System data. The purpose is to present an INSURV/EIC dictionary constructed as follows. For each INSURV line element, we seek to list all EIC systems that pertain to entities inspected in order to assign a grade to the designated INSURV line element. It would be possible to invert the above relationship and, for each EIC system, to list all associated INSURV elements but we defer such a step until later stages of the investigation.

There are 609 line elements but only 245 are appropriate as entries in the dictionary. The reasons for these exclusions are presented in Section 1 and the excluded line elements are listed by categories in Appendix B.

As presented in Section 2, there are 27 EIC system codes but only 21 are appropriate for the dictionary. The dictionary itself is presented as Appendix A.

In Section 3 we summarize a few basic features of the correspondence between INSURV line elements and EIC systems. We conclude that the present dictionary can be used to form the basis for the next study wherein the more detailed EIC "subsystems" will be considered.

1. INSURV Line Elements

The INSURV line elements correspond to the entries on the inspection forms, OPNAV 4730, that are identified by lower case letters: a, b, c, The remaining entries, identified by numbers 1, 2, 3, ..., correspond to functions that are actually defined as being the totality of their assigned line elements. A full set of INSURV reporting forms consists of 19 sheets. Each sheet is assigned to what is popularly termed a department although this term does not identify exactly with the ship's organizational department as shown in Table I which lists only the 12 "departments" which are pertinent to a DD.

The first two columns in Table I carry the OPNAV form number and the formal name of the inspection whose elements are listed on the sheet. This is followed by the popular name of the area covered by these elements and the two-letter code by which INSURV identifies work list items which pertain to this sheet. In the fifth column we have shown that segment of the ship's organization which is responsible for the area whose inspection is reported on the sheet. For this last purpose we have relied solely on Navy Regulations and have considered neither the DD Type Organization nor individual Ship Organizations. Where the Regulations permit an assistant to the Head of Department, we have used the organizational unit title "branch." For example, the Weapons Officer's assistant, the First Lieutenant is represented in our fifth column by "Deck branch." The title "Division" which is not specified in the Regulations is used in the customary usage. It is possible that some DDs do not have the three assistants to the Engineer Officer, which are shown, namely, Main Propulsion Officer (branch); Damage Control Officer (branch); and Electrical Officer (branch). Table I should not be misleading in any case.

Six of the inspection sheets (aviation, submarine weapon, submarine main propulsion and principal auxiliaries, reactors, submarine auxiliaries, and repair) are not applicable to DDs and one (trials) is applicable only to underway trials and not to INSURV material inspections. In any INSURV report of a material inspection on any DD these seven sheets will not appear at all. These seven sheets are not included in Appendix A. They are not given any further consideration in a dictionary which is limited to DDs. The eliminated sheets contain 240 line elements which are thus eliminated through the eliminated parent, thereby reducing the number of line elements for consideration to 369.

TABLE I

OPNAV Form	Title of Inspection Sheet	Short Title	INSURV Code	Ship's Organization
4730-12	Navigation Equipment	Navigation	NV	Navigation Department
4730-13	Operations	Operations	OP	Operations Department
4730-15	Weapons	Weapons	WP	Weapons Department less Deck Branch
4730-17	Surface Ships Deck	Deck	DK	First Lieutenant's ("Dept") Branch of Weapons Department
4730-18	Surface Ships Main Propulsion and Principal Auxiliaries	Main Propulsion	MP	Main Propulsion Branch of Engineering Dept. less Boiler and Auxiliaries Division
4730-20	Boilers	Boilers	BR	Boiler Division of Main Propulsion Branch of Engineering Dept.
4730-22	Electrical	Electrical	EL	Electrical Branch of Engineering Department
4730-23	Surface Ship Auxiliaries	Auxiliaries	AX	Auxiliary Div. of MP Branch of Eng. Dept.
4730-25	Surface Ship Damage Control/Hull Structure	Damage Control	DC	Damage Control Branch of Eng. Dept. plus Hull Structure which Overlays all Depts.
4730-27	Supply	Supply	SP	Supply Dept.
4730-28	Medical and Dental	Medical & Dental	MD	Medical & Dental Depts.
4730-29	Habitability	Habitability	HB	General Function Overlaying all Depts.

Included in the 369 remaining line elements are 24 which describe material entities which are believed not to be represented in the material configuration of any existing DD. In Appendix A these 24 are identified by (non-DD) in the "Systems" column. We list these elements in Section O of Appendix B. In any INSURV report of a material inspection on any DD, these 24 line elements will carry the symbol "x" meaning "not applicable in this ship" in place of an inspection grade. As a result, only 345 line elements will receive inspection grades in any INSURV report of a DD material inspection.

Included in the 345 graded line elements are some which for one reason or another cannot be described by an EIC counterpart. In Appendix B such line elements are listed in Tables 1 to 7. Each table groups the line elements under the reason for which they are not included in the dictionary. The seven reasons are more fully described in Appendix B. For brevity we have termed these reasons as follows with the number of line elements which are eliminated for this reason.

1. Inventory	13
2. Records	4
3. Technical Library	6
4. Housekeeping	5
5. Compliance	17
6. Design	39
7. General	<u>16</u>
	100

In the dictionary, Appendix A, the reason for elimination in each case is indicated by entering the appropriate table descriptor within parentheses in the "Systems" column. As listed above, these considerations eliminate a further 100 line elements so that there are 245 line elements that are appropriate as entries in a dictionary for DDs.

2. EIC System Codes

The EIC systems are identified by the first digit of the complete seven-digit EIC code. As shown in Table II there are 27 such codes of which five are not applicable to DDs and one is eliminated because its structuring makes its application in this context impracticable.

TABLE II

LIST OF EIC "SYSTEMS" (1st DIGIT OF EIC)System

1	Main Propulsion System Diesel and/or Gas Turbine	Not Applicable to DDs
3	Damage Control	
4	Hull Structure	
5	Surface Missile Systems	
6	Fleet Ballistic Missile Systems	Not Applicable to DDs
7	Aviation (Ship Installation)	Not Applicable to DDs
8	Specialized Ordnance Equipment	
9	Expendible Ordnance	
A	Auxiliary Systems, Engineering	
B	Auxiliary Systems, Ship Control	
C	Countermeasures Equipment, Electronic	
D	Radar IFF, Electronic Navigation Systems	
E	Test Equipment, General Purpose	Structure Not Appropriate
F	Communication and Computer Systems	
G	Gun Systems	
J	ASW Systems, UW Systems	
K	Deck Systems, General	
L	Deck Systems, Countermeasures Gear, Mine & Torpedo & Salvage Equipment	
M	Deck Systems, Aircraft Handling	Not Applicable to DDs
N	Repair Shops, Shipboard Tools & Miscellaneous Equipment	
P	Electrical Generation Systems	
Q	Electrical Distribution Systems	
R	Interior Communications Systems	
S	Navigation Systems	
T	Administration & Habitability	
U	Maintenance Support Systems	Not Applicable to DDs
Z	Main Propulsion System, Steam	

3. Conclusions

Appendix A is the first edition of the dictionary. For each line element which is not eliminated for the reasons just described, all of the systems which include material entities which could affect the material inspection grade assigned to a line element are listed.

Table III summarizes an important aspect of the correspondence between line elements and systems as given in Appendix A. In the first row the line elements and systems which have been eliminated from the dictionary are accounted for by showing that there are 364 line elements to which no system pertains and six systems to which no element corresponds. In the second row, the entry 90 means that there are 90 elements that correspond uniquely to a single system; all entities inspected to grade any one of these elements have a common EIC system code. The entry 0 in the last column means that there are no EIC systems that correspond to but one line element. In fact, according to the last entry, 18 EIC systems correspond to more than six elements.

The data in Table III should be interpreted relative to the goal of listing, for each INSURV line element, all EIC systems which include material entities whose material condition could affect the grade which INSURV assigns to the line element. It will be noted from Table III that any activity which is reported in the maintenance data collection program and is identified by an EIC system (one-digit code) can affect two or more line elements. Six of the systems will not be reported on in any INSURV inspection report for a DD and no system uniquely affects a single line element. Three systems each affect from two to six line elements. The greatest multiple relationship occurs in the case of System A (Auxiliary Systems, Engineering) which may affect 152 different line elements.

It is seen that any reported MDCS action which is identified by merely the first digit of the EIC may have to share its effect between from two to 152 different line elements. As a matter of fact, in most cases a fully identified maintenance action can affect only a single line element grade. It is also true that a more detailed EIC code, i.e., more than the first digit, is available to describe the entity involved in the MDCS action. On this basis we intend to carry out a task similar to the one described in this paper to produce a second

TABLE III

	CROSS-REFERENCE	
	I From INSURV LINE ELEMENT to EIC SYSTEM	II From EIC SYSTEM to INSURV LINE ELEMENT
From 1 to 0	364 line elements are ruled out (a) because they are not pertinent to any DD (264); or (b) because material is not specifically involved (100) (See Appendix B)	6 systems are ruled out because they are not included in the material configuration of any DD (See Table II)
From 1 to 1	90	0
From 1 to 2	103	1
From 1 to 3	31	0
From 1 to 4	8	1
From 1 to 5	6	0
From 1 to 6	3	1
From 1 to more than 6	4	18
Totals	609 INSURV LINE ELEMENTS	27 EIC SYSTEMS

edition of the dictionary which will differ from Appendix A by substituting for the one-digit EIC system, the two-digit subsystem code(s) as the dictionary listing for a line element.

Preliminary to completing this Technical Paper, a Technical Memorandum was issued in the same format as this paper. With the assistance of Lieutenant Commander I. K. Goto, USN, who is an experienced member of the Board of Inspection and Survey, the data in the initial Technical Memorandum was revised to more correctly reflect real life. Lieutenant Commander Goto's collaboration in correcting the data gives reasonable assurance that Appendix A and the numbers in the text which are derived from the Appendices are realistic. His assistance is gratefully acknowledged.

APPENDIX A

INSURV/EIC DICTIONARY

The column headed "Systems(s)" contains the following types of entries.

- a. One or more letters such as "Q", "S,R,E", etc. These are dictionary entries which would be included in a final printing of this edition.
- b. "(Non-DD)" which means that the entire line would be deleted from the final dictionary because the line element does not pertain to DDs.
- c. (Noun) which means that for the reason stated by the noun as described in Appendix B, the entire line would be deleted from the final dictionary.

Note: The left side of these pages is replicated from actual INSURV Inspection Report forms.

OPERATIONS INSPECTION
OPNAV FORM 5750-12A (2-64)

		EIC SYSTEM(S)
1	GENERAL	
a	Space Environment & Arrangement	(Design)
b	Electromagnetic Interference	(Design)
c	Reliability Program	(Compliance)
d	Test Equipment & Tools	F, N
e	Engineers Manning	4
f	Labeling & Marking	(Compliance)
g	Publications & Plans	(Library)
h	Safety	(General)
2	COMMUNICATIONS	
a	VHF/UHF Transmitters	A, F, Q
b	HF/VHF Receivers	F, Q
c	VHF/UHF Transmitters	A, F, Q
d	VHF/UHF Receivers	F, Q
e	Terminal Equipment	F, Q
f	Remote Facilities	F, Q
g	Sp. City Equipment	C, D, F, T
h	Multiplexers & Transfer Panels	F, Q
i	Portable & Backup Equipment	F, R
j	Underwater Telephone	J
k	Visual Signal Equipment	4, F, K, Q
3	INTELLIGENCE	
a	Surface Search Radar	A, D, F, Q, R
b	Air Search Radar	A, D, F, Q, R
c	Surface Tracking Radar	(Non-DD)
d	IFF & Direction Finders	C, F, Q
e	Processor & AEW	C, D, F, Q
f	TASS R / A	(Non-DD)
g	EW	D, F, Q
h	Active Sonar	4, A, F, J, Q, R
i	Passive Sonar	4, A, F, J, Q, R
j	Range Classification	4, A, F, J, Q, R
k	Search Antennas	4, A, F, J, Q, R
4	• Search, DAP and IFF Antennas	F
a	• EW	C, D, F
b	• Radar	(Non-DD)
c	• Photocopy & Printing	8, S
d	• Including Transmission Lines	8, A, T

		EIC SYSTEMS(S)
1	MAIN BATTERY	
a	Turrets or Mounts	(Non-DD)
b	Fire Control, including Radar	(Non-DD)
c	Optics	(Non-DD)
d	Magazines/Ammunition Handling	(Non-DD)
2	DOUBLE PURPOSE BATTERY	
a	Mounts	4,G
b	Fire Control, including Radar	G,R
c	Optics	G
d	Magazines/Ammunition Handling	3,4,8,9,G,K,R
3	HEAVY MACHINE GUN BATTERY	
a	Mounts	4,G
b	Fire Control, including Radar	G,R
c	Optics	G
d	Magazines/Ammunition Handling	3,4,9,G,R,
4	GUIDED MISSILE BATTERY	
a	Launchers	4,5
b	Fire Control, including Radar	5,R
c	Stacks/Down/Handling/Stowage	3,4,5,8,9,A,R
d	Checkout Equip./Performance Eval.	5
5	SC	
a	Launching System	4,J,Q
b	Fire Control	J,R
c	Loading/Handling/Stowage	3,4,8,9,A,J,R
6	TORPEDO BATTERY	
a	Tube Mounts	4,J
b	Fire Control	J,R
c	Loading and Handling	8,9,J
7	PIPE BATTERY	
a	Launching & Stowage	(Non-DD)
b	Swearing Equipment	(Non-DD)
8	CONTROL ARRANGEMENT	
a	Target Designation	G,R
b	Flexibility	(Design)
9	SUPPORT & MISCELLANEOUS	
a	Loading Force Equipment	8
b	Pyrotechnics	(General)
c	Armory & Small Arms/Line Throwing Guns	8,G,N
d	Office/Records and Subs.	(Records)
e	Stores/Tools/Test Facility/Stowages	G,J,N

		EIC SYSTEMS(S)
1	ANCHORING & MOORING	
a	Ground Tackle	4, K
b	Anchor Engines/Control/Indication	4, K, R
c	Wired at Control/Brake/Elec. Brake	K
d	Safety Devices/Belf Vlys/Torque Cpl.	K, R
e	Moorline Lines & Stowages	K
f	Chocks & Batts/Adequacy/Surf. Cond.	4
g	Chain Locker	4
h	Towing Arrangements & Equipment	4, K
2	WEIGHT HANDLING	
a	RWS Arrangement/Eqpt.	4, K
b	Fuel/ing at Sea Arrangement/Eqpt.	4, K
c	Winches & Capstans	4, K
d	Hooks & Cranes	4, K
e	Hoops & Ladders	4, K
f	Tests/Records & Labels	(Compliance)
3	BOATS & LIFESAIVING EQUIPMENT	
a	Life Boat Readiness/Communications	F, K
b	Boats/Allow./Inv./Cond./Engines	K
c	Boat Stowage & Handling	4, K
d	Life Rafts/Allow./Inv./Cond.	K
e	Life Jackets/Allow./Inv./Cond.	4, K
f	Lifelines/Pulwarks/Hails/Heavy Weath/Safety Nets	(Design)
g	Protection of Exposed Stn. & Eqpt.	(Inventory)
h	Abandon Ship Equipment Allow/Inv.	
4	FULL PRESERVATION	
a	Bottom Paint	4, K
b	Side Cleaning Arrangements	K
c	Exterior Hull Paint	4, K
d	Paint Issue Arrangements	(Design)
e	Doc. & Control of Painting Practices	(Compliance)
5	STOWAGES	
a	Boatwain's Stowages	(Design)
b	Canvas Shop & Equipment	K, N
6	SPECIAL FACILITIES	
a	Landing (Helio)	J
b	Services (Helio)	J
c	Stowages (Helio)	J
d	Safety & Helio Casualty Control	d. Other (Specify) 4, F, J

	EIC SYSTEMS(S)
1 PROPULSION	
a Main Engines/Main Engines	4, A, Z
b Main Cond. Vacuum Equip.	4, A, Z
c Red. Gear, Thrust Bearings	4, A, Z
d Shafting Propellers/Bearings	4, A, Z
e Wear Exha. etc./L.O. E. F. W. Coolers	A, Z
f Lubrication Pumps and Systems	Z
g Condensate and Feed Systems	A, Z
h Piping, Valves, and Fittings	A, Z
2 PRINCIPAL AUXILIARIES	
a Turbo & Diesel Gen. Eng. & Compon.	4, A
b Boilers/Plant	4, A
c Air Cond./Refrig. Compressors	4, A
d Air & Gas Compressors & Systems	4, A
e S.R. Systems, Sea Valves, Flex. Conn.	3, 4, A
f Pumps, Boilers, Valves & Fittings	3, 4, A
g Pumps & Other Diesel Engines	A, K
3 GENERAL	
a Controls & Instrumentation	A, R, Z
b Noise and Shock Isolation	(General)
c Foundations, Hangers, Supports	4
d Maintenance Equip. Shops & Tools	L, N
e Labeling and Marking	(Compliance)
f Lighting and Insulation	(General)
4 CASUALTY CONTROL AND SAFETY	
a Installations & Safety Precautions	(Compliance)
b Hazardous Publication	(Design)
c Safety Systems, Alarms, Monitors	3, 4
5 ADMINISTRATION	
a Machinery & Auxiliary Spaces	(Compliance)
b Control and Office Spaces	(Compliance)
c Logs, Records, CSM, History	(Records)
d Publications, Plans, Library	(Library)
e Water/Oil Testing and Control	N, Z

CLASSIFICATION AUTHORITY:
CICR 1000 07-29-21A (2-01)

EIC SYSTEM(S)	
1 MAIN PROPULSION (ELECTRIC)	
a Main Generators	(Non-DD)
b Propulsion Motors	(Non-DD)
c Main Storage Batteries	(Non-DD)
d Propulsion Control	(Non-DD)
2 POWER AND SERVICES	
a Ships Service Generators	4, A, P, Q, R
b Aux/Boiler/Other Generators	4, A, P, Q, R
c U.G. Sets & Rectifiers	4, Q, R
d Storage Batteries	Q
e Switchgear/Data Transfer Equip.	4, Q
f Controllers & Relays	3, A, K, Q, Z
g Pylons and Talkings	Q
h Distribution Panels/Boxes	Q
i Co-salty Power	Q
j Auxiliary Motors	3, A, K, Z
k Lighting	Q, T
l Emergency Lighting	3, Q
m Heating	Q
3 INTERIOR COMMUNICATIONS	
a Control & Indication	F, R, S
b Telephone Systems	R
c Saf. Systems	R
d Entertainment Equipment	F, R
e Access Systems	Q, R, S
f COMMS/PC	(Compliance)
g Calibration/Handling	Q
h Condition/Effectiveness	
i Control	
a Equipment Shock Resistance	(General)
b Power and Shock Isolation	(General)
c Foundations, Runners, Supports	4
d Labeling and Marking	(Compliance)
e Arrangement of Equipment	(Design)
f Records, Mat'l History	(Records)
g Modifications and Plans	(Library)
h Facilities, Tools and Equip.	N, Q
i Flexibility and Duplication	(Design)
j Safety	(General)

1000000

		EIC SYSTEM(S)
1	STEERING GEAR	
a	Hydraulic Systems/Other Types	4, B
b	Woolflect	4, A, B, R
c	Controls and Indication	B, R
d	Public Structure/Bearings	4, B
2	ANCHOR WINDLASS	4, K
a	Hydraulic System	K, Q, R
b	Woolflect	A
3	VENTILATION SYSTEM OPERATION	
a	Cleanliness and Maintenance	A, R
b	Reaction System and Controls	A, R
c	CHILL System and Controls	4, A
d	Insulation and Insulation	3, A
e	Registers and Controllers	A
f	Procket Fan Allowance/Adjustment	3, N
4	BULK REPAIR SHOPS	N
a	Minifitex Shop	3, N
b	Carpenter Shop	N
c	Others	3, N

CONTROL SYSTEMS CONTROL/HULL STRUCTURE INSPECTION

T-212
6-27-41

	EIC SYSTEM(S)
1	1941 418951002
a	Low structural strength
b	Leak, Voids, Shell Plating
c	Structures & Stacks
d	Ice Protection and Cold Ops.
e	Sea Chests and Bulbs
f	Foundations, Riggers and Supports
g	Deck, Stow and Vibration
h	Deck Springs
i	Deck Bulkheads
j	Deck and Platforms
k	Non-Structural Bulkheads
l	Load Distribution Condition
m	Deck Structure
n	Deck Schedule and Program
o	Access Closures
p	Open End Systems (Magazine & Hanger Deck)
q	Ventilation Closures
r	Drain and Drain Systems
s	Labeling and Marking
t	Compassion Check-Off Lists
u	Electrical III, III & IV
v	Electrical Storage/Display
w	Fire Alarm Condition
x	Fire Stations Equip/Locations
y	Fire Stations Alarms/Inventory
z	Fire Stations Alarms/Buttons
aa	Portable O ₂ Condition/Location
ab	Explosion Hazard Storage
ac	Explosion Hazard Alarms/Storage
ad	Explosion Hazard
ae	Special Clothing & Gas Masks
af	Repair Locker Equip. Inventory
ag	Repair Locker Arrangement & Access
ah	Emergency Lighting
ai	General Station & Control
aj	Electromagnetic Communications
ak	Firearm & Shotgun
al	Living Equipment

1820V

Supply Management
 Form 100-10 (Rev. 10-63)

	EIC SYSTEM(S)
1. STORES/INVENTORY	
a. Electronics Parts (Condition/2)	(Inventory)
b. Mech/Elect. Parts (Condition/2)	(Inventory)
c. Ordnance Parts (Condition/2)	(Inventory)
d. Aviation Parts (Condition/2)	(Inventory)
e. General Stores	(Inventory)
f. Refrigerated Stores	(Inventory)
g. Dry Provisions	(Inventory)
h. Special Clothing	(Inventory)
i. Milk, Store Bulk	(Inventory)
2. FOOD PREPARATION AND SERVICE	
a. Vegetable Preparation	F
b. Meat Handling	F
c. Baking and Baking Facilities	A, T
d. Frying and Grilling Facilities	A, T
e. Hot Cooking	A, T
f. Food Machinery	F
g. Coffee Making	A, T
h. Ice Cream Facilities	A, T
i. Sliced Bar	A, T
j. Seating Facilities	A, T
3. SECURITY	
a. Garbage Handling and Disposal	A, T
b. Bunkashing	A, T
N. SHIP SERVICE FACILITIES	
a. Schedules/Drivers	F
b. Laundry Press Deck	T
c. Retail Store	(Design)
d. Clothing and Small Stores	(Design)
e. Barber and Other Services	T
5. GENERAL	
a. Office and Barracking Facilities	(Design)
b. Equipment Stock Post Office	(General)
c. Foundations, Pavers, Supports	A
d. Labeling and Marking	(Compliance)
e. Arrangement of Equipment/Spares	(Design)
f. Allowance and Other Publications	(Library)

	EIC SYSTEM(S)	
1. SHIP SANITATION & HYGIENE		
a. Living Compartments	(Housekeeping)	
b. Gal. and Ventrooms	(Housekeeping)	
c. Condensate/Boilers/Sealing/Scullery	4	
d. Water Stations	(Housekeeping)	
e. Potable Water Surveillance	T	
f. Health Phys. (Nuclear)	(Non-DD)	
g. Atmosphere Control (Submarine)	(Non-DD)	
h. Exhaust & Inboard Control	(Housekeeping)	
2. MEDICAL TREATMENT		
a. Space/Place/Adequacy/Environment	(Design)	
b. Pharmacy	(Design)	
c. Body Massages/Refrigerator	A,T	
d. Operating Arrangement & Watch	(Design)	
e. Utility/Water/Hot/Wind. (incl. X-Ray)	R,T	
f. Electrical Facilities	(Design)	
g. Amalgam Storage/Access	(Design)	
h. X-Ray & Sterilizers	T	
3. DENTAL TREATMENT		
a. Space/Place/Adequacy/Environment	(Design)	
b. Equipment	T	
c. Electrical Facilities	(Design)	
4. EMERGENCY TREATMENT FACILITIES		
a. Ion Beam & X-Ray	T	
b. Utility & Transfer Equip.	K,T	
c. Oxygen Regulator	T	
d. Access/Arrangement/Environment	(Design)	
e. Utilities/Plumb. Lighting	3,Q	
f. Water Storage & Heating	A,T	
g. Equipment/Sterilizer	T	
h. Room/Access/Facilities/Equipment	(Design)	
i. Antidote Locker	T	
5. SUPPLIES AND SAFETY		
a. Fixed Storage (Pressure Control)	(Design)	
b. Adequate Space/Equip./Environment	(Design)	
c. Flammables & Acids	T	
d. Safety/Vol./Electrical/Pressure	3,A,R,T	

Revised

RELIABILITY INSPECTION
Form 1, 6723-211 (2-68)

	EIC SYSTEM(S)
1. VENTILATION EFFECTIVENESS	
a. Wash Stations/Working Areas	(Design)
b. Living Compartments	(Design)
c. Mess and Washrooms	(Design)
d. Atmosphere Control/Balance/Cleanliness	3,A,R
2. LIGHTING	
a. Wash Stations/Working Areas	Q
b. Messes	Q
c. Living Compartments	Q
d. Mess and Washrooms	Q
3. CREW WORK ARRANGEMENTS	
a. Crew's Mess Traffic	(Design)
b. Work Gear/Storage and Drying/Sterilizing	A,T
c. Sufficient Capacity/Condition	T
d. General Appearance/Painting	(Housekeeping)
4. HEADS AND WASHROOMS	
a. Showers/Urinals/Sinks/Toilet/Grab Bars	4,A,T
b. Washbasin/Sheet Dryer/Outlet	A,Q,T
c. 30" Privacy/Power Holder/Flushing	A,T
d. Hooks	A
e. Deck Drainage/Condition	3,4
5. MEETING & LIVING FACILITIES	
a. Washroom and Officer's Quarters	T
b. Crew Quarters	T
c. Crew's Quarters	T
d. Privacy and Interference	(Design)
e. Individual's Lockers	T
f. Other Clothing Stowages	T
g. Dirty Clothes Stowages	T
h. Locker Trunks, Liners, Beds/Opens	4,K
i. Deck Maintenance BSR Ch. 14/Condition	4,K
j. Cleaning Gear Stowages	T
k. Social Facilities	T
6. RECREATION FACILITIES	
a. Entertainment Facilities	F,R
b. Library	T
c. Seating for Letter Writing	(Design)
d. Athletic Facilities	(Design)

APPENDIX B

LINE ELEMENTS ELIMINATED FROM THE DICTIONARY

O. Non-DD

A. Non-specific Material

1. Inventory

2. Records

3. Library

B. Others Eliminated

4. Housekeeping

5. Compliance

6. Design

7. General

0. Non-DDLine Elements Not Included in the
Material Configuration of Any DD

<u>"Dept"</u> <u>Code</u>	<u>Function Descriptor</u>	<u>Line Element Descriptor</u>
NV	Navigation & Piloting	SINS
NV	Navigation & Piloting	NAVDAC
NV	Navigation & Piloting	Time-Frequency Standard (7SQ-L(SSN(B)s only)
NV	Navigation & Piloting	Type XI Periscope Systems
NV	Navigation & Piloting	Other Periscope Systems
OP	Intelligence	Height Finding Radar
OP	Intelligence	TACAN & CCA
OP	Intelligence	SUPRAD
WP	Main Battery	Turrets and Mounts
WP	Main Battery	Fire Control Including Radar
WP	Main Battery	Optics
WP	Main Battery	Magazines/Ammunition Handling
WP	Mine Battery	Launching and Stowage
WP	Mine Battery	Sweeping Equipment
BR	Auxiliary/Heating Boilers	Furnace
BR	Auxiliary/Heating Boilers	Tubes
BR	Auxiliary/Heating Boilers	Associated Equipment
EL	Main Propulsion/Electric	Main Generator
EL	Main Propulsion/Electric	Propulsion Motors
EL	Main Propulsion/Electric	Main Storage Batteries
EL	Main Propulsion/Electric	Propulsion Control
DC	Hull Structure	Wood Construction Condition
MD	Ship Sanitation & Hygiene	Health Physics (Nuclear)
MD	Ship Sanitation & Hygiene	Atmosphere Control (Submarine)

A. Non-Specific Material

There are some line elements which pertain to material but do not describe material, and others which for other reasons counterparts will not be found in the EIC catalog. No maintenance actions on them will be taken and reported in MDCS. They will not appear in the published edition of the dictionary. They fall into seven categories as shown below.

1. Inventory

The inspection grade pertains to allowance list adequacy and/or inventory status and not to material condition.

<u>"Dept"</u> <u>Code</u>	<u>Function Descriptor</u>	<u>Line Element Descriptor</u>
DK	Boats & Life Saving Equipment	Abandon Ship Equipment Allowance/Inventory
DC	Damage Control	Foam Systems Allowance/Inventory
DC	Damage Control	OBA & Canisters Allowance/Stowage
DC	Damage Control	Repair Locker, Equipment, Inventory
SP	Stowages/Inventory	Electronics Parts (Condition/%)
SP	Stowages/Inventory	Mech/Elect. Parts (Condition/%)
SP	Stowages/Inventory	Ordnance Parts (Condition/%)
SP	Stowages/Inventory	Aviation Parts (Condition/%)
SP	Stowages/Inventory	General Stores
SP	Stowages/Inventory	Refrigerated Stores
SP	Stowages/Inventory	Dry Provisions
SP	Stowages/Inventory	Special Clothing
SP	Stowages/Inventory	Ships Store Bulk

2. Records

The inspection grade pertains only to the effectiveness of record keeping.

<u>"Dept"</u> <u>Code</u>	<u>Function Descriptor</u>	<u>Line Element Descriptor</u>
NV	General	Logs, Records, Material History
EL	General	Records, Material History
WP	Support & Miscellaneous	Office, Records & Publications
MP	Administration	Logs, Records, CSMP, History

3. Technical Library

The inspection grade is based solely on the completeness and condition of the technical library of books, booklets, publications, plans, etc.

<u>"Dept"</u> <u>Code</u>	<u>Function Descriptor</u>	<u>Line Element Descriptor</u>
NV	General	Publications, Plans
OP	General	Publications & Plans
MP	Administration	Publications, Plans, Library
EL	General	Publications & Plans
DC	Damage Control	Damage Control Books, I, II, III, IV
SP	General	Allowance & Other Publications

B. Others Eliminated

It is necessary to note an important difference between an INSURV Material Inspection which is reported on by grading line elements, and the use of the EIC catalog to describe Maintenance Actions. The former pertains to a live ship, that is, one which has a material configuration and a crew. The latter describes a material ship whether manned or not and does not describe the effect of training of the crew or the interactions between crew and material. The INSURV reports on both of these. Because of these differences, the following line elements will not be represented directly in the EIC catalog.

4. Housekeeping

Line elements which presumably pertain only to the general housekeeping or effectiveness of the crew and are independent of the material condition, in a mechanical sense, of any equipment.

<u>"Dept"</u> <u>Code</u>	<u>Function Descriptor</u>	<u>Line Element Descriptor</u>
MD	Ship Sanitation & Hygiene	Living Compartments
MD	Ship Sanitation & Hygiene	Heads & Washrooms
MD	Ship Sanitation & Hygiene	Watch Stations
MD	Ship Sanitation & Hygiene	Insect & Rodent Control
HB	Crew's Mess Arrangements	General Appearance/Painting

5. Compliance

Line elements which describe compliance with instructions such as to post markings or signs and instructions and will not be found uniquely itemized in the EIC catalog.

<u>"Dept"</u> <u>Code</u>	<u>Function Descriptor</u>	<u>Line Element Descriptor</u>
NV	General	Labeling & Marking
OP	General	Maintenance Program
OP	General	Labeling & Marking
DK	Weight Handling	Tests/Records & Labels
DK	Hull Preservation	Use & Control of Painting Practices
MP	General	Labeling & Marking
MP	Casualty Control & Safety	Instruction & Safety Precautions
MP	Administration	Machinery & Auxiliary Spaces
MP	Administration	Control & Office Spaces
BR	Casualty Control & Safety	Labeling & Instructions
EL	Degaussing	Calibration/Ranging
EL	General	Labeling & Marking
DC	Damage Control	Air Test Schedule & Program
DC	Damage Control	Labeling & Marking
DC	Damage Control	Compartment Checkoff List
DC	Damage Control	Damage Control Plates Stowage/ Display
SP	General	Labeling & Marking

6. Design

Some line elements pertain to some kind of deficiency in the ship's design. Although these could be changed by ShipAlts, they are not subject to maintenance. Most of them, if altered, would be affected by undeterminable EIC described material items at the INSURV inspection stage of ship development.

<u>"Dept"</u> <u>Code</u>	<u>Function Descriptor</u>	<u>Line Element Descriptor</u>
NV	Navigation & Piloting	Ice Suit
NV	General	Space Arrangement & Environment
NV	General	Stowages
OP	General	Space Environment & Arrangement
OP	General	Electronic Interference
WP	Control Arrangement	Flexibility
DK	Boats & Life Saving Equipment	Protection of Exposed Stations & Equipment
DK	Hull Preservation	Paint Issue Arrangements
DK	Stowages	Boatswain's Storage
MP	Casualty Control & Safety	Flexibility, Duplication
BR	Casualty Control & Safety	Flexibility, Duplication
EL	General	Arrangement of Equipment
EL	General	Flexibility & Duplication
DC	Hull Structure	Ice Protection & Cold Operation
DC	Damage Control	Fire Stations Equipment/Locations
DC	Damage Control	Repair Locker Arrangement & Access
SP	Ship's Service Facilities	Retail Store
SP	Ship's Service Facilities	Clothing & Small Stores
SP	General	Office & Disbursing Facilities
SP	General	Arrangement of Equipment/Spaces
MD	Medical Treatment	Space/Use/Adequacy/Environment
MD	Medical Treatment	Pharmacy
MD	Medical Treatment	Operating Arrangements & Wards
MD	Medical Treatment	Clerical Facilities
MD	Medical Treatment	Narcotics Security/Access
MD	Dental Treatment	Space/Use/Adequacy/Environment

<u>"Dept" Code</u>	<u>Function Descriptor</u>	<u>Line Element Descriptor</u>
MD	Dental Treatment	Clerical Facilities
MD	Emergency Treatment Facilities	Access/Arrangement/Environment
MD	Emergency Treatment Facilities	Decontamination/Access/ Facilities/Equipment
MD	Stowages & Safety	Divided Stowages (Damage Control)
MD	Stowages & Safety	Adequate Space/Equipment/ Environment
HB	Ventilation Effectiveness	Watch Station/Working Areas
HB	Ventilation Effectiveness	Messes
HB	Ventilation Effectiveness	Living Compartments
HB	Ventilation Effectiveness	Heads & Washrooms
HB	Crew's Mess Arrangements	Crew's Mess Traffic
HB	Berthing & Living Facilities	Arrangements & Interferences
HB	Recreation Facilities	Seating for Letter Writing
HB	Recreation Facilities	Athletic Facilities

7. General

Certain line items are quite general and cannot be uniquely isolated in the EIC sense or are not included in the EIC catalog.

<u>"Dept" Code</u>	<u>Function Descriptor</u>	<u>Line Element Descriptor</u>
NV	Rules of the Road Equipment	Bell/Gong
NV	General	Equipment Condition
NV	General	Noise & Shock Isolation
NV	General	Safety
OP	General	Safety
WP	Support & Miscellaneous	Pyrotechnics
MP	General	Noise & Shock Isolation
MP	General	Lagging & Insulation
BR	General	Noise & Shock Isolation
BR	General	Maintenance, Accessibility/ Equipment

<u>"Dept"</u> <u>Code</u>	<u>Function Descriptor</u>	<u>Line Element Descriptor</u>
BR	General	Lagging & Insulation
EL	General	Equipment Shock Resistance
SL	General	Noise & Shock Isolation
BL	General	Safety
DC	Full Structure	Noise, Shock & Vibration
SP	General	Equipment Shock Resistance

NONE

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13. ABSTRACT This paper presents a dictionary wherein each "line element" in the U. S. Navy Board of Inspection and Survey (INSURV) inspection report is related to specific "systems" of the Equipment Identification Code (EIC) catalog. The approach is to list, for each INSURV line element, all EIC systems that pertain to entities inspected in order to assign a grade to the line element. There are 609 line elements but only 245 are appropriate as entries in the dictionary. Since we limit our attention to the DD type of ship, only 21 of the 27 EIC system codes need be considered. Our objective is to clarify the nature of the problem of relating INSURV inspection data and data such as those from the Maintenance Data Collection System where EIC codes are used. In addition to this clarification, the present dictionary will form the basis for the next study wherein INSURV line elements will be related to EIC "subsystems".			

NONE

Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Materials identification Integration of materials identification systems Cross-reference of material identification systems Common coding for two material identification systems INSURV inspections Ship maintenance procedures						

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