

Introduction

As Gas Free Engineering Personnel you will be required to know the requirements for certifying a space gas free and placing the information obtained on a Navy Gas Free Certificate.

Enabling Objectives

- Describe procedures and safety precautions for gas free inspection, gas free testing, and post gas free inspection in accordance with NSTM Chapter 074 Vol. 3, Gas Free Engineering and OPNAVINST 5100.19, series.
- Determine test readings and describe the common characteristics of the Four Gas Analyzer in accordance with NSTM Chapter 074 Vol. 3, Gas Free Engineering and the Biosystems Phd Ultra Four Gas Analyzer Technical Manual.

Enabling Objectives

 Determine test readings and describe the common characteristic of the Toxic Gas Detectors, Draeger Model 31 and accuro in accordance with NSTM Chapter 074 Vol. 3, Gas Free Engineering and the Model 31 and Accuro Manufactures technical Manuals.

• Use Gas Free Test Equipment in accordance with NSTM Chapter 074 Vol. 3, Gas Free Engineering and applicable Manufactures Technical Manual.

Enabling Objectives

• Perform procedures using respiratory equipment during simulated gas free operations using safety precautions and procedures to include; Inspect, Don, Operate and Stow equipment in accordance with NSTM Chapter 074 Vol. 3, Gas Free Engineering and the SAR/SCBA technical manual, NAVSEA 0910-LP-708-0000.

Lesson Topic 3.4, Gas Free Inspection and Certification

Enabling Objectives

• Write a Gas Free Certificate using the information obtained during a Gas Free Inspection in accordance with NSTM 074 Vol 3.

PRE-INSPECTION PROCEDURES



CERTIFICATION & LIABILITY

The Shipboard GFE Can Certify a Space for any Crewmember

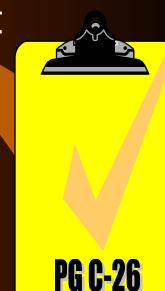
•CO's Authorization is Required for IDLH Spaces

- 02<19.5% or > 22%
- Explosivity > 10% of LEL
- Toxics above PEL
- Sewage, Fuel, or Oil Tanks



Page C-26 NSTM 074 VOL 3 "SAMPLE GAS FREE ENGINEERING PROCEDURAL WORKING GUIDE"

- Use as a guide so you don't forget anything!
- Pre-Inspection Procedures
- Closed Compartment Opening & Testing Procedures
- Post-Inspection Procedures



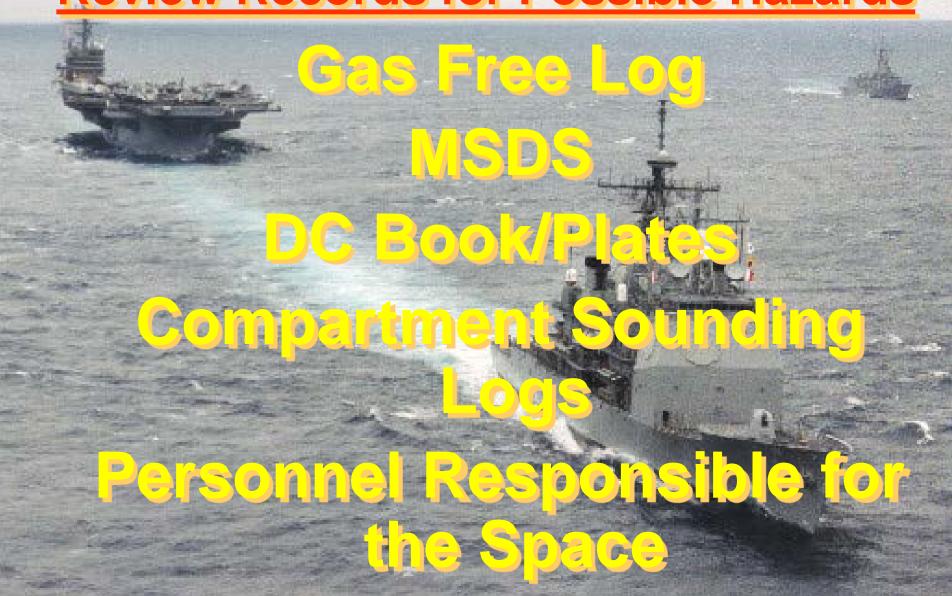
CLOSED COMPARTMENT OPENING REQUEST FORM

- Helps You Organize Your Time
- Prioritize Your Workload
- Provides Planning For:
 - Safety Observers
 - **Equipment Movement**
 - Space & Equipment Tag Outs
 - TALK TO THESE PEOPLE
 - NSTM 074V3 Appeddix C 13, 29



PRE-INSPECTION PROCEDURES

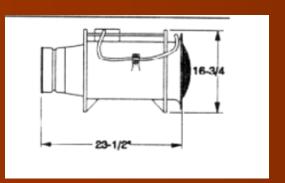
Review Records for Possible Hazards

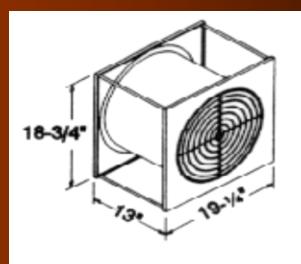


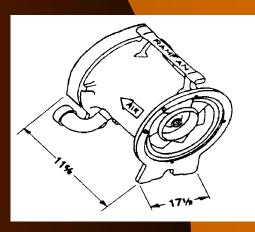
PRE-INSPECTION PROCEDURES

- Assign personnel
 - CompartmentTesting
 - Fire Watches
 - Attendants

DetermineVentilationRequirements







PRE-ENTRY PROCEDURES

- Tag Out Space
- Safety Equipment
 - a) Respiratory Equipment
 - b) Lifelines
 - c) Harness
 - d) Communications
 - e) Protective Clothing
- **Rescue Control Point Designated**
- Inspection Equipment
- Ventilation



PRE-ENTRY PROCEDURES

- Region Personnel Needed for Test
 - a) Two Test Personnel
 - b) Safety Observer / Supply Air Operator
 - c) Rescue Control Point Personnel
- & Secure Surrounding Area
- SMOKING LAMP OUT!!





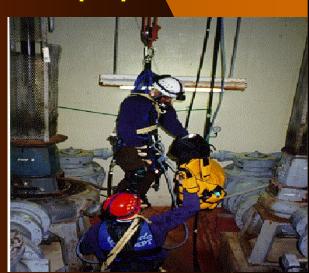


CLOSED COMPARTMENT OPENING AND TEST PROCEDURES

- SMOKING LAMP OUT!! Secure hot work in vicinity of space
- Perform required pre-operational checks of test equipment
- Muster personnel and don PPE & equipment



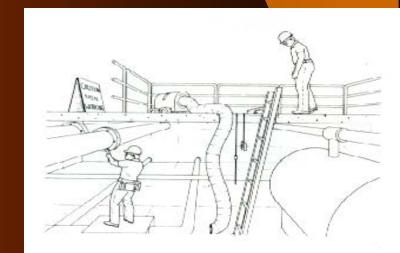




CLOSED COMPARTMENT OPENING AND TEST PROCEDURES

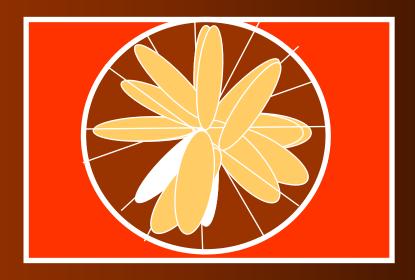
- Ventilation
 - Where to place duct?
 - How long to ventilate?
- Don required respiratory protection equipment
- Remove access cover or break piping system flange

- Inspect for hazards
- Drop Test
 - IDLH Space? If so, do
 NOT enter.
 - Re-ventilate two complete air changes



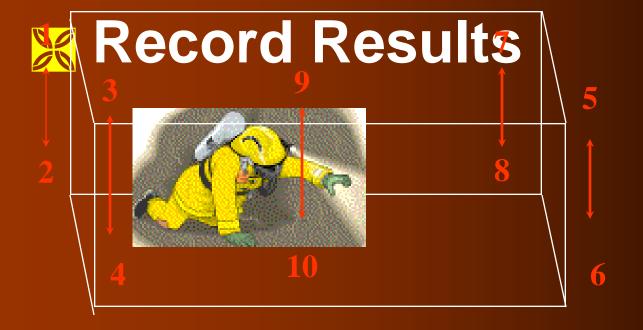
ENTRY PROCEDURES

- 1. Drop Test -- Is It IDLH?
- 2. Ventilation
 - a) Where to Place Duct?
 - b) How Long to Ventilate?



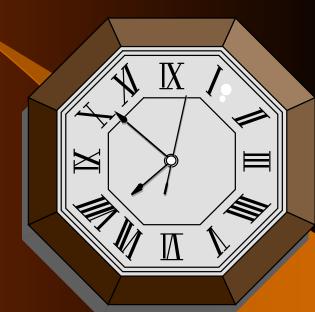
TESTING PROCEDURES

- **→ Enter Space**
- **Nisual Inspection**
- **% 10 Point Test**



WORK REQUIREMENTS

- Hazards Produced by Work?
- **XTesting Frequency**
 - a) Periodic
 - b) Continuous
- **SUpdating if < 8 hours**
- **Retesting/Recertification**
 - a) GFE/GFEA
 - b) GFEPO



SERIAL		

INITIAL CERTIFICATION		TEST RESULT	rs	
SHIP/UNIT/ACTIVITY:	TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1" RETEST	2 rd RETEST
TYPE OF OPERATION TO BE CONDUCTED	OXYGEN			
INITIAL DATE OF TEST: HOUR: DATE	COMBUSTABLE GAS			
INITIAL EXPIRATION: HOUR: DATE: VENTILATION REQUIRED: YES NO	TOXIC TYPE:			
TYPE:	TOXIC TYPE:			
	TOXIC TYPE:			
INERTED GAS:(gas)	TOXIC TYPE:		-	
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PRESSED UP WITH: (Hquid) REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS	PASITING CONSTITIONS	INITIAL TEST	I* RETEST	2 nd RETEST
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GasFree	or entities			
	SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
GAS RELATED HOT WORK PQS QUALIFIED FIRE WATCHES ASSIGNED	SAFE FOR PERSONNEL/			
	SAFE FOR PERSONNEL/ NOT SAFE FOR INT WORK			
PQS QUALIFIED FIRE WATCHES ASSIGNED	SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK SAFE FOR PERSONNEL/ SAFE FOR HOT WORK NOT SAFE FOR PERSONNEL/ INSIDE/SAFE FOR HOT	THE CONDITIONS THAT EXISTS	ED AT THE TIME THE TEET	S WERE CONDUCTED
PQS QUALIFIED FIRE WATCHES ASSIGNED LOCATIONS PRINT NAME/RATE SIGNATURE (upon completion) FINAL CIECCUP, WORK AREA AND ALL ADEACENT AREAS TO WIRCH SPARKS AND HEAT MIGHT SPREAD WERE INSPECTED 39 MINUTES AFTER THE WORK WAS COMPLETED AND WERE POUND TO BE FIRE SAFE. THE EQUIPMENT AND STRUCTURES WORKED ON WERE COOK TO THE TOUCH.	SAFE FOR PERSONNEL/ NOT SAFE FOR INT WORK SAFE FOR PERSONNEL/ SAFE FOR HOT WORK NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE NOTE THIS INSPECTION INSICATES IT GPE PERSONNEL SIGNATURE	THE CONDITIONS THAT EXISTS	ED AT THE TIME THE TEST	S WERE CONDUCTED
PQS QUALIFIED FIRE WATCHES ASSIGNED LOCATIONS PRINT NAME/RATE SIGNATURE (upon completion) FINAL CHECKUP, WORK AREA AND ALL ADJACENT AREAS TO WHICH SPARKS AND HEAT MIGHT SPREAD WERE DISPECTED AS MONITES AFTER THE WORK WAS COMPLETED AND WERE FOUND TO BE FIRE SAFE. THE EQUIPMENT AND STRUCTURES WORKED ON WERE COOK TO THE TOUCH. TIME SECURED	SAFE FOR PERSONNEL/ NOT SAFE FOR INT WORK SAFE FOR PERSONNEL/ SAFE FOR HOT WORK NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE NOTE THIS INSPECTION INSICATES IT GPE PERSONNEL SIGNATURE	RECERTIFICAT	TON	

INITIAL CERTIFICATION	TEST RESULTS			
SHIP/UNIT/ACTIVITY:	TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1* RETEST	2 nd RETEST
ITEM/COMPARTMENT/SPACE:	OXYGEN			
TYPE OF OPERATION TO BE CONDUCTED:	Elizabeth and the second			
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INITIAL EXPIRATION: HOUR: DATE: VENTILATION REQUIRED: YES NO	TOXIC TYPE:			
TYPE:	TOXIC TYPE:			
	TOXIC TYPE:			
INERTED GAS: (gas)	TOXIC TYPE:			
OR				-
PRESSED UP WITH:(liquid) REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS	EXISTING CONDITIONS	INITIAL TEST	I* RETEST	2 nd RETEST
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	NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK			
	SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
GAS RELATED HOT WORK			32	
PQS QUALIFIED FIRE WATCHES ASSIGNED	SAFE FOR PERSONNEL/ SAFE FOR HOT WORK			
LOCATIONS PRINT NAME/RATE SIGNATURE (upon completion)	NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE			
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HOT WORK SUPERVISOR	GFE PERSONNEL SIGNATURE_			
FIRE MARSHAL	2 st RETESTAPDATE TIME:_ GFE PERSONNEL SIGNATURE_			s

	INITIAL CER	TIFICATION	
SHIP/UNIT/ACTIVITY:			
ITEM/COMPARTMENT/SPACE	B:		
TYPE OF OPERATION TO BE	CONDUCTED:		
INITIAL DATE OF TEST:	HOUR:	DATE:	_
NITIAL EXPIRATION:	HOUR:	DATE:	4
VENTILATION REQUIRED: TYPE:		NO	
OR			(gas)
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ITEM/COMPARTMENT/SPACE TYPE OF OPERATION TO BE			
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INITIAL EXPIRATION:		DATE:	
VENTILATION REQUIRED: TYPE:		NO	_
INERTED GAS:OR			(gas)
PRESSED UP WITH:			(liquid
REQUIREMENTS/CONCLUSIO			
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SHIP/UNIT/ACTIVITY:_US	S NEVERSAII	L	
ITEM/COMPARTMENT/SPACE			
INITIAL DATE OF TEST:	HOUR:	DATE:	
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VENTILATION REQUIRED: TYPE:		NO	
			(gas)
REQUIREMENTS/CONCLUSIO	NS/PRESCRIBED PRECA	UTIONS/INSTRUCTIONS	
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OR PRESSED UP WITH:	
TYPE OF OPERATION TO BE CONDUCTED: Cleaning INITIAL DATE OF TEST: HOUR:, DATE: INITIAL EXPIRATION: HOUR:, DATE: VENTILATION REQUIRED: YES NO TYPE: INERTED GAS: OR PRESSED UP WITH:	
INITIAL EXPIRATION: HOUR: DATE: VENTILATION REQUIRED: YES NO TYPE: INERTED GAS: OR PRESSED UP WITH:	
VENTILATION REQUIRED: YES NO TYPE:	
TYPE: INERTED GAS: OR PRESSED UP WITH:	
INERTED GAS: OR PRESSED UP WITH: REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS	
REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS	(liqui

SHIP/UNIT/ACTIVITY: USS NEVERSAIL ITEM/COMPARTMENT/SPACE: 5-51-0-E TYPE OF OPERATION TO BE CONDUCTED: Cleaning INITIAL DATE OF TEST: HOUL: 0800 INITIAL EXPIRATION: OUL 1200 VENTILATION REQUIRED: YES NO TYPE: (liquid REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS)		INITIAL CERTIFI	CATION		
TYPE OF OPERATION TO BE CONDUCTED Cleaning INITIAL DATE OF TEST: HOUE 0800 DATE 30 May 99 INITIAL EXPIRATION: OUL 1200 DATE 30 May 99 INITIAL EXPIRATION REQUIRED: YES NO TYPE: This time MUST NOT exceed 8 hours. PRESSED UP WITH: (iquid	SHIP/UNIT/ACTIVITY: USS				
INITIAL DATE OF TEST: HOUT: 0800 DATE: 30 May 99 INITIAL EXPIRATION: VENTILATION REQUIRED: YES NO TYPE: This time MUST NOT exceed 8 hours. (gas) (gas) (liquid)	ITEM/COMPARTMENT/SPACE:_				
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PRESSED UP WITH:	This time MUS	ST NOT exceed	d 8 hours.		(gas)
REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS					(liquid
	REQUIREMENTS/CONCLUSIONS	PRESCRIBED PRECAU	TIONS/INSTRUC	CTIONS	
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INITIAL CERTIFICATION	
SHIP/UNIT/ACTIVITY: USS NEVERSAIL	
ITEM/COMPARTMENT/SPACE: 5-51-0-E	
TYPE OF OPERATION TO BE CONDUCTED: Cleaning	May 00
INITIAL DATE OF TEST: HOUR: 0800 DATE: 30	May 99
INITIAL EXPIRATION: HOUR: 1200 DATE: 30	May 99
VENTILATION REQUIRED: YES NO	
INERTED GAS: OR PRESSED UP WITH:	(gas)
REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUC	
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	INITIAL CERTIF	ICATION	
SHIP/UNIT/ACTIVITY: USS	NEVERSAII		
ITEM/COMPARTMENT/SPACE:_	5-51-0-E		
TYPE OF OPERATION TO BE CO	ONDUCTED: CI	eaning	
INITIAL DATE OF TEST:	HOUR: 0800	DATE: 30 May 99	
INITIAL EXPIRATION:	HOUR: 1200	DATE: 30 May 99	
VENTILATION REQUIRED:	ovhousting from	NO m 5 51 0 E to weather	doolz
		m 5-51-0-E to weather	
(1) Ram lan, S	supplying air ir	om weather deck to 5-	-51-0-
INERTED GAS: Gas name (OR PRESSED UP WITH:	(Dry Nitrogen)	or N/A (as applicable)	(gas)
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INITIAL CERT	TIFICATION
SHIP/UNIT/ACTIVITY: USS NEVERSA	
TEM/COMPARTMENT/SPACE: 5-51-0-E	
TYPE OF OPERATION TO BE CONDUCTED:	Cleaning
NITIAL DATE OF TEST: HOUR: 0800	DATE: 30 May 99
NITIAL EXPIRATION: HOUR: 1200	DATE: 30 May 99
VENTILATION REQUIRED: YES	NO
TYPE(2) Ram fans, exhausting f	from 5-51-0-E to weather deck
(1) Ram fan, supplying air	r from weather deck to 5-51-0-E
NERTED GAS: N/A	(gas)
DR .	
PRESSED UP WITH: Water or N/A (as app	olicable) (liquid)
REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRI	ECAUTIONS/INSTRUCTIONS

TEM/COMPARTMENT/SPACE: 5-51-0-E TYPE OF OPERATION TO BE CONDUCTED: Cleaning NITIAL DATE OF TEST: HOUR: 0800 DATE: 30 May 99 NITIAL EXPIRATION: HOUR: 1200 DATE: 30 May 99 VENTILATION REQUIRED: YES NO TYPE(2) Ram fans, exhausting from 5-51-0-E to weather dec (1) Ram fan, supplying air from weather deck to 5-51-0 NERTED GAS: N/A REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS All personnel inside space (no more and no less than 2) must wear SAR/SCBA, clean coveralls and chemical gloves. One safety observer station directly outside the space using con-space comms with personnel inside space. One attendant and one CPA operator shall also be outside assisting with the SAR/SCBA. Any questions or changes call the GFE (254)		INITIAL CERTIF	ICATION	
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with personnel inside space. One attendant and one CPA operator shall also be outside assisting with the SAR/SCBA. Any questions or	SAR/SCBA, clean cove	ralls and chemica	l gloves. One safety	
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shall also be outside assisting with the SAR/SCBA. Any questions or		•		
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changes call the GFE (254)		0	AIVSCDA. Ally question	12 OI
	changes call the GFE (2	254)		

INITIAL CERTIFICATION	TEST RESULTS			
SHIPJUNIT/ACTIVITY: USS NEVERSAIL 5-51-0-E	TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1" RETEST	2 nd RETEST
TYPE OF OPERATION TO BE CONDUCTED: Cleaning	OXYGEN			
INITIAL DATE OF TEST: HOUR: _0800 DATE 30 May 99	COMBUSTABLE GAS			
VENTILATION REQUIRED: VEST 1200 DATE: 30 May 99	TOXIC TYPE:			
(2) Ram fans, exhausting from 5-51-0-E to weather deck (1) Ram fan, supplying air from weather deck to 5-51-0-E.	TOXIC TYPE:			
(-)	TOXIC TYPE:			
INERTED GAS: N/A (gas) OR	TOXIC TYPE:		-	
PRESSED UP WITH: N/A (liquid)			-	
REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS	EXISTING CONDITIONS	INITIAL TEST	I* RETEST	2 [™] RETEST
All personnel inside space (no more and no less than 2) must wear SAR/SCBA, clean coveralls and chemical gloves. One safety	NOT SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
observer station directly outside the space using con-space comms with personnel inside space. One attendant and one CPA operator shall also be outside assisting with the SAR/SCBA. Any questions or	NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK			
changes call the GFE (254)	SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
GAS RELATED HOT WORK			72	
PQS QUALIFIED FIRE WATCHES ASSIGNED	SAFE FOR PERSONNEL/ SAFE FOR HOT WORK			
LOCATIONS PRINT NAME/RATE SIGNATURE (upon completion)	NOT SAFE FOR PERSONNEL. INSIDE/SAFE FOR HOT WORK OUTSIDE			
	NOTE: THIS INSPECTION INDICATES THE	CONDITIONS THAT EXERTE	DAT THE TIME THE TEXT	S WERE CONDUCTED
FINAL CHECKUP, WORK AREA AND ALL ADIACENT AREAS TO WHICH SPARKS AND HEAT MIGHT SPREAD WERE INSPECTED AS MINUTES AFTER THE WORK WAS COMPLETED AND WERE POUND TO BE FIRE SAFE. THE EQUIPMENT AND STRUCTURES WORKED ON WERE COOL TO THE TOUCH.	GPE PERSONNEL SIGNATURE		-	
TIME SECURED	CO SIGNATURE, If required			
I CERTIFY THAT I AM FAMELIAR WITH AND WILL COMPLY WITH ALL SAFETY PRECAUTIONS PERTINENT TO THES TYPE OF WORK.		RECERTIFICAT	ION	
HOT WORK OPERATER SIGNATURE		DATE:		S:
HOT WORK SUPERVISOR	GFE PERSONNEL SIGNATURE_			
	2 st RETEST/UPDATE TIME:_	DATE:	, EXPIRE	8

	GAS RELATED HO	T WORK
LOCATIONS	PRINT NAME/RATE	HES ASSIGNED SIGNATURE (upon completion)
	A AND ALL ADJACENT AREAS TO WHICH	SPARKS AND HEAT MIGHT SPREAD WERE RE FOUND TO BE FIRE SAFE. THE EQUIPMENT AND
STRUCTURES WORKED ON W	VERE COOL TO THE TOUCH.	REPOOND TO BE FIRE SAFE. THE EQUIPMENT AND
TIME SECURED		
CERTIFY THAT I AM FAMILI VORK.	AR WITH AND WILL COMPLY WITH ALL SA	AFETY PRECAUTIONS PERTINENT TO THIS TYPE OF
HOT WORK OPERATEI	R SIGNATURE	
HOT WORK SUPERVIS	OR	

INITIAL CERTIFICATION	TEST RESULTS			
SHIPUNIT/ACTIVITY: USS NEVERSAIL 5-51-0-E	TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1" RETEST	2 nd RETEST
TYPE OF OPERATION TO BE CONDUCTED: Cleaning	OXYGEN			
INITIAL DATE OF TEST: HOUR 0800 DATE 30 May 99 INITIAL EXPIRATION: HOUR 1200 DATE 30 May 99	COMBUSTABLE GAS			
VENTILATION REQUIRED: YES NO	TOXIC TYPE:			
(2) Ram fans, exhausting from 5-51-0-E to weather deck (1) Ram fan, supplying air from weather deck to 5-51-0-E.	TOXIC TYPE:			
INERTED GAS: N/A (gas)	TOXIC TYPE:			
OR	TOXIC TYPE:	ARTICLE TO SERVICE TO		
PRESSED UP WITH N/A (liquid)	Paramona and methods		Marror	and a common
REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS	EXISTING CONDITIONS	INITIAL TEST	I* RETEST	2 nd RETEST
All personnel inside space (no more and no less than 2) must wear SAR/SCBA, clean coveralls and chemical gloves. One safety	NOT SAFE FOR PERSONNEL/ NOT SAFE POR HOT WORK.			
observer station directly outside the space using con-space comms with personnel inside space. One attendant and one CPA operator shall also be outside assisting with the SAR/SCBA. Any questions or	NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK			
changes call the GFE (254)	SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
GAS RELATED HOT WORK			32	
PQS QUALIFIED FIRE WATCHES ASSIGNED	SAFE FOR PERSONNEL/ SAFE FOR HOT WORK			
LOCATIONS PRINT NAME/RATE SIGNATURE (upon completion)	NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE			
	WORK GOTALE.			
FINAL CHECKUP, WORK AREA AND ALL ADMACENT MEAS TO WHICH SPARKS AND HEAT MIGHT SPREAD WERE DISPECTED 36 MENUTES AFTER THE WORK WAS COMPLETED AND WERE DOUND TO BE FRE SAFE. THE EQUIPMENT AND	GFE PERSONNEL SIGNATURE			S WERE CONDUCTED
STRUCTURES WORKED ON WERE COOL TO THE TOUCH. TIME SECURED.	CO SIGNATURE, If required			
I CERTIFY THAT I AM FAMILIAR WITH AND WILL COMPLY WITH ALL SAFETY PRICANCIONS PERTINENT TO THIS TYPE OF		RECERTIFICAT	TON	
HOT WORK OPERATER SIGNATURE	I* RETESTAUPDATE TIME:	DATE:	EXPIRE	is-
HOT WORK SUPERVISOR	GFE PERSONNEL SIGNATURE_			
FIRE MARSHAL DC1(SW) BRYANT	2 [™] RETEST/UPDATE TIME:_ GFE PERSONNEL SIGNATURE_	DATE:	EXPIRE	s

TEST RESULTS				
TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1st RETEST	2 nd RETEST	
OXYGEN				
COMBUSTABLE GAS				
TOXIC TYPE:				

TEST RESULTS				
TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1st RETEST	2 nd RETEST	
OXYGEN	20.2%			
COMBUSTABLE GAS				
TOXIC TYPE:				

TEST RESULTS				
TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1st RETEST	2 nd RETEST	
OXYGEN	20.2%			
COMBUSTABLE GAS	0%			
TOXIC TYPE:				

TEST RESULTS			
TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1st RETEST	2 nd RETEST
OXYGEN	20.2%		
COMBUSTABLE GAS	0%		
TOXIC TYPE: CO	8 PPM		
TOXIC TYPE: CO ²	700 PPM		
TOXIC TYPE: H2S	0 PPM		
TOXIC TYPE:			

INITIAL TEST	1st RETEST	2 nd RETEST
20.2%		
0%		
8 PPM		
700 PPM		
0 PPM		
.40	about "U	nity"
	0% 8 PPM 700 PPM	0% 8 PPM 700 PPM 0 PPM Don't for about "U

INITIAL CEPTIFICATION

NAVY GAS FREE CERTIFICATION AND TEST LOG

TECT DECIT TO

Had yes ted a H				
SHIPUNIT/ACTIVITY: USS NEVERSAIL 5-51-0-E	TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1" RETEST	2 nd RETEST
TYPE OF OPERATION TO BE CONDUCTED. Cleaning	OXYGEN	20.2		
INITIAL DATE OF TEST: HOUR: 0800 DATE 30 May 99	COMBUSTABLE GAS	0		
INITIAL EXPIRATION: HOUR: 1200 DATE: 30 May 99 NO	TOXIC TYPE: CO	8 PPM		
Type: (2) Ram fans, exhausting from 5-51-0-E to weather deck	TOXIC TYPE: CO2	700 PPM		
(1) Ram fan, supplying air from weather deck to 5-51-0-E.	TOXIC TYPE: H2S	0 PPM		
INERTED GAS: N/A (gas)	TOXIC TYPE:		-	
OR .		Office to the second		Company of the last of the las
PRESSED UP WITH: N/A (liquid)				
REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS	EXISTING CONDITIONS	INITIAL TEST	I* RETEST	2 nd RETEST
All personnel inside space (no more and no less than 2) must wear SAR/SCBA, clean coveralls and chemical gloves. One safety	NOT SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK.			
observer station directly outside the space using con-space comms with personnel inside space. One attendant and one CPA operator shall also be outside assisting with the SAR/SCBA. Any questions or	NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK			
changes call the GFE (254)	SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
GAS RELATED HOT WORK	SAFE FOR PERSONNEL/		11	
PQS QUALIFIED FIRE WATCHES ASSIGNED	SAFE FOR HOT WORK			
LOCATIONS PRINT NAME/RATE SIGNATURE (upon completion)	NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT			
	WORK OUTSIDE			
	NOTE: THIS INSPECTION INDICATES TH	E CONDITIONS THAT EXISTS	D AT THE TIME THE TEXT	IS WERE CONDUCTED
FINAL CHECKUP, WORK AREA AND ALL ADEACENT AREAS TO WEICH SPARKS AND HEAT MIGHT SPREAD WERE INSPECTED 39 MINUTES AFTER THE WORK WAS COMPLISTED AND WERE POUND TO BE FIRE SAFE. THE EQUIPMENT AND STRUCTURES WORKED ON WERE COOL TO THE TOUCH.	GFE PERSONNEL SIGNATURE			
TIME SECURED	CO SIGNATURE, If required			
CERTIFY THAT I AM FAMILIAR WITH AND WILL COMPLY WITH ALL SAFETY PRECANDORS PERTINENT TO THIS TYPE OF MODE.	RECERTIFICATION			
HOT WORK OPERATER SIGNATURE	I* RETESTAUPDATE TIME:	DATE:	EXPIRE	18:
	GFE PERSONNEL SIGNATURE			
			comme	
DC1(SW) BRYANT	2" RETEST/UPDATE TIME:_	DATE:	- EXPIRE	200

EXISTING CONDITIONS	INITIAL TEST	1st RETEST	2 nd RETEST
NOT SAFE FOR PERSONNEL NOT SAFE FOR HOT WORK	DBB		
NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK			
SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
SAFE FOR PERSONNEL/ SAFE FOR HOT WORK			
NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE			
NOTE: THIS INSPECTION INDICATES THE			S WERE CONDUCTED
CO SIGNATURE, If required			

EXISTING CONDITIONS	INITIAL TEST	1st RETEST	2 nd RETEST
NOT SAFE FOR PERSONNEL NOT SAFE FOR HOT WORK	DBB		
NOT SAFE FOR PERSONNEL			
There is dang	er of poisoning	ng due	
to toxic mater			
NOT SAFE FOR HOT WORK			No.
Danger of suf	focation due	to oxygen d	leficiencie
SAFE FOR HOT WORK		• •	
NOT 9	ger of fire or	explosion	***
There is a dar			
WORK OUTSIDE			S WEDE CONTNUCTED
WORK OUTSIDE	E CONDITIONS THAT EXISTE		S WERE CONDUCTED
	E CONDITIONS THAT EXISTE		S WERE CONDUCTED

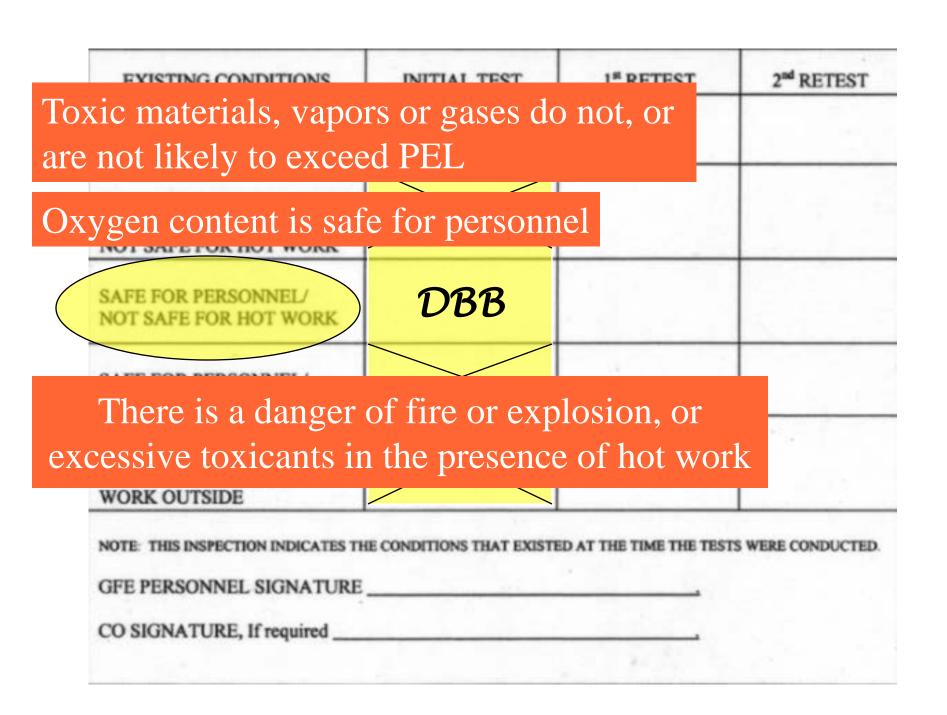
EXISTING CONDITIONS	INITIAL TEST	1st RETEST	2 nd RETEST
NOT SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK	DBB		
SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
SAFE FOR PERSONNEL/ SAFE FOR HOT WORK			
NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE			
NOTE: THIS INSPECTION INDICATES THE			S WERE CONDUCTED

EXISTING CONDITIONS	INITIAL TEST	1st RETEST	2 nd RETEST
NOT SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK	DBB		
Toxic materials, vap	ore or gasas	may ba	
Toxic materials, vap	ors or gases	may be	
present or evolve in	the space		
SAFE FOR HOT WORK			
Flammable vapor	rs may be pre	esent or may	У
evolve but at levels	s less than 10	of the Ll	EL

MOTE. THIS INSPECTION INDICATES THE CONDITIONS THAT EVISTED AT THE TIME THE TESTS WERE CONDUCTED

There is a danger of fire, explosion or excessive toxic levels in the presence of hot work

EXISTING CONDITIONS	INITIAL TEST	1st RETEST	2 nd RETEST
NOT SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK			
SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK	DBB		
SAFE FOR PERSONNEL/ SAFE FOR HOT WORK			
NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE			
NOTE: THIS INSPECTION INDICATES THE		D AT THE TIME THE TEST	S WERE CONDUCTED



EXISTING CONDITIONS	INITIAL TEST	1st RETEST	2 nd RETEST
NOT SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK			
SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
SAFE FOR PERSONNEL/ SAFE FOR HOT WORK	DBB		
NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE			***
NOTE: THIS INSPECTION INDICATES TO			S WERE CONDUCTED.
CO SIGNATURE, If required		-	

EXISTING CONDITIONS	INITIAL TEST	1st RETEST	2 nd RETEST
NOT SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
Oxygen, Explowill not likely e			levels and
MIII HOU HKETY C	Acced unsaic		
NOT SAFE FOR HOT WORK			15.1
SAFE FOR PERSONNEL/ SAFE FOR HOT WORK	DBB		
NOT SAFE FOR PERSONNEL NSIDE/SAFE FOR HOT WORK OUTSIDE			
NOTE: THIS INSPECTION INDICATES TH	E CONDITIONS THAT EXISTE	D AT THE TIME THE TEST	S WERE CONDUCTED.
GFE PERSONNEL SIGNATURE			
O SIGNATURE, If required			

INITIAL TEST	1st RETEST	2 nd RETEST
DBB		
E CONDITIONS THAT EXIST	ED AT THE TIME THE TEST	S WERE CONDUCTED
		E CONDITIONS THAT EXISTED AT THE TIME THE TEST

EXISTING CONDITIONS	INITIAL TEST	1st RETEST	2 nd RETEST
NOT SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK		SERIAL#	
NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK		SHIP/UNIT/ACTIVITY:	
SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK		VENTILATION REQUIRED: TYPE: INERTED GAS: Dry	YES NO
SAFE FOR PERSONNEL/ SAFE FOR HOT WORK		Service of the servic	ater NS/PRESCRIBED PRECAUTIONS/INSTRUCTION
NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE	DBB		
		D AT THE TIME THE TESTS	WERE CONDUCTED.
GFE PERSONNEL SIGNATURE			
CO SIGNATURE, If required			

EXISTING CONDITIONS	INITIAL TEST	1st RETEST	2 nd RETEST
NOT SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK	DBB		
SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
SAFE FOR PERSONNEL/ SAFE FOR HOT WORK			
NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE			
GFE PERSON SIGNATURE	DCC(SW) Bo		S WERE CONDUCTED

INITIAL CERTIFICATION	TEST RESULTS			
SHIPUNIT/ACTIVITY: USS NEVERSAIL 5-51-0-E	TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1" RETEST	2 ^{sd} RETEST
TYPE OF OPERATION TO BE CONDUCTED. Cleaning	OXYGEN	20.2		
INITIAL DATE OF TEST: HOUR0800 DATE 30 May 99	COMBUSTABLE GAS	0		-
VENTILATION REQUIRED: 1200 DATE 30 May 99	TOXIC TYPE: CO	8 PPM		
(2) Ram fans, exhausting from 5-51-0-E to weather deck (1) Ram fan, supplying air from weather deck to 5-51-0-E.	TOXIC TYPE: CO2	700 PPM		
(1) Nam fan, supplying an from weather deck to 5-51-0-L.	TOXIC TYPE: H2S	0 PPM		
INERTED GAS: N/A (gas) OR	TOXIC TYPE:			
PRESSED UP WITH N/A (liquid)	EXISTING CONDITIONS	INITIAL TEST	I* RETEST	2 nd RETEST
All personnel inside space (no more and no less than 2) must wear SAR/SCBA, clean coveralls and chemical gloves. One safety	NOT SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK	><		
observer station directly outside the space using con-space comms with personnel inside space. One attendant and one CPA operator shall also be outside assisting with the SAR/SCBA. Any questions or	NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK	DBB		
changes call the GFE (254)	SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK	><		
GAS RELATED HOT WORK	2		11	
PQS QUALIFIED FIRE WATCHES ASSIGNED	SAFE FOR PERSONNEL/ SAFE FOR HOT WORK			
LOCATIONS PRINT NAME/RATE SIGNATURE (upon completion)	NOT SAFE FOR PERSONNEL. INSIDE/SAFE FOR HOT WORK OUTSIDE	\times		
FINAL CHECKUP, WORK AREA AND ALL ADMICENT NEBAS TO WIRCH SPARKS AND HEAT MIGHT SPREAD WERE INSPECTED IN MINUTES AFTER THE WORK WAS COMPLISED AND WERE POUND TO BE FIRE SAFE. THE DOLLPMENT AND	NOTE: THIS INSPECTION INDICATES THE GPE PERSONNEL SIGNATURE	DCC(CM) 0		S WERE CONDUCTED
STRUCTURES WORKED ON WERE COOL TO THE TOUCH. TIME SECURED	CO SIGNATURE, If required	Capt. Kírk		
CERTIFY THAT I AM FAMILIAR WITH AND WILL COMPLY WITH ALL SAFETY PRECANDING PERTINENT TO THIS TYPE OF		RECERTIFICAT	TON	
HOT WORK OPERATER SIGNATURE HOT WORK SUPERVISOR FIRE MARSHAL DC1(SW) BRYANT	1* RETEST/UPDATE TIME; GFE PERSONNEL SIGNATURE, 2 st RETEST/UPDATE TIME;			

POST INSPECTION PROCEDURES

- Gas Free Certificate
 - a) Log Results
 - b) Safe for Personnel?
 - Requirements???
 - c) Ventilation Requirements
 - d) Posting Requirements
- **%** Inventory
 - a) Tool Check
 - b) Trash, Rags, People...?





RETESTING

- Entry or Work Delay
- Expiration (8 Hours)
- Hazards Detected
- Ship Movement

RECERTIFICATION (Do Over)

- Securing Ventilation
- New Operations or Materials
- Closing Space Or Temporary Shutdown

TEST RESULTS							
ESTS CONDUCTED AS REQUIRED		INITIAL TEST	1ST RETEST	2ND RETEST			
XYGEN 19.5 % < C)2 < 22 %	20.7%	20.9%	20.8%			
COMBUSTIBLE GAS < 10	% LEL	0	0	0			
	< 35 ppm	<u> </u>	0	0			
	< 10 ppm	<u> </u>	0	0			
OXICTYPE:	N/A						
OXICTYPE:	N/A	<u> </u>	<u> </u>	1			
EXISTING CONDITION	NS	INITIAL TEST	IST RETEST	2ND RETEST			
NOT SAFE FOR PERSONOT SAFE FOR HOT W							
NOT SAFE FOR PERSO WITHOUT PROTECTION NOT SAFE FOR HOT W	ON/						
SAFE FOR PERSONNE NOT SAFE FOR HOT W		MLA	RKL	MAB			
SAFE FOR PERSONNE SAFE FOR HOT WORK							
NOT SAFE FOR PERSO INSIDE/SAFE FOR HO WORK OUTSIDE							
NOTE: THIS INSPECTION INDICATES THE CONDITIONS WHICH EXISTED AT THE TIME TESTS WERE CONDUCTED.							
CO SIGNATURE, if required N/A							
RECERTIFICATION							
1ST RETEST/UPDATE							
TIME: 1600 DATE: 12 MAY 9 8 EXPIRES: 2400							
GFE PERSONNEL SIGNATURE	GFE PERSONNEL SIGNATURE R K LaCount DCC (SW)						
2ND REJEST/UPDATE	GFEA						
TIME: 0000	DATE:	1 3 MAY 9					
GFE PERSONNEL SIGNATURE	IVIA	dowe	∩ HT1(SV	 			



GAS FREE CERTIFICATES

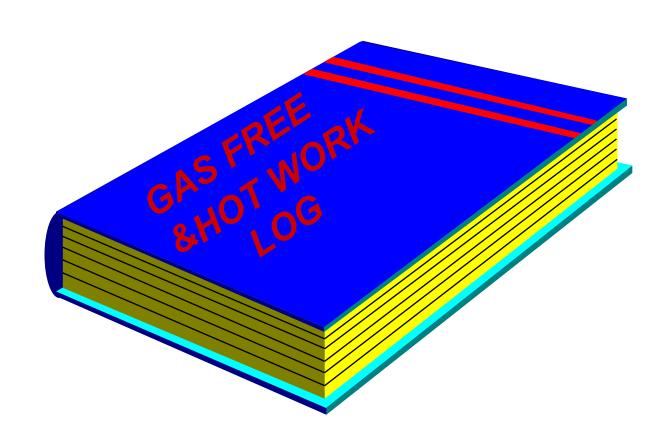
- POSTING REQUIREMENTS
 - **Gas Free Files**

 - **All Accesses to the Space**
 - **Division Requesting Services**
 - **Damage Control Central**

REFORM AND CENTRACERON TO THE LOCAL TOP AND THE

Must Retain for At Least 1 Year

FILE IN YOUR GAS FREE LOG



INITIAL CERTIFICATION TEST RESULTS				
SHIP/UNIT/ACTIVITY:	TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1" RETEST	2 rd RETEST
ITEM/COMPARTMENT/SPACE	OXYGEN			
TYPE OF OPERATION TO BE CONDUCTED: INITIAL DATE OF TEST HOUR: DATE:				
INITIAL EXPIRATION: HOUR: DATE:	COMBUSTABLE GAS			-
	TOXIC TYPE:	4-1	• 4 -	
Time to make y	our own	cerui	icate	
First we will de	ONO FOR	oloon	ina	18
INERTED GAS: 1115 L VV C VV III G	n one tor	Clean	ung,	
OR				
PRESSED UP WITH: REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTION 1 CT	hot-wor	INITIAL TEST	I* RETEST	2 nd RETEST
REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTION TO THE PROPERTY OF			1.000	
	NOT SAFE FOR PERSONNEL NOT SAFE FOR HOT WORK.			
	NOT SAFE FOR PERSONNEL WITHOUT SPOTECTION/ NOT SAFE FOR THAT WORK			
	SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK			
GAS RELATED HOT WORK			72	
PQS QUALIFIED FIRE WATCHES ASSIGNED	SAFE FOR PERSONNEL/ SAFE FOR HOT WORK			
LOCATIONS PRINT NAME/RATE SIGNATURE (upon completion)	NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE			
	NOTE: THIS INSPECTION INDICATES	THE CONDITIONS THAT EXIST	ED AT THE TIME THE TEX	TS WERE CONDUCTED
FINAL CHECKUP, WORK AREA AND ALL ADEACENT AREAS TO WHICH SPARKS AND HEAT MIGHT SPREAD WERE INSPECTED AS MENUTES AFTER THE WORK WAS COMPLETED AND WERE POUND TO BE FIRE SAFE. THE EQUIPMENT AND STRUCTURES WORKED ON WERE COOL TO THE TOUCH. TIME SECURED	CHE BERSONNEL SIGNATUR	E		
I CERTIFY THAT I AM FAMILIAR WITH AND WILL COMPLY WITH ALL SAFETY PRECAUTIONS PERTINENT TO THES TYPE OF WORK.		RECERTIFICAT	TION	
HOT WORK OPERATER SIGNATURE	I* RETESTAUPDATE TIM	E DATE:_	EXPIR	ES:
HOT WORK SUPERVISOR	GFE PERSONNEL SIGNATUR			
FIRE MARSHAL	2 [™] RETEST/UPDATE TIME GFE PERSONNEL SIGNATUR		EXPIR	ES:

Lesson Topic 3.4

REVIEW AND SUMMARY

Review and Summary

- Pre-Inspection Procedures
- Initial Oxygen test
- Initial Explosive test
- Inital Toxic test
- Preparing to enter space
- Gas Free Test and Inspection

SERIA	7 4		

NAVY GAS FREE CERTIFICATION AND TEST LOG

INITIAL CERTIFICATION	TEST RESULTS			
SHIP/UNIT/ACTIVITY:	TESTS CONDUCTED AS REQUIRED	INITIAL TEST	1* RETEST	2 nd RETEST
TYPE OF OPERATION TO BE CONDUCTED:	OXYGEN			
INITIAL DATE OF TEST: HOUR: DATE	COMBUSTABLE GAS			
INITIAL EXPIRATION: HOUR: DATE: VENTILATION REQUIRED: YES NO	TOXIC TYPE:			
TYPE:	TOXIC TYPE:			
	TOXIC TYPE:			
INERTED GAS:(gas) OR	TOXIC TYPE:			
Maria de la constanta de la co		THE RESERVE OF THE PARTY OF THE		Name and Address of the Owner, where the Owner, which is the Owner, where the Owner, which is the Owner, where the Owner, where the Owner, which is the Owner, whic
PRESSED UP WITH: (Reput REQUIREMENTS/CONCLUSIONS/PRESCRIBED PRECAUTIONS/INSTRUCTIONS		INITIAL TEST	I* RETEST	2 nd RETEST
**************************************	NOT SAFE FOR PERSONNEL/ NOT SAFE POR HOT WORK		0.000	
	NOT SAFE FOR PERSONNEL WITHOUT PROTECTION/ NOT SAFE FOR HOT WORK			
	SAFE FOR PERSONNEL/ NOT SAFE FOR HOT WORK.			
GAS RELATED HOT WORK			32	
PQS QUALIFIED FIRE WATCHES ASSIGNED	SAFE FOR PERSONNEL/ SAFE FOR HOT WORK			
LOCATIONS PRINT NAME/RATE SIGNATURE (upon completion)	NOT SAFE FOR PERSONNEL INSIDE/SAFE FOR HOT WORK OUTSIDE			
FINAL CIRCKUP, WORK ARIA AND ALL ADMACENT AREAS TO WHICH SPARKS AND HEAT MIGHT SPREAD WERE INSPECTED IN MINUTES AFTER THE WORK WAS COMPLETED AND WERE POUND TO BE FIRE SAFE. THE EQUIPMENT AND STRUCTURES WORKED ON WERE COOL TO THE TOUCH. TIME SECURED.	OFE PERSONNEL SIGNATURE CO SIGNATURE, If required			S WERE CONDUCTED
I CERTIFY THAT I AM FAMILIAR WITH AND WILL COMPLY WITH ALL SAFETY PRECAUTIONS PERTINENT TO THIS TYPE OF WORK.	RECERTIFICATION			
HOT WORK OPERATER SIGNATURE	I* RETEST/UPDATE TIME:	DATE:	EXPIRE	is:
HOT WORK SUPERVISOR	GFE PERSONNEL SIGNATURE	5.7711-15		
FIRE MARSHAL	2 st RETEST/UPDATE TIME: GFE PERSONNEL SIGNATURE			

Lesson Topic 3.4

THE END