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ENGINEERING SAFETY AND ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT PLAN VOLUME 3 OF 4 NSWC WHITE OAK MD

7/31/1991

EVENTS ANALYSIS, INC.

NAVAL SURFACE WARFARE CENTER
WHITE OAK
ENGINEERING SAFETY AND ENVIRONMENTAL
RISK ASSESSMENT AND MANAGEMENT PLAN

VOLUME III
Part II

FACILITY AND FIRE SAFETY SURVEYS

WHITE OAK

July 31, 1991

Prepared by

Events Analysis, Inc.
12101 Toreador Lane
Oakton, Va. 22124-2217
9064

Contract No. N60921-88-D-0007
Delivery Order 0010

This is Volume III, Part I of a 4-Volume report describing work performed on

Contract N60921-88-D-0007, Delivery Order 0010
by Events Analysis, Inc.

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FACILITY AND FIRE SAFETY SURVEY

OF

ADMINISTRATIVE BUILDINGS

(Buildings 1-5)

NAVAL SURFACE WARFARE CENTER

WHITE OAK, MARYLAND

Prepared By:

Events Analysis Inc.

FSES ANALYSIS RESULTS

	Fire Control	Egress	General Firesafety
Provided	1.5	-4	1
Required	2	2	3
Equivalency	**-.5**	**-6**	**-2**

FACILITY

FIRE AND SAFETY SURVEY

OF

ADMINISTRATIVE BUILDINGS 1-5

NAVSWC-WHITE OAK

1.0 INTRODUCTION Under Contract No. N60921-88-D-0007, Task 0010, with the Naval Surface Warfare Center, Events Analysis, Inc., was tasked to provide Facility and Fire Safety and Occupational Health and Safety Surveys of selected Center facilities.

This report details the results of the Facility and Fire Safety Survey of the Administrative Buildings (1-5) , NAVSWC-White Oak, that was conducted by Mark Lorenz FPE, and Milton VanSlyke CSP, on January 24, 1991.

2.0 SURVEY METHODOLOGY

2.1 Applicable Standards

During the conduct of the inspection, the following standards and guidelines were used to evaluate the facility and fire safety conditions at the aforementioned facility.

- Code of Federal Regulations, 29CFR1910 - General Industry Standards; and
- National Fire Protection Association (NFPA) Codes.

2.2 Inspection Procedures

The actual walk-through survey consisted of observing the condition of facilities, inspecting the condition of equipment, the storage of materials, and any operations in progress that may affect the physical facility or Navy owned or leased equipment, plus the layout of the equipment/materials in the facilities as they relate to facility and fire safety. In addition, a review of the buildings fire safety features, e.g., fire detection/alarm systems, fire suppression systems (both fixed and portable), fire divisions and doors, emergency lighting and exit lights, and means of egress were conducted.

2.3 Description of Facilities

The Administrative Building, a 238,863 square ft. facility, was built in the1940's and is a four story building with one below grade level (basement) and several small elevator machine rooms which are located on the building's roof. The building is rectangular in shape and is sub-divided into six smaller areas, commonly known as Buildings 1 through 5 and the Arcade. The longer sides of the rectangle are designated as Buildings 1 and 4, while the shorter sides are designated as Buildings 2 and 3. The Arcade connects Building 1 to Building 4 at the center of the rectangle, with Building 5 located adjacent to the rectangle at the intersection of Building 4 and the Arcade. It appears that the building was intended to be sub-divided into separate fire areas by installing doors labeled "fire doors" in the corridors of the building. However, these doors do not meet the definition of construction of a fire door, which means that each floor level is one large fire area. The construction of the building was observed to be reinforced concrete with no exposed structural steel members. This results in a construction classification of Type I (332) as defined by NFPA 220. The majority of the occupancy in the building is classified as a Business Occupancy by criteria found in NFPA 101, *Life Safety Code* , with additional occupancies such as Assembly

(Auditorium) located in Building No. 5 and Industrial (laboratories involving hazardous chemicals) located in the basement level of Buildings 1 through 5.

3.0 FINDINGS

3.1 Findings - Facility Safety Survey

There was one Facility Safety and Health Findings as a result of this survey.

3.2 Findings - Fire Safety Survey

Fourteen fire safety findings were identified as a result of this survey. The FSES analysis presented in Appendix B demonstrates that the building does not provide a minimum level of safety as required by the Life Safety Code. None of the findings identified appear to create a fire hazard. However, they will compromise the level of protection afforded to the occupants. Therefore, these findings should be prioritized based on which items will provide the best protection in the most timely manner.

3.2.1 Means of Egress

The Administrative Building is provided with approximately twelve stairs; four stairs serve Building 5, and eight stairs serve the remainder of the building. An additional stair tower is being constructed at the NE end of Building 3. It is reported that this stair is being added in order to eliminate a means of egress problem. The stairs are a minimum 44 inches wide (Bldg. 5) and a maximum of 58 inches wide (remainder), which results in a total egress capacity adequate for the Building's occupants. At least two stairs are accessible from each of the smaller building divisions. These stairs are typically located at the far ends of the corridors. Therefore, the remoteness of the exits is also adequate. Two findings regarding egress were noted during the survey. The most serious finding addresses the arrangement of discharge of the building's stairwells. None of the eight stairwells which serve Buildings 1 through 4 and the Arcade discharge directly to the outside of the building. In accordance with NFPA-101, all of the exits are required to terminate directly at a public way, or at least half of the building's exits can terminate at a public way while the other half can discharge through areas on the level of discharge provided the level of discharge is protected throughout by an automatic sprinkler system. A recommendation to alleviate this problem is included as part of the finding. The second finding addresses an office door, the path of travel to which is blocked by boxes. The door is one of two in the office which leads into the corridor and the situation appears to be temporary.

3.2.2 Sprinkler and Standpipe System

The Administrative Building has very few areas provided with sprinkler protection . These areas include the cafeteria's exhaust hood, the back stage area of the auditorium, and the third floor storage area in Building 3. Standpipes are provided in the building's stairwells with hose outlets for fire department use in the corridors. Three findings were identified with respect to the building's sprinkler and standpipe system. Two of these findings address the lack of sprinkler protection for a room in which an emergency generator is housed, and an area where there is an excessive amount of storage. The third finding concerns the lack of supervision of valves in the water supply to what appears to be the building's standpipe system. There are presently no controls in place which would prevent someone from closing these (and possibly others) valves, thus shutting off the water supply to the standpipe system. It is recommended that these valves be supervised in either a mechanical (chain and lock) or electrical (tamper switch with remote alarm) manner. The fire department is responsible for the testing and maintenance of the systems.

3.2.3 Fire Separation

The only fire separations of concern in this building are the enclosure of the stairs, fire walls/partitions separating special occupancies from occupied spaces, and the integrity of the floor assemblies. Significant findings identified in this category address rooms or operations which, due to their nature, are required to be

separated from other occupancies of the building. These rooms/operations include a library, computer room, anc basement laboratories. It appears that the enclosures for these areas are not of a minimum one-hour fire resistan construction. It is recommended that these areas be evaluated and appropriate action (upgrade to one-hou construction) taken. An additional finding in this category identifies the lack of a latching mechanism on th building's stairwell doors. Such a mechanism is required in order to ensure that the fire doors will latch shu following their operation.

3.2.4 Fire Extinguishers

Fire extinguishers provided for the building are generally placed well and are readily noticeable. Th extinguishers are inspected monthly by the on-site fire department personnel. An off-site contractor services th extinguishers on an annual basis. The fire department is in the process of replacing the building's water anc carbon dioxide extinguishers with multi-purpose dry chemical fire extinguishers (typical rating of 4A:60B:C). I is not known as to how long this process will take. There was only one minor finding associated with th building's fire extinguishers. This concerns a halon extinguisher which is inappropriately labeled as a carbor dioxide extinguisher.

3.2.5 Emergency Lighting and Power

Emergency lighting is provided by wall mounted rechargeable battery pack units. The units are typically locatec in the stairwells and corridors. During the survey two inoperable emergency lighting units were identified anc these are included as a finding. An additional finding identifies a lighting unit which is mounted in ar inappropriate location. The Alarm Shop is responsible for the testing and maintenance of the lights. A diese engine driven generator is located in the basement of Building 1. The generator has a capacity of 60 KW anc provides emergency power to specific areas/operations of the Administrative Building. Emergency power to th remainder of the building is provided by two separate and independent sources (feeds).

3.2.6 Exit Signs

A majority of the exit signs in this building are provided with a battery back-up. The signs are generally placec throughout the building and are readily visible, with the exception of four signs which were not illuminated These are included as a finding. The Electric Shop is responsible for the testing and maintenance of the signs. Nc additional findings with respect to exit signs were identified.

3.2.7 Alarm System

There is a separate fire alarm system (panel) provided for each building within the Administrative Building The panels are of numerous types and manufactured by various companies. The panels are normally located in th corridors of the building. The various panels report to a main panel which the fire department accesses during a fire emergency. The main panel will then direct them to the local panel in alarm. The fire alarm systen monitors smoke detectors, manual pull stations, and waterflow. The system sounds an entire building evacuatior alarm. Ninety per cent of the systems are of Class A supervision. A battery back- up is provided for each system The fire department is responsible for the testing of the system; the Alarm Shop is responsible for th maintenance of the system. No findings were identified with regards to the alarm system.

3.2.8 Witnessing and Documentation of System Tests

No actual system testing was performed or witnessed during this survey. Documentation on the testing anc maintenance of the fire alarm and sprinkler systems was not reviewed during the survey. This data is critical sc that the reliability and operability of the systems can be monitored. It does appear that both the fir department and Alarm Shop are kept busy with the testing and maintenance of sprinkler systems, fir extinguishers, emergency lighting units, and fire alarm systems for the entire site. Documentation for th elevator inspections was available and it appears that the elevators are currently being inspected as th certificates are about to expire.

3.2.9 Fire Safety Summary

The Administrative Building does not meet several of DOD's fire safety requirements as outlined in the Military Handbook (MIL-HDBK-1008A). None of the findings presented are possible causes of a fire incident. However issues such as the inappropriate discharge of the stairwells, lack of sprinkler systems, and the lack of separation of specific occupancies greatly compromise the level of safety provided to the occupants. These findings should be addressed as soon as possible in order to reduce the exposure from its current level. None of the three categories in the FSES analysis were satisfied, which indicates inadequate protection and illustrates the need for improved fire safety.

3.3 Findings - Environmental Management

There were no environmental findings identified during this survey. The buildings are used primarily for office type operations and laboratory work.

3.3. 1 Air Pollution Control (Emission Sources)

There were no air pollution emission sources identified at these locations.

3.3.2 Asbestos abatement

According to the contacts, asbestos has either been removed or has been encapsulated in these facilities. It was noted that in the air handling plenums there were notices posted indicating that asbestos was present but that it was not a problem. (It appeared that asbestos lagging and joints between the plenums were constructed of asbestos. In these cases, however, the material looked undisturbed and had no signs of abrasion.)

3.3.3. Water Pollution Control (Emission Sources)

There were no water pollutant emission sources identified at these locations.

3.3.4 Nonhazardous Waste Management (Paper Recycling)

There is a paper recycling system in place at this location. Containers are located in designated areas throughout the various buildings.

3.3.5 Hazardous Waste Management

In one of the laboratories there was a container of waste chemicals that appeared to be waiting for pickup. There is a hazardous waste handling system in effect at NAVSWC but comments indicate that collection is not always prompt. There were no other hazardous waste generating sources in these buildings.

3.3.6 Underground storage tanks

Per contacts there are no underground storage tanks in this complex of buildings.

3.3.7 PCB Management (Transformers)

Per contacts there is no longer any PCBs utilized in the transformers. Signs noting this fact were posted on some of the transformers.

3.3.8 Drinking Water

In previous office space surveys, comment was made that the drinking water had been tested for lead and found to have high levels which resulted in changing of several fountains. Testing is supposed to have been accomplished but the results were not known.

3.3.9 Pesticide Control

Pesticide control is provided by NAVSWC.

3.3.10 Environmental Management Summary

The environmental practices in this complex of buildings meet basic government criteria. The building and its operation as currently utilized do not present any observed environmental concerns.

3.4 Findings - Indoor Air Quality

3.4.1 Ventilation

A request has been made to the facilities department for drawings of the system but has not yet been received. Based on my observations, the HVAC system works for this complex in the following manner.

The forced air system is distributed throughout the building complex via a system of ceiling air vents and returns.

Heat is provided to the building complex via a steam pipe from the power house. It enters building 4 where it is manifolded and routed to the machine spaces in buildings 2 and 3. At this point the steam supply is further divided into the supply for the individual room radiator systems and also into the heating coils inside the air handling plenums.

Cooling is provided via a water cooling tower on top of building 5. This cold water is then provided to the main machine room in the basement of building 4 from which it is redistributed to other machine rooms. This room also has auxiliary cooling system capabilities.

Return air is exhausted into air handling spaces in buildings 2 and 3 on the(4th floor and then returned to the basement machine rooms where it is heated or cooled and reused. Make up air percentage was not known by the contacts.

Overall, the system seems to work well although some work areas in the basement had a problem with too much heat and were having to control it with fans.

INDOOR AIR QUALITY READINGS

LOCATION	DATE	TIME	Temp F	RH%	CO/PPM	CO2/PPM
A-025	Jan 24	9:30 AM	74	15.1		None
1-050	Jan 24	10:30 AM	76	14.6		
3-334 Cmptr	Jan 24	2:00 PM	74	36.7		
Photo Lab	Jan 24	AM	76			Trace

3.4.2 Complaints

There were no known complaints regarding indoor air quality.

3.4.3 Potential Contamination Sources

No potential contamination sources were noted.

3.4.4 Maintenance

Contacts did not know and a request has been made obtain the information.

A profile for the building is presented in Appendix A. Appendix B presents an FSES analysis for the building. A complete listing of all fire safety findings identified during the survey is provided in Appendix C.

APPENDIX A

BUILDING PROFILE

BUILDING PROFILE

I. GENERAL BUILDING INFORMATION

1. Building name and address: NAVSWC ADMINISTRATIVE BUILDING 10901 NEW HAMPSHIRE AVENUE SILVER SPRING, MARYLAND	2. Building Number: 1,2,3,4, & 5
3. Building Contact: INSPECTOR DAVID HENSLEY (301) 394-2252	4. Number of stories of building: Above grade: 4 Below grade: 1 (BASEMENT)
5. Lease information (if applicable): N/A Lease expiration date: N/A Lessor : N/A	6. Date of previous survey: N/A
7. Previous findings not corrected: N/A	8. Floors the Federal Government occupies: ALL
9. Height of highest federally occupied floors above the lowest level of fire department access (in feet): APPROX. 40 FEET	10. Types of Federal occupancies on each floor (NFPA 101 Classifications): BUSINESS ON ALL FLOORS INDUSTRIAL IN BASEMENT ASSEMBLY IN BUILDING 5
11. Types of non-Federal hazardous occupancies on each floor: NONE	12. Approximate gross area per building: BUILDING 1 & ARCADE: 74,751 SQUARE FEET BUILDING 2: 33,566 SQUARE FEET BUILDING 3: 38,175 SQUARE FEET BUILDING 4: 63,149 SQUARE FEET BUILDING 5: 29,222 SQUARE FEET
13. Number of Federal occupants: APPROX. 1,124 Agency(ies): NAVAL SURFACE WARFARE CENTER	

II. FIRE PROTECTION INFORMATION

1. Building name and address:
NAVSWC ADMINISTRATIVE BUILDING
10901 NEW HAMPSHIRE AVENUE
SILVER SPRING, MARYLAND

14. Construction Type (NFPA 220 Classification): Type I (332)
a. Describe floor/ceiling construction: REINFORCED CONCRETE
b. Describe roof construction: COMPOSITE ON CONCRETE
c. Describe column construction: REINFORCED CONCRETE

15. Location of significant fuel loads on Federally occupied floors: NONE

16. Describe fire-rated subdivision of floors: NONE

17. Fire suppression capability (describe as listed below):

a. Sprinklers - location(s): KITCHEN EXHAUST HOOD, AUDITORIUM STAGE, 3RD FLOOR STORAGE (BLDG. 3)

b. Waterflow alarm(s), type and location: FLOW SWITCH, SPRINKLER RISER

c. Control valves, type and typical location: OS&Y, SYSTEM RISER

d. Valve tamper switches, type and typical location: EXTERNAL, CONTROL VALVE

e. Standpipe - riser size, location, and number: 4", STAIRWELLS & CORRIDORS, VARIOUS

f. Location(s) and manufacturer / model of fixed CO_2, dry chemical and / or halon fire suppression systems: THIRD FLOOR-BLDG 3 COMPUTER ROOM, HALON

g. Fire pump data: N/A
Rated capacity (gpm): N/A

Fire pump data(continued)
Rated net pressure (psi): N/A
Primary power supply: N/A
Secondary power supply: N/A
Manufacturer: N/A
Supply static pressure (psi): N/A
Discharge static pressure (psi): N/A
Separate controller for fire pump and jockey pump? N/A

h. Water supply to building: DUAL FEED

18. Computer room fire protection (each location):

Location 1: ROOM 3-344
a. Describe suppression system(s): HALON-UNDERFLOOR
b. Detection system:
Appropriate type for intended use: YES
Type and manufacturer: IONIZATION, PYROTRONICS
Control equipment location: IN COMPUTER ROOM
Control equipment manufacturer: PYROTRONICS
Describe connection to building fire alarm system: WIRED TO SEPARATE PANEL

Location 2: ROOM 4-130
a. Describe suppression system(s): NONE
b. Detection system:
Appropriate type for intended use: YES
Type and manufacturer: IONIZATION, GAMEWELL
Control equipment location: IN CORRIDOR
Control equipment manufacturer: GAMEWELL
Describe connection to building fire alarm system: WIRED TO SEPARATE PANEL

Location 3: ROOMS 4-264,268,274
a. Describe suppression system(s): NONE
b. Detection system:
Appropriate type for intended use: YES
Type and manufacturer: GAMEWELL
Control equipment location: IN CORRIDOR
Control equipment manufacturer: GAMEWELL
Describe connection to building fire alarm system: WIRED TO SEPARATE PANEL

Location 4: BUILDING 1 CAD FACILITY
a. Describe suppression system(s): NONE
b. Detection system:
Appropriate type for intended use: YES
Type and manufacturer: NOTIFIER
Control equipment location: IN CORRIDOR
Control equipment manufacturer: NOTIFIER
Describe connection to building fire alarm system: WIRED TO SEPARATE PANEL

19. Day Care Center: NONE
- a. Location: N/A
- b. Describe exits: N/A
- c. Describe sprinkler system: N/A
- d. Fire Alarm/Detection System: N/A
  - Pull station locations: N/A
  - Smoke detector locations: N/A
  - Equipment manufacturers: N/A
  - Control equipment location: N/A
  - Describe connection to building fire alarm system: N/A

20. Smoke detectors (not computer room detectors):
- a. Location (s): NUMEROUS
- b. Appropriate type for intended use: YES
- c. Type and manufacturer: IONIZATION, VARIOUS
- d. Control equipment location: ROOMS/CORRIDORS
- e. Control equipment manufacturer: VARIOUS
- f. Describe connection to building fire alarm system: COMMONLY WIRED TO SEPARATE PANELS

21. Heat detectors: NONE
- a. Location (s): N/A
- b. Appropriate type for intended use: N/A
- c. Type and manufacturer: N/A
- d. Control equipment location: N/A
- e. Control equipment manufacturer: N/A
- f. Describe connection to building fire alarm system: N/A

22. Other detectors:
- a. Location (s): HVAC SYSTEM
- b. Appropriate type for intended use: UNKNOWN
- c. Type and manufacturer: UNKNOWN
- d. Control equipment location: VARIES
- e. Control equipment manufacturer: VARIOUS
- f. Describe connection to building fire alarm system: COMMONLY WIRED TO SEPARATE PANELS

23. Communication features:
- a. Type of fire alarm system - general, pre-signal, coded with limited number of rounds, etc.: GENERAL
- b. Central station (company name): ON-SITE FIRE DEPARTMENT
- c. Describe emergency telephone system: NONE
- d. Describe secondary power source: BATTERY
- e. Control panel information:
  - Location: VARIES
  - Manufacturer / model: NUMEROUS
  - Operating voltage: TYPICALLY 24 VDC
- f. Manual station locations: NEAR EXITS
- g. Style of alarm initiating circuit wiring: 90% CLASS A
- h. Type of alarm indicating appliances (visual and / or audible) and locations: PULSATING HORN-STROBE, CORRIDORS
- i. Style of alarm indicating circuit wiring: 90% CLASS A
- j. Notification system: Entire bldg., floor, above and below or other: ENTIRE BUILDING
  - Devices that actuate general alarm (list all types): PULL STATIONS, DETECTORS
- k. System interfaced with:
  - Elevators: NO
  - Smoke control: N/A
  - Electric door locks: N/A
  - Other (describe): N/A

24. Emergency lighting:
- a. Type: RECHARGEABLE
- b. Locations: CORRIDORS & STAIRWELLS
- c. Secondary power source: BATTERY

25. Exit signs:
- a. Locations: NEAR ENTRANCE TO EXITS
- b. Secondary power source: NONE

26. Emergency generator:
- a. Power source: DIESEL ENGINE
- b. Capacity: 60 KW
- c. Location: ROOM 1-012

27. Means of egress:
- a. Number of exits: APPROX. 12
- b. Where do they discharge? CORRIDORS, OUTSIDE
- c. Exit capacity: ADEQUATE
- d. Exit remoteness: ADEQUATE
  - Maximum diagonal dimension of typical floor (identify for others if different than typical floors): N/A
  - Exit door separation distance: N/A
  - How is distance measured? N/A
- e. Exit access: CORRIDOR
- f. Exit enclosure: STAIRWELLS
- g. Exit discharge protection: NONE
- h. Exit dimensions - width, tread, riser: 44",10",7" 58",10",7"
- i. Exit time calculations: N/A
- j. Handrails: GOOD
- k. Dead ends: NONE NOTED
- l. Common paths of travel: NONE NOTED

28. Elevator features:
a. Number of elevators: 4
b. Emergency elevator operation:
- Phase I operation (automatic and manual recall)? NO
- Phase II operation (firefighter's service)? NO
- Designated recall level: N/A
- Alternate recall level: N/A
- What other alarms in building, other than elevator lobby smoke detectors, will recall elevators? N/A
c. Certificate date: EXPIRES 2/28/91
d. Telephone within cab? YES
Who answers telephone? DIAL OUT

29. Hazard of exposure buildings: NONE

31. Local fire department pre-fire plan: SITE FIRE DEPARTMENT

30. Occupant emergency plan (OEP):
a. Date of last revision / update: N/A
b. Are the persons designated in the plan current and have they had training? N/A
c. Does it contain procedures to evacuate handicapped individuals? N/A

32. HVAC system design:
a. Source of heat: CENTRAL STEAM PLANT
b. Source of chilled water: BLDG 5 CHILLER PLANT
c. Location of fans: MECHANICAL ROOM EACH FLOOR
d. Presence of fire dampers: NONE NOTED
e. Presence of duct smoke detectors: YES
f. Return air routing: PLENUM
g. Supply air routing: DUCT
h. Smoke control features: NONE
i. Rated cable if used in plenum? N/A

33. Maintenance of fire protection equipment.
a. Report the general condition of the equipment as whether maintenance records and frequency conform to appropriate National Fire Protection Association (NFPA) Standards:
- Fire extinguishers - GOOD
- Fire alarm - FAIR
- Sprinklers - FAIR
b. Who maintains which types of equipment:
- Fire extinguishers - SITE FIRE DEPARTMENT, CONTRACTOR
- Fire alarm - ALARM SHOP
- Sprinklers - SITE FIRE DEPARTMENT

34. Boiler inspection: N/A
a. Certificate(s) (who inspected?): N/A
b. Date(s): N/A

35. Locations of other special occupancies:
a. Laboratories: BASEMENT
b. Printing Plants: BASEMENT
c. Parking Garages: NONE
d. Storage Areas > 1000 square feet: BLDG 3 &BLDG 4
e. Computer Rooms: SECOND,THIRD & FOURTH FLOORS
f. Telephone Frame Rooms: NONE
g. Child / Day Care: NONE

APPENDIX B

FSES ANALYSIS

FIRE SAFETY EVALUATION SYSTEM

The Fire Safety Evaluation System (FSES) Analysis presented in this Appendix follows the approach outlined in NFPA 101M, Alternative Approaches to Life Safety. NFPA 101M stipulates that the FSES must take into consideration any deficiencies in systems. If the system does not meet the applicable standards listed in Chapter 8 of 101M, then credit can not be given in the initial evaluation.

The evaluation can be based on the entire building. However, portions of the building may also be evaluated as zones. A zone must be one or more complete fire or smoke zones and must meet other criteria as presented in the methodology. For this analysis, the entire building was evaluated. The Safety Parameters, justification for their selection and their values as defined in Table 7-1 of NFPA 101M are as follows:

1. Construction - Safety Parameter Value = 2

The building is of Type I (332) construction and is four stories in height.

2. Segregation of Hazards - Safety Parameter Value = -4

The exit routes in the basement of the Building are exposed by the laboratories which are not enclosed by one-hour fire resistant construction.

3. Vertical Openings - Safety Parameter Value = 0

Stairwells are considered to be enclosed with at least 30 minute construction (due to finding regarding doors).

4. Sprinklers - Safety Parameter Value = 0

Very few areas of the building are provided with automatic sprinkler protection.

5. Manual Firefighting Appliances - Safety Parameter Value = 2

Both fire extinguishers and standpipes are provided and the building is 4 stories.

6. Manual Fire Alarm System - Safety Parameter Value = 2

A manual fire alarm system is provided with on-station fire department notification.

7. Smoke Detection and Alarm - Safety Parameter Value = 0

The few smoke detectors which are provided do not qualify for this credit.

8. Interior Finish - Safety Parameter Value = 1

The flame spread rating in the exit routes is considered less than or equal to 25. The office space has a flame spread rating of between 25 and 200.

9. Smoke Control - Safety Parameter Value = 0

There is no engineered smoke control system for this building.

10. Exit Access - Safety Parameter Value = 0

No dead ends were identified; travel distance is between 100 and 200 ft.

11. Exit System - Safety Parameter Value = -2

The building is provided with multiple routes; the majority of which do not discharge to the outside of the building.

12. Corridor/Room Separation - Safety Parameter Value = 0

Level of protection is considered smoke resistive without door closers.

13. Emergency Preparedness - Safety Parameter Value = 0

The level of training of building occupants does not qualify for this credit.

Table 7.2 Individual Safety Evaluation

Safety Parameter	Fire Control (S_1)	Egress Provided (S_2)	General Firesafety Provided (S_3)
1. Construction	2		2
2. Hazardous Areas	-4	-4	-4
3. Vertical openings	0/2	0	0
4. Sprinklers	0	0/2	0
5. Manual fire fighting equipment	2		2
6. Manual fire alarm system	2/2	2	2
7. Smoke detection and alarm	0/2	0	0
8. Interior finish	1/2		1
9. Smoke control		0/2	0
10. Exit access		0	0
11. Exit system		-2	-2
12. Corridor separation	0/2	0/2	0
13. Emergency preparedness		0	0
Total	$(S_1) = 1.5$	$(S_2) = -4.0$	$(S_3) = 1.0$

Table 7.3 Mandatory Requirements

Building Heights	Control Requirements (S_a)	Egress Requirements (S_b)	General Firesafety Requirements (S_c)
1 Story	2	2	3
2-5 Story	2	2	3
>6 Story	11	4	9

Table 7.4 Equivalency Evaluation

			YES	NO
Control (S_1) minus Required Provided Control	(S_a) ≥ 0	(S_1) 1.5 - (S_a) 2.0 = -0.5		√
Egress (S_2) minus Required Provided Egress	(S_b) ≥ 0	(S_2) -4.0 - (S_b) 2.0 = -6.0		√
General (S_3) minus Required Firesafety Gen. Firesafety	(S_c) ≥ 0	(S_3) 1.0 - (S_c) 3.0 = -2.0		√

Table 7-5 Facility Fire Safety Requirements Worksheet

Considerations	Met	Not Met	Not Applic.
A. Building utilities conform to the requirements of Section 7-1 of NFPA 101, *Life Safety Code.*	√		
B. The air conditioning, heating, and ventilation systems conform with Section 7-2 of NFPA 101, *Life Safety Code.*	√		
C. Elevator installations are made in accordance with the requirements of Section 7-4 of NFPA 101, *Life Safety Code.*		√	
D. Rubbish chutes, incinerators, and laundry chutes are installed in accordance with Section 7-5 of NFPA 101, *Life Safety Code.*			√

Equivalency Conclusion

One or more of the checks in Table 7-4 are in the "NO" column. The level of firesafety is not shown by this system to be equivalent to the life safety requirements prescribed by NFPA 101, *Life Safety Code.*

APPENDIX C

FINDINGS

Finding Number: W/OAK ADMIN - 001

Referenced Directive: NFPA 101, Paragraphs 5-1.3.1 & 5-7.2
MIL-HDBK-1008A, Section 2.5.1

Finding:

Approximately ten of the building's twelve stairwells discharge through areas on the level of discharge.

Recommendation:

Provide sprinkler protection for the entire level of exit discharge and enclose the path of travel from at least half of the stairwells to the outside of the building by construction having a minimum 2-hour fire resistance rating.

Estimated Abatement Cost = $200K+

RAC: IIC; Moderate

Finding Number: W/OAK ADMIN- 002

Referenced Directive: NFPA 80, Paragraph 2-8.5.4
MIL-HDBK-1008A, Section 2.4.2

Finding:

A majority of the stairwell fire doors are not provided with a latching mechanism.

Recommendation:

Provide a latching mechanism for all fire doors so that positive latching of the doors can occur following every door operation.

Estimated Abatement Cost = $20K

RAC: IIIC; Minor

Finding Number: W/OAK ADMIN- 003

Referenced Directive: NFPA 101, Paragraph 5-5.1.1

Finding:

An exit door from Room 1-009 is blocked by numerous cardboard boxes.

Recommendation:

Remove the boxes away from the door and maintain this area in a clear condition.

Estimated Abatement Cost = NIL

RAC: IIIC; Minor

Finding Number: W/OAK ADMIN- 004

Referenced Directive: NFPA 101, Paragraph 5-10.3.1

Finding:

Exit signs in the following areas were not illuminated: Room 4-047 (Machine Room), near Room 2-013, rear of Auditorium stage, and Building 1 first floor main lobby.

Recommendation:

Repair or replace these exit signs as necessary in order that they be properly illuminated.

Estimated Abatement Cost = $500

RAC: IVC; Negligible

Finding Number: W/OAK ADMIN- 005

Referenced Directive: NFPA 101, Paragraph 5-9.2.2

Finding:

Emergency lighting units 2-02 (Building 2) and 5-29 (Building 5) did not operate when their respective test buttons were depressed.

Recommendation:

Repair or replace these emergency lights as necessary.

Estimated Abatement Cost = $200

RAC: IVC; Negligible

Finding Number: W/OAK ADMIN- 006

Referenced Directive: NFPA 101, Paragraph 5-9.2.1

Finding:

The emergency lighting unit in the NW corner of Room 4-047 (Machine Room) is mounted close to the floor and has paint on both lenses (bulbs).

Recommendation:

Re-mount the unit to a higher location and remove the paint from the lenses in order to provide a proper degree of illumination of the means of egress.

Estimated Abatement Cost = $100

RAC: IVC; Negligible

Finding Number: W/OAK ADMIN- 007

Referenced Directive: MIL-HDBK-1008A, Section 3.2.2.d

Finding:

The emergency generator in Room 1-012 is not protected by a fire extinguishing system.

Recommendation:

Provide the necessary extinguishing system as per the referenced directive.

Estimated Abatement Cost = $5K

RAC: IIIC; Minor

Finding Number: W/OAK ADMIN- 008

Referenced Directive: MIL-HDBK-1008A, Section 4.2.7.b

Finding:

The library on the third floor of Building 1 does not appear to have a fire resistance rating of at least one-hour to separate the library from other occupancies.

Recommendation:

Verify the fire resistance rating of the library enclosure and upgrade to a one-hour rating as required.

Estimated Abatement Cost = $4K

RAC: IIID; Negligible

Finding Number: W/OAK ADMIN- 009

Referenced Directive: MIL-HDBK-1008A, Section 4.3.1

Finding:

The computer room on the third floor of Building 3 does not appear to have a fire resistance rating of at least one-hour to separate the room from other occupancies.

Recommendation:

Verify the fire resistance rating of the computer room and upgrade to a one-hour rating as required.

Estimated Abatement Cost = $5K

RAC: IIID; Negligible

Finding Number: W/OAK ADMIN- 010

Referenced Directive: MIL-HDBK-1008A, Section 6.1.3.h

Finding:

The fourth floor of Building 4 is not sprinklered and contains a large volume of storage.

Recommendation:

Provide an automatic sprinkler system for the storage area(s) and separate these areas from unsprinklered areas by a minimum one-hour fire resistant construction.

Estimated Abatement Cost = $25K

RAC: IIIC; Minor

Finding Number: W/OAK ADMIN- 011

Referenced Directive: NFPA 45, Paragraph 3-1.3

Finding:

The various laboratories in the basement of the Building do not appear to have a fire resistance rating of at least one-hour to separate the laboratories from other work areas and the main corridor, which is a required means of exit access.

Recommendation:

Verify the fire resistance rating of the laboratories and upgrade to a one-hour rating as required.

Estimated Abatement Cost = $15K

RAC: IIC; Moderate

Finding Number: 012

Referenced Directive: NFPA 14, Paragraph 7-2.6

Finding:

Two control valves, in what appears to be the supply to the Building's standpipe system, are not supervised electrically or mechanically. The valves are located in Room 4-047 (Mechanical Room) and in a basement office at the north end of Building 1.

Recommendation:

Supervise these two valves, and all other appropriate valves, in the open position in order to maintain the Building's manual fire suppression system in a ready state.

Estimated Abatement Cost = $2.5K

RAC: IID, Minor

Finding Number: W/OAK ADMIN- 013

Referenced Directive: NFPA 45, Paragraph 8-2.5

Finding:

Two deuterium gas cylinders were noted lying flat on a table in Room 4-086.

Recommendation:

Secure the cylinders in place to prevent them from falling.

Estimated Abatement Cost = NIL

RAC: IVC; Negligible

Finding Number: W/OAK ADMIN- 014

Referenced Directive: NFPA 10, Paragraph 1-6.11

Finding:

A halon fire extinguisher is incorrectly identified as a carbon dioxide fire extinguisher in the third floor computer room of Building 3.

Recommendation:

Properly identify the halon fire extinguisher as such.

Estimated Abatement Cost = NIL

RAC: IVC; Negligible

Finding No: W/OAK ADMIN - 015

Referenced Directive: 1910.22

Finding: Oil was leaking from a piece of equipment in machine room 2 and had spread around on floor presenting both a slipping hazard and a fuel source in the case of ignition.

Recommendation: Stop leak in equipment and clean up oil on floor.

Estimated Abatement Costs: = $ 100.

Risk Code: RAC4 LCIII; Minor

FACILITY AND FIRE SAFETY SURVEY

OF

BUILDING 20

NAVAL SURFACE WARFARE CENTER

WHITE OAK, MARYLAND

Prepared By:

Events Analysis Inc.

NOTE: FSES DOES NOT APPLY TO THIS BUILDING

FACILITY AND FIRE SAFETY SURVEY

OF

BUILDING 20

NAVAL SURFACE WARFARE CENTER

WHITE OAK, MD

1.0 INTRODUCTION Under Contract No. N60921-88-D-0007, Task 0010, with the Naval Surface Warfare Center, Events Analysis, Inc. was tasked to provide Facility and Fire Safety and Occupational Health and Safety Surveys of selected Center facilities.

This report details the results of the Facility and Fire Safety Survey of the Administrative Buildings (1-5) , NAVSWC-White Oak, that was conducted on June 26, 1991, by Randolph Shearman and Leslie M White.

2.0 SURVEY METHODOLOGY

2.1 Opening Conference

An opening conference was held with Mr. David Hensley of the base fire department. During the opening conference the representatives reviewed the purpose of the visit and the procedures to be used during the conduct of the survey effort. Following this conference it was decided that Mr. Hensley would accompany the representatives on the survey.

2.2 Applicable Standards

During the conduct of the inspection, the following standards and guidelines were used to evaluate the facility and fire safety conditions at the aforementioned facility.

- Military Handbook MIL-HDBK-1008A
- Code of Federal Regulations, 29CFR1910 - General Industry Standards; and
- National Fire Protection Association (NFPA) Codes.

2.3 Inspection Procedures

The actual walk-through survey consisted of observing the condition of facilities, inspecting the condition of equipment, the storage of materials, and any operations in progress that may affect the physical facility or Navy owned or leased equipment, plus the layout of the equipment/materials in the facilities as they relate to facility and fire safety. In addition, a review of the buildings fire safety features, e.g., fire detection/alarm systems, fire suppression systems (both fixed and portable), fire divisions and doors, emergency lighting and exit lights, and means of egress were conducted.

2.4 Description of Facilities

Building 20 is a four story 15,000 square feet per floor testing lab building having offices on the second floor. The loading dock/receiving area of the building is protected by an automatic wet pipe sprinkler

system. This building is classified as an Industrial Occupancy by NFPA 101 and as a Group H Division 5 by MIL-HDBK-1008A criteria. The structural members are reinforced concrete and concrete encased steel resulting in an NFPA 220 Type II (222) and UBC Type II (F.R.) construction type.

3.0 RESULTS

Highlights of the facility and fire safety surveys are contained in this section. Section 3.1 highlights the facility safety findings, while section 3.2 highlights the fire safety findings.

3.1 Findings - Facility Safety Survey

There were four Facility Safety and Health Findings identified as a result of this survey. One finding, involving exposure to the high voltage leads on a bridge crane is considered to be serious.

3.2 Findings - Fire Safety Survey

There were ten fire safety findings and seven minor fire safety findings identified during this survey. The major items identified during the survey concerned the lack of a total building sprinkler system, exit stair enclosure, and lack of fire dampers, and duct smoke detectors. Lack of elevator recall and emergency power for the exit signs were also areas of concern. Minor findings include emergency lighting unit maintenance and lack of testing documentation for fire alarm testing. The addition of the sprinkler system to the building would greatly improve the fire and life safety of the building. Provision of proper exit stair enclosure will also enhance life safety. Based on the items identified during the survey, the fire safety of this building is considered to be less than adequate.

3.2.1 Means of Egress

The building is served by two stair towers located at opposite ends of the building which discharge to the first floor corridor. The stairs are 46" and 58" wide and are provided with handrails. The calculated occupant load based on NFPA 101 criteria would be approximately 150 persons per floor. The exits provide an adequate capacity of 346. Four findings and one minor finding were identified. The first finding was the lack of a fire rated enclosure for the two exit stairs. Doors opening into the stairs are non-fire rated and both stairs discharge to the first floor corridor which is the level of exit discharge. A protected path is required to an exit discharge once the occupants enter the exit stair. The first floor corridor does not meet the criteria for a protected exit discharge area. The second egress item identified during the survey includes the need for physical barriers at the first floor level of both exit stairs to prevent occupants from descending to a level below exit discharge. Occupants entering these areas will have to turn around and ascend the stairs to egress from the building. The third finding is the lack of an Occupant Emergency Plan. The plan currently consists of exit route maps posted in the corridors. A formal emergency plan was not available during the survey. Finding number four addresses the lack of adequate separation distance between the exit stairs. The stairs are required to be remotely located from each other by a distance not less than 50% of the longest diagonal dimension of the building for unsprinklered buildings. The stairs are separated by approximately 47% of the diagonal dimension. The minor finding involves storage of office furniture, supplies and other material in the second floor corridor. This corridor is an exit access corridor and should not be obstructed. A recommendation will be made to provide the building with an automatic sprinkler system throughout based on the building occupancy and the egress enclosure and separation items identified above. The impact of the sprinkler system on upgrading the means of egress safety for the building should be evaluated in depth in conjunction with the stair enclosure issue. Based upon the items identified during the survey, the means of egress for this building are not acceptable.

3.2.2 Sprinkler and Standpipe System

The loading dock/receiving area of the building is protected by an automatic wet pipe sprinkler system. A recommendation will be made to provide wet pipe sprinkler protection for the entire building based on the building use and relative importance of the work conducted in the building. None of the critical valves for the partial sprinkler and standpipe system are electrically supervised against tamper. These valves should be electrically supervised to prevent tampering or inadvertent closing which would place the systems out of service. Sprinklers in the tunnel leading to Buildings 2 and 4 are located too far from the ceiling. These sprinklers are provided with non-approved, non-labeled "heat collectors" to facilitate actuation given their distance from the ceiling. Additional sprinklers should be provided in this area at the ceiling level and under obstructions as required. This is a minor finding. A standpipe system with outlets throughout the building is provided.

3.2.3 Fire Separations

Fire separation from a structural standpoint is generally good. However, fire dampers are not provided in the ventilation ducts as they pass through floors to the air handling units. This would permit vertical fire spread subsequently increasing occupant hazard and damage. This is a fire protection finding. A recommendation will be made to install fire dampers in the HVAC ducts at all critical penetrations. The lack of adequate fire separation for the exit stairs is addressed in Section 3.2.1.

3.2.4 Fire Extinguishers

Fire extinguishers provided for this building are placed well and are readily noticeable. Extinguishers in this building have been inspected within the last year. There were no findings in this category.

3.2.5 Emergency Lighting and Power

Emergency lighting is provided by wall mounted battery packs placed in the corridors, windowless work areas and stairtowers. Nearly all of the lighting units tested during the survey failed to operate. A minor finding will be listed to service all emergency lights in the building to ensure proper operation. Also, an additional emergency light will be required in Mechanical Room 037A. This is a windowless room and requires significant travel to reach the door to the corridor. This is also a minor finding.

3.2.6 Exit Signs

Additional exit signs or signs providing exit instructions should be installed in the corridor near Room 118 to direct exiting occupants to proceed directly to the outside through the foyer near this location. These signs will provide clear direction to occupants and ensure an orderly and timely evacuation. Emergency power is not provided for the exit signs in the building. A recommendation will be made to provide emergency power for these signs to ensure operation during interruption of normal power. This item is a fire protection finding.

3.2.7 Alarm System

The fire alarm system provided for this building is manufactured by the King Fisher Company model KFRTI-52. The system supervises the manual pull stations, and waterflow devices for the building. The system sounds an entire building evacuation alarm and alarms remotely at the base fire station. Back up power for the system is provided by batteries. Based on information obtained during the survey, there appears to be no provision for automatic elevator recall in the event of a fire alarm. The

existing freight elevator for the building is the only elevator in service and is subsequently used to transport personnel. Installation of automatic recall features including elevator lobby and elevator equipment room smoke detectors will be recommended. This feature is essential to protect the building occupants and provided fire department access. In addition, smoke detectors are also required in the HVAC ducts to provide for HVAC shut down during a fire to inhibit smoke spread. These recommendations will require a significant amount of physical modifications to complete. Fire and life safety will be upgraded by their installation.

3.2.8 Witnessing and Documentation of Testing

No actual system testing was performed or witnessed during this survey. Documentation of testing for the fire alarm system was not available and should be provided so that the reliability and operability of the system can be determined. The lack of documentation is a minor finding. In addition, the inspection certificate posted in the elevator indicated that the inspection for the unit has expired. The elevator should be inspected and a new certificate posted.

3.2.9 Fire Safety Summary

Building 20, Naval Surface Warfare Center has no hazards that pose an immediate threat to the occupants. However, the items identified in the means of egress, lack of a sprinkler system and lack of smoke detection and elevator recall will need to be addressed. The items identified in this report will require a significant amount of physical modification to correct. Based on the magnitude of the items identified, consideration should be given to the performance of an engineering evaluation to ascertain the most cost effective way to upgrade the building. As indicated previously, the firesafety of this building is considered to be less than adequate at this time.

3.3 Findings - Environmental Management

There was one environmental findings identified during this survey. The building is used primarily for office type operations and laboratory work.

3.3. 1 Air Pollution Control (Emission Sources)

There were no air pollution emission sources identified in this building.

3.3.2 Asbestos abatement

Data requested-not received. Did not observe any friable asbestos which presented a hazard

3.3.3. Water Pollution Control

There were no water pollutant emission sources identified at these locations.

3.3.4 Nonhazardous Waste Management

There is a paper recycling system in place at this location. Containers are located in designated areas throughout the building.

3.3.5 Hazardous Waste Management

In one of the laboratories there were several drums of waste chemicals that appeared to be waiting for pickup. The supervisor expressed discontent with the amount of time it took to be collected.

3.3.6 Underground storage tanks

Vents for undergound fuel tank noted. Per contact, PW has identified for testing. See Appendix B, Volume I.

3.3.7 PCB Management (Transformers)

Per contact PCBs are not utilized in the transformers.

3.3.8 Drinking Water

Could find not documentation for lead tests.

3.3.9 Pesticide Control

Pesticide control is provided by NAVSWC.

3.3.10 Environmental Management Summary

The environmental practices in this complex of buildings meet basic government criteria. The building and its operation as currently utilized do not present any observed environmental concerns.

3.4 Findings - Indoor Air Quality

3.4.1 Ventilation

Based on observations, the HVAC system works for this complex in the following manner.

The forced air system is distributed throughout the building by ceiling air vents and returns.

Heat is provided to the building complex via a steam pipe from the power house.

Cooling is provided via HVAC compressors in the yard,.

Make up air percentage was not known by the contacts.

3.4.2 Complaints

There were no known complaints regarding indoor air quality.

3.4.3 Potential Contamination Sources

The roof mounted exhaust for a fume hood is a potential source of contamination.

3.4.4 Maintenance

Contacts did not know and a request has been made obtain the information. Filters that were examined were clean.

APPENDIX A

FINDINGS

Finding No.: 20-01

Referenced Directive: NFPA 101 Section 28-2.5
NFPA 101 Section 5-5.1.4

Finding:

Exit stairs are separated by approximately 47% (220' separation with 464' diagonal) of the longest diagonal dimension of the building. For an unsprinklered building the minimum separation is 50% (232'). Unmitigated fire in this building could also severely impact testing and development activities.

Recommendation:

Install wet pipe sprinkler system throughout the building.

Estimated Abatement Cost = $ 300,000.00

RAC IIC; Moderate

Finding No.: 20-02

Referenced Directive: NFPA 101 Section 31-1.1

Finding:

There is no current occupant emergency plan or regular fire drills for this building.

Recommendation:

Generate OEP, conduct drills and train occupants as required by the referenced section.

Estimated Abatement Cost = $ 1000.00

RAC IIIB; Moderate

Finding No.: 20-03

Referenced Directive: NFPA 101 Section 5-2.2.3.6

Finding:

Stair 1 and 2 at first floor are not interrupted to make clear direction of egress. Occupants can continue to the basement bypassing level of exit discharge.

Recommendation:

Install gate or other physical means to indicate make clear direction of egress.

Estimated Abatement Cost = $ 500.00

RAC IIC; Moderate

Finding No.: 20-04

Referenced Directive: NFPA 101 Section 5-10.3.1

Finding:

Emergency power is not provided for exit signs in the building.

Recommendation:

Provide emergency power for exit signs to ensure operation during interruption of normal power.

Estimated Abatement Cost = $ 35000.00

RAC IIIB; Moderate

Finding No.: 20-05

Referenced Directive: NFPA 90A Section 4-4.1 b.

Finding:

Ventilation system is not provided with smoke detectors.

Recommendation:

Provide duct smoke detectors in air handling ducts as required.

Estimated Abatement Cost = $ 25000.00

RAC IIC; Moderate

Finding No.: 20-06

Referenced Directive: NFPA 101 Section 7-4
ANSI A17.1B

Finding:

Elevator is not provided with automatic recall. Elevator lobby and penthouse smoke detection is not provided

Recommendation:

Provide automatic recall upon activation of the fire alarm system or required smoke detectors.

Estimated Abatement Cost = $ 10,000.00

RAC IIC; Moderate

Finding No.: 20-07

Referenced Directive: NFPA 101 Section 7-2.1

Finding:

Air handler ducts are not provided with fire dampers. Ducts share common return shaft.

Recommendation:

Provide fire dampers at all points were ducts breach fire separation such as at shaft.

Estimated Abatement Cost = $ 40,000.00

RAC IIC; Moderate

Finding No.: 20-08

Referenced Directive: NFPA 101 Section 5-1.3.1
NFPA 101 Section 5-1.3.2

Finding:

Non fire rated doors are provided into Stairs 1 and 2 negating the fire resistance of the required exit stair. Fire resistance of exit enclosure is not maintained to point of exit discharge.

Recommendation:

Install fire rated and labeled doors and frames of at least 1.5 hour fire rating in all openings into these stairs. Provide 2 hour fire rated enclosure to point of exit discharge.

Estimated Abatement Cost = $ 10,000.00

RAC IIC; Moderate

Finding No.: 20-09

Referenced Directive: NFPA 13 Section 3-9.2.3

Finding:

Control valves for loading dock area sprinkler system are not tamper supervised.

Recommendation:

Provide electrical tamper supervision connected to the fire alarm system and the central station.

Estimated Abatement Cost = $ 5000.00

RAC IIIB; Moderate

Finding No.: 20-10

Referenced Directive: NFPA 101 Section 5-10.1.3

Finding:

Adequate exit signs are not provided on the first floor near room 118. Path to exit discharge to the outside is not clear.

Recommendation:

Install exit sign to make egress path apparent.

Estimated Abatement Cost = $ 500.00

RAC IIIC; Minor

Finding No.: 20-11

Referenced Directive: NFPA 101 Section 31-1.3.3

Finding:

Testing and maintenance records were not available for the fire alarm system. They are necessary to determine reliability and operability of the system.

Recommendation:

Maintain records on fire alarm system testing and maintenance so that system reliability and operability can be ascertained.

Estimated Abatement Cost = $ 100.00

Risk Code: RAC4***BCIII;Minor

Finding No.: 20-11

Referenced Directive: NFPA 101 Section 31-1.3.2

Finding:

Majority of emergency lighting units in the building did not light upon test.

Recommendation:

Test all units, repair as necessary.

Estimated Abatement Cost = $ 1000.00

RAC IIIC; Minor

Finding No.: 20-12

Referenced Directive: NFPA 101 Section 31-1.1.1

Finding:

Storage in exit access corridors obstructing means of egress in the second floor corridor.

Recommendation:

Remove all stored material to provide unimpeded access. Routinely inspect all areas to prevent recurrence.

Estimated Abatement Cost = $ 250

RAC IID; Minor

Finding No.: 20-13

Referenced Directive: NFPA 101 Section 31-1.3.10

Finding:

Elevator inspection certificate for Elevator 2 expired 7-90.

Recommendation:

Provide documentation of inspection/certification or have inspections/certifications conducted.

Estimated Abatement Cost = $ 500.00

RAC IIIC; Minor

Finding No.: 20-14

Referenced Directive: NFPA 13 Section 4-3.1

Finding:

Sprinklers are a minimum of 24" from ceiling in corridor between Building 20 an 25. Maximum distance is 12". Sprinklers are equipped with non-approved improvised "heat collectors" to facilitate activation.

Recommendation:

Locate sprinklers within required distance of ceiling and install additional sprinklers to provide adequate coverage for this area.

Estimated Abatement Cost = $ 2000.00

RAC IIIC; Minor

Finding No.: 20-15

Referenced Directive: NFPA 101 Section 28-2.9.1

Finding:

Mechanical Room 037A is windowless and not provided with emergency lighting.

Recommendation:

Install wall mounted battery pack unit in this area.

Estimated Abatement Cost = $ 350.00

RAC IIIC; Minor

Finding No.: 20-16

Referenced Directive: NFPA 45

Finding:

Hood F-20-38 exhaust directly onto the roof some 30' from the fresh air inlet

Recommendation:

Extend stack on hood to preclude potential for contamination of HVAC

Estimated Abatement Cost = $500

RAC IIIC-4 Minor

Finding No.: 20-17

Referenced Directive:

Finding: 29 CFR 1910.303

Power line passes low over SW corner of roof and is not barricaded - contact with a worker on the roof is possible

Recommendation:

Erect fence/barricade

Estimated Abatement Cost = $500

RAC ID-3 Moderate

Finding No.: 20-18

Referenced Directive: 29 CFR 1910.22

Finding:

Very poor housekeeping in Room 20-025

Recommendation:

Remove trash

Estimated Abatement Cost = Nil

RAC IIIC-4 Minor

Finding No.: 20-19

Referenced Directive: 29 CFR 1910.23

Finding:

Loose access panel in floor presents a tripping hazard outside Room 20-033

Recommendation:

Repair panel

Estimated Abatement Cost = $200

RAC IIIB-3 Moderate

Finding No.: 20-20

Referenced Directive: 29 CFR 1910.101

Finding:

15,000 PSI compressed air line not marked throughout run. Inadvertent opening of this line could cause severe injury

Recommendation:

Placard line throughout run

Estimated Abatement Cost = $500

RAC ID-3 Moderate

Finding No.: 20-21

Referenced Directive: 29 CFR 1910.303

Finding:

Newly added stairs in Vibration Laboratory expose users to 400V electrical circuits on bridge crane.

Recommendation:

Adjust stops on crane to keep it well out of reach of anyone on the stairs

Estimated Abatement Cost = $300

RAC IC-2 Serious

APPENDIX B
BUILDING PROFILE

BUILDING PROFILE

I. GENERAL BUILDING INFORMATION

1. Building name and address: Building 20 Naval Surface Warfare Center White Oak, MD	2. Building Number:
3. Building Contact: David Hensley (301) 394-1222	4. Number of stories of building: Above grade: 3 Below grade: 1
5. Lease information (if applicable): Lease expiration date: N/A Lessor :	6. Date of previous survey:
7. Previous findings not corrected:	8. Floors the Federal Government occupies: All
9. Height of highest federally occupied floors above the lowest level of fire department access (in feet): 48 FEET	10. Types of Federal occupancies on each floor (NFPA101 classifications): Industrial
11. Types of non-Federal hazardous occupancies on each floor: None	12. Approximate gross area per floor (Federally occupied floors): 15,000 SQUARE FEET
13. Number of Federal occupants: ******** Agency(ies) USN	

II. FIRE PROTECTION INFORMATION

1. Building name / address: Building 20 Naval Surface Warfare Center White Oak, MD.	14. Construction Type (NFPA 220 Classification): TYPE I (332) a. Describe floor/ceiling construction: Reinforced Concrete b. Describe roof construction:Built-up on reinforced concrete c. Describe column construction: Concrete encased steel
15. Location of significant fuel loads on Federally occupied floors: None	16. Describe fire-rated subdivision of floors: None
17. Fire suppression capability (describe as listed below): a. Sprinklers - location(s):Loading dock and dock office area. b. Waterflow alarm(s), type and location: Pressure switch, Retard chamber c. Control valves, type and typical location: PIV, Yard d. Valve tamper switches, type and typical location:None e. Standpipe - riser size, location, and number:4"Min.,throughout bldg. f. Location(s) and manufacturer / model of fixed CO_2, dry chemical and / or halon fire suppression systems:N/A g. Fire pump data: N/A Rated capacity (gpm): Rated net pressure (psi): Primary power supply: Secondary power supply:	Fire pump data(continued) Manufacturer: Supply static pressure: Discharge static pressure: Separate controller for fire pump and jockey pump? h. Water supply to building:Single feed i. Water supply information:Unavailable Test Date Hydrant location Static pressure(psi): Flow (gpm): Residual pressure(psi): Low hydraulic gradient where applicable (ft.):
18. Computer room fire protection (each location): Location 1: N/A a. Describe suppression system(s): b. Detection system: Appropriate type detectors for intended use: Type and manufacturer: Control equipment location: Control equipment manufacturer: Describe connection to building fire alarm system. c. Type of emergency lighting: d. Emergency power shutdown switches provided: How many and location in rooms: Separated switch for computer power and air conditioning? e. Fire extinguisher type (s) and number: f. Describe computer room enclosure (fire rating, construction and shielding):	Location 2: N/A a. Describe suppression system(s): b. Detection system: Appropriate type detectors for intended use: Type and manufacturer: Control equipment location: Control equipment manufacturer: Describe connection to building fire alarm system. c. Type of emergency lighting: d. Emergency power shutdown switches provided: How many and location in rooms: Separated switch for computer power and air conditioning? e. Fire extinguisher type (s) and number: f. Describe computer room enclosure (fire rating, construction and shielding):

19. Day Care Center: None a. Location: b. Describe exits: c. Describe sprinkler system: d. Fire Alarm/Detection System: Pull station locations: Smoke detector locations: Equipment manufacturers: Control equipment location: Describe connection to building fire alarm system:	20. Smoke detectors (not computer room detectors) None a. Location (s) b. Appropriate type for intended use: c. Type and manufacturer: d. Control equipment location: e. Control equipment manufacturer: f. Describe connection to building fire alarm system:
21. Heat detectors: None a. Location (s) b. Appropriate type for intended use: c. Type and manufacturer: d. Control equipment location: e. Control equipment manufacturer: f. Describe connection to building fire alarm system:	22. Other detectors: None a. Location (s) b. Appropriate type for intended use: c. Type and manufacturer: d. Control equipment location: e. Control equipment manufacturer: f. Describe connection to building fire alarm system:
23. Communication features: a. Type of fire alarm system - general, pre-signal, coded with limited number of rounds, etc.: General b. Central station (company name):Base fire department c. Describe emergency telephone system: None d. Describe secondary power source: Battery e. Control panel Information: Location:1st floor Manufacturer / model: King Fisher Model KFRTI-52 Operating voltage: 24 vdc f. Manual station locations:Near doors to stairs and discharge doors,corridors g. Style of alarm initiating circuit wiring:A(Assumed)	h. Type of alarm indicating appliances (visual and / or audible) and locations:Visual/Audible i. Style of alarm indicating circuit wiring: W(Assumed) j. Notification system: Entire bldg., floor, above and below or other: Entire Devices that actuate general alarm (list all types): Manual pull stations k. System interfaced with: Elevators:No Smoke control:No Electric door locks:N/A Other (describe): N/A
24. Emergency lighting: a. Type: Battery Packs b. Locations: Corridors,stairs,labs c. Secondary power source: N/A	25. Exit signs: a. Locations: Corridors, stair doors,labs b. Secondary power source: None
26. Emergency generator: None a. Power source:	b. Capacity: c. Location:
27. Means of egress: a. Number of exits: 2 b. Where do they discharge?First floor corridor c. Exit capacity: 346 d. Exit remoteness: Insufficient Maximum diagonal dimension of typical floor (identify for others if different than typical floors): 464 FT. Exit door separation distance: 220 FT. How is distance measured? Straight line	e. Exit access:Not rated f. Exit enclosure: Not rated g. Exit discharge protection:None h. Exit dimensions - width, tread, riser: Stair 1; 58",10.5",7.25" Stair 2; 46",10.5",7.5" i. Exit time calculations:N/A j. Handrails: Provided k. Dead ends: None l. Common paths of travel:None

<table>
<tr><td colspan="2">28. Elevator features:
a. Number of elevators: 1 freight
b. Emergency elevator operation:
- Phase I operation (automatic and manual recall)? None
- Phase II operation (firefighter's service)? None
- Designated recall level: N/A
- Alternate recall level: N/A
- What other alarms in building, other than elevator lobby smoke detectors, will recall elevators? N/A
c. Certificate date: Expired 7-90
d. Telephone within cab? Yes
Who answers telephone? Base line</td></tr>
<tr><td>29. Hazard of exposure buildings: None</td><td rowspan="2">30. Occupant emergency plan (OEP):None
a. Date of last revision / update: None
b. Are the persons designated in the plan current and have they had training? N/A
c. Does it contain procedures to evacuate handicapped individuals? N/A</td></tr>
<tr><td>31. Local fire department pre-fire plan:Yes</td></tr>
<tr><td>32. HVAC system design:
a. Source of heat:Steam Site-wide boilers
b. Source of chilled water:Physical Plant
c. Location of fans:Penthouse
d. Presence of fire dampers:None
e. Presence of duct smoke detectors:No
f. Return air routing:Corridor
g. Supply air routing:Duct
h. Smoke control features:None
i. Rated cable if used in plenum?N/A</td><td>33. Maintenance of fire protection equipment.
a. Report the general condition of the equipment as whether
maintenance records and frequency conform to appropriate
National Fire Protection Association (NFPA Standards:
- Fire extinguishers - Good
- Fire alarm - Unavailable
- Sprinklers - Unavailable
b. Who maintains which types of equipment:
- Fire extinguishers - Fire Dept.
- Fire alarm - Alarm Maintenance
- Sprinklers - Fire Dept.</td></tr>
<tr><td>34. Boiler inspection: N/A
a. Certificate(s) (who inspected?):
b. Date(s):</td><td>35. Locations of other special occupancies:
a. Laboratories: Testing labs throughout
b. Printing plants: N/A
c. Parking garages: N/A
d. Storage areas > 1000 square feet:N/A
e. Computer rooms: Floors 5 & 6
f. Telephone frame rooms: N/A
g. Child / Day care: N/A</td></tr>
</table>

FACILITY AND FIRE SAFETY SURVEY

OF

BUILDING 25

NAVAL SURFACE WARFARE CENTER

WHITE OAK, MARYLAND

Prepared By:

Events Analysis Inc.

NOTE: FSES DOES NOT APPLY TO THIS BUILDING

FACILITY AND FIRE SAFETY SURVEY

OF

BUILDING 25

NAVAL SURFACE WARFARE CENTER

WHITE OAK, MD

1.0 INTRODUCTION Under Contract No. N60921-88-D-0007, Task 0010, with the Naval Surface Warfare Center, Events Analysis, Inc. was tasked to provide Facility and Fire Safety and Occupational Health and Safety Surveys of selected Center facilities.

This report details the results of the Facility and Fire Safety Survey of the Administrative Buildings (1-5) , NAVSWC-White Oak, that was conducted on July 23, 1991, by Randolph Shearman and Leslie M White.

2.0 SURVEY METHODOLOGY

2.1 Opening Conference

The EVA survey representatives arrived on-site at Building 25 on July 03, 1991 and subsequently began the survey. An opening conference was held with Mr. David Hensley of the base fire department. During the opening conference the representatives reviewed the purpose of the visit and the procedures to be used during the conduct of the survey effort. Following this conference it was decided that Mr. Hensley would accompany the representatives on the survey.

2.2 Applicable Standards

During the conduct of the inspection, the following standards and guidelines were used to evaluate the facility and fire safety conditions at the aforementioned facility.

- o Military Handbook MIL-HDBK-1008A
- o Code of Federal Regulations, 29CFR1910 - General Industry Standards; and
- o National Fire Protection Association (NFPA) Codes.

2.3 Inspection Procedures

The actual walk-through survey consisted of observing the condition of facilities, inspecting the condition of equipment, the storage of materials, and any operations in progress that may affect the physical facility or Navy owned or leased equipment, plus the layout of the equipment/materials in the facilities as they relate to facility and fire safety. In addition, a review of the buildings fire safety features, e.g., fire detection/alarm systems, fire suppression systems (both fixed and portable), fire divisions and doors, emergency lighting and exit lights, and means of egress were conducted.

2.4 Description of Facilities

Building 25 is a three story 37,000 square feet per floor shop/fabricating building having offices on the first and second floor. Much of the first floor shop area is open to the second floor roof and provided

with natural ventilation for summer cooling. The basement of the building is used as a warehouse/distribution center for supplies for the base. The building with the exception of the crane bay areas is protected by an automatic wet pipe sprinkler system. This building is classified as an Industrial Occupancy by NFPA 101 and as a Group H Division 5 by MIL-HDBK-1008A criteria. The structural members are reinforced concrete and concrete encased steel resulting in an NFPA 220 Type II (222) and UBC Type II (F.R.) construction type.

3.0 RESULTS

Highlights of the facility and fire safety surveys are contained in this section. Section 3.1 highlights the facility safety findings, while section 3.2 highlights the fire safety findings.

3.1 Findings - Facility Safety Survey

Three facility safety findings were identified as a result of this survey. The supervisor of the HVAC shop should be commended for the control of hazardous materials in the shop. All were properly stowed, inventories were posted and MSDS's available.

3.2 Findings - Fire Safety Survey

There were fifteen fire safety findings and twelve minor fire safety findings identified during this survey. The major items identified during the survey concerned the lack of a total building sprinkler system, exit stair enclosure, and lack of fire separation for flammable liquid storage and application. Elevator recall and emergency power for the exit signs were also areas of concern. Minor findings include emergency lighting unit maintenance and lack of testing documentation for fire alarm testing. The addition of the sprinkler system to the entire building would greatly improve the fire and life safety of the building. Provision of proper exit stair enclosure will also enhance life safety. Based on the items identified during the survey, the fire safety of this building is less than adequate.

3.2.1 Means of Egress

The second floor of the building is served by one stair tower and one horizontal exit. The stairs discharge to the first floor corridor and the horizontal exit to the crane bay mezzanine. The stairs are 56" wide and are provided with handrails. The calculated occupant load based on NFPA 101 criteria would be approximately 200 persons for the second floor. The exits provide an adequate capacity of 351. The first floor and basement are provided with numerous exits discharging directly at grade level. These levels are sparsely occupied as they are primarily shop and storage areas. Three findings and three minor findings were identified. The first two findings were the lack of a fire rated enclosure for the exit stairs and horizontal exit from the second floor. Doors opening into the stair are non-fire rated and the stair discharges to the first floor corridor which is the level of exit discharge. A protected path is required to an exit discharge once the occupants enter the exit stair. The first floor corridor does not meet the criteria for a protected exit discharge area. The corridor serving the horizontal exit also does not meet the criteria. The third finding is the lack of an Occupant Emergency Plan. The plan currently consists of exit route maps posted in the corridors. A formal emergency plan was not available during the survey. Minor findings include narrow means of egress paths due to storage and an obstructed exit access door. Based upon the items identified during the survey, the means of egress for this building are not acceptable.

3.2.2 Sprinkler and Standpipe System

The building is protected by an automatic wet pipe sprinkler system with the primary exception of the second floor office area and the crane bay areas. A recommendation will be made to provide wet pipe sprinkler protection for the entire building based on the building use and relative importance of the

work conducted in the building. None of the critical valves for the partial sprinkler, pre-action sprinkler or standpipe system are electrically supervised against tamper. These valves should be electrically supervised to prevent tampering or inadvertent closing which would place the systems out of service. These items will be listed as findings. Minor findings include a blocked fire department connection and paint encrusted sprinklers in the paint shop. A standpipe system with outlets throughout the building is provided.

3.2.3 Fire Separations

Fire separation from a structural standpoint is generally good. However, six findings and two minor findings were identified. Flammable liquid storage area 1154 is not provided with a fire rated enclosure as required. The second and third findings include the lack of a fire rated enclosure for the paint spray booth and solvent tank respectively. Findings four and five address lack of curbing and labeled fire damper for the paint shop flammable liquid storage room. The last finding is the use of combustible PVC coated cables in the underfloor area of both first floor computer rooms. These cables should be replaced with rated cables or enclosed in conduit. Minor findings include an open flammable liquid storage cabinet vent and lack of labels on the first floor computer room doors. The lack of adequate fire separation for the exit stairs and horizontal exit is addressed in Section 3.2.1.

3.2.4 Fire Extinguishers

Fire extinguishers provided for this building are placed well and are readily noticeable. Extinguishers in this building have been inspected within the last year. The newly installed computer rooms on the first floor are not provided with fire extinguishers at all. A finding will be listed to require installation of extinguishers in these areas.

3.2.6 Emergency Lighting and Power

Emergency lighting is provided by wall mounted battery packs placed in the corridors, windowless work areas and stairtower. Nearly all of the lighting units tested during the survey failed to operate. A minor finding will be listed to service all emergency lights in the building to ensure proper operation.

3.2.6 Exit Signs

Additional exit signs or signs providing exit instructions should be installed in the second floor wire room and in the basement near room 25-045. These signs will provide clear direction to occupants and ensure an orderly and timely evacuation. Emergency power is not provided for the exit signs in the building. A recommendation will be made to provide emergency power for these signs to ensure operation during interruption of normal power. This item is a fire protection finding. Also, the exit signs in room 25-168 are not lit and the emergency power shut off button for room 25-166 is obstructed. These items are minor findings.

3.2.7 Alarm System

The fire alarm system provided for this building is manufactured by the King Fisher Company model KFRTI-52. The system supervises the manual pull stations, computer room suppression and detection systems, and waterflow devices for the building. The system sounds an entire building evacuation alarm and alarms remotely at the base fire station. Back up power for the system is provided by batteries. Based on information obtained during the survey, there appears to be no provision for automatic elevator recall in the event of a fire alarm. The existing freight elevator for the building is the only elevator in service and is subsequently used to transport personnel. Installation of automatic recall features including elevator lobby and elevator equipment room smoke detectors will be

recommended. This feature is essential to protect the building occupants and provide fire department access.

3.2.8 Witnessing and Documentation of Testing

No actual system testing was performed or witnessed during this survey. Documentation of testing for the fire alarm system was not available and should be provided so that the reliability and operability of the system can be determined. This is a minor finding.

3.2.9 Fire Safety Summary

Building 25, Naval Surface Warfare Center has no hazards that pose an immediate threat to the occupants. However, the items identified in the means of egress, lack of a complete sprinkler system, inadequate flammable liquid storage and lack of elevator recall will need to be addressed. The items identified in this report will require a significant amount of physical modification to correct. Based on the magnitude of the items identified, consideration should be given to the performance of an engineering evaluation to ascertain the most cost effective way to upgrade the building. As indicated previously, the firesafety of this building is less than adequate.

3.3 Findings - Environmental Management

There were two environmental findings identified during this survey. The building is undergoing renovation and contains some office space and shops are located in the basement.

3.3. 1 Air Pollution Control (Emission Sources)

There were no air pollution emission sources identified in this building.

3.3.2 Asbestos abatement

Data requested-not received. Did not observe any friable asbestos which presented a hazard

3.3.3. Water Pollution Control

There was one possible water pollutant emission sources identified, photo-lab equipment hooked up to drain into floor drain.

3.3.4 Nonhazardous Waste Management

There is a paper recycling system in place at this location. Containers are located in designated areas throughout the building.

3.3.5 Hazardous Waste Management

A considerable (6-700) gallons of solvents are stored in old machine room area. Waste oil tank outside building is leaking onto ground.

3.3.6 Underground storage tanks

Vents for undergound fuel tank noted. Per contact, PW has identified for testing.

3.3.7 PCB Management (Transformers)

Per contact PCBs are not utilized in the transformers.

3.3.8 Drinking Water

Could find not documentation for lead tests.

3.3.9 Pesticide Control

Pesticide control is provided by NAVSWC.

3.3.10 Environmental Management Summary

Leaking oil drum, storage of old materials detract from overall environment acceptability.

3.4 Findings - Indoor Air Quality

3.4.1 Ventilation

Escort could not gain access to HVAC spaces-not evaluated.

Basement passageways in shop area very hot (94F) due to room air conditioners exhausting into these spaces.

INDOOR AIR QUALITY READINGS

LOCATION	DATE	TIME	TEMP/F	RH/ %	CO/PPM	CO2/PPM
25/213	3-Jul	930	79	62	0	500
Comp Room	3-Jul	945	79	52		
25-168	3-Jul	1005	75	42		
Basement	3-Jul	1030	94	54	0	600
OAT	3-Jul	1100	84	52		

3.4.2 Complaints

Several employees complained about the heat in the basement shop area.

3.4.3 Potential Contamination Sources

None observed.

3.4.4 Maintenance
Unable to gain access - not observed.

A complete listing of all facility and fire safety findings identified during the survey is provided in Appendix A. A building profile for the building is presented in Appendix B.

APPENDIX A

FACILITY FIRE SAFETY FINDINGS

Finding No.: 25-01

Referenced Directive: NFPA 33 Section 3-3

Finding:

Spray booth in paint shop is not separated from other operations by one hour fire resistive construction. Doors of booth contain combustible filters.

Recommendation:

Install one hour fire resistive enclosure around spray booth.

Estimated Abatement Cost = $ 5000.00

RAC II C;Moderate

Finding No.: 25-02

Referenced Directive: NFPA 101 Section 31-1.1

Finding:

There is no current occupant emergency plan or regular fire drills for this building.

Recommendation:

Generate OEP, conduct drills and train occupants as required by the referenced section.

Estimated Abatement Cost = $ 1000.00

RAC IIIB; Moderate

Finding No.: 25-03

Referenced Directive: NFPA 30 Section 4-4.2.5

Finding:

Paint/flammable liquid storage room adjacent to paint shop is not provided with dikes to prevent spilled or burning liquids from entering shop area.

Recommendation:

Install dikes and drains as required to provide required performance and prevent liquid flow to shop area.

Estimated Abatement Cost = $ 3000.00

RAC IIIB; Moderate

Finding No.: 25-04

Referenced Directive: NFPA 101 Section 5-10.3.1

Finding:

Emergency power is not provided for exit signs in the building.

Recommendation:

Provide emergency power for exit signs to ensure operation during interruption of normal power.

Estimated Abatement Cost = $ 35000.00

RAC IIIB; Moderate

Finding No.: 25-05

Referenced Directive: NFPA 30 Section 4-4.2.4 and 4-4.1.2

Finding:

Opening in wall between flammable storage room and paint shop is provided with a non-labeled/approved fire damper.

Recommendation:

Provide labeled fire damper of at least 1.5 hour fire resistance in this opening.

Estimated Abatement Cost = $ 500.00

RAC IIIB; Moderate

Finding No.: 25-06

Referenced Directive: NFPA 101 Section 7-4
ANSI A17.1B

Finding:

Elevator is not provided with automatic recall. Elevator lobby and machine room smoke detection is not provided

Recommendation:

Provide automatic recall upon activation of the fire alarm system or required smoke detectors.

Estimated Abatement Cost = $ 10,000.00

RAC IIC; Moderate

Finding No.: 25-07

Referenced Directive: NFPA 75 Section 5-3.2

Finding:

Fire extinguishers are not provided for computer rooms 25-166 and 25-168.

Recommendation:

Provide fire extinguishers of the proper number and type for these areas.

Estimated Abatement Cost = $ 400.00

RAC IIC; Moderate

Finding No.: 25-08

Referenced Directive: NFPA 101 Section 5-1.3.1
NFPA 101 Section 5-1.3.2

Finding:

Non fire rated doors are provided into Stair 1 negating the fire resistance of the required exit stair. Fire resistance of exit enclosure is not maintained to point of exit discharge.

Recommendation:

Install fire rated and labeled doors and frames in all openings into these stairs. Provide 1 hour fire rated enclosure to point of exit discharge.

Estimated Abatement Cost = $ 5,000.00

RAC IIC; Moderate

Finding No.: 25-09

Referenced Directive: MIL-HDBK-1008A Section 6.1.3 d.
NFPA 101 Section 5-7.2 c.

Finding:

Building is not provided with automatic wet pipe sprinkler protection throughout. Unmitigated fire in this building could severely impact building activities thus impacting research projects being conducted.

Recommendation:

Provide automatic wet pipe sprinkler protection for the entire building.

Estimated Abatement Cost = $200,000.00

RAC IIC; Moderate

Finding No.: 25-10

Referenced Directive: NFPA 13 Section 3-9.2.3

Finding:

Control valves for existing wet pipe and pre-action sprinkler systems are not tamper supervised.

Recommendation:

Provide electrical tamper supervision connected to the fire alarm system and the central station.

Estimated Abatement Cost = $ 5000.00

RAC IIIB; Moderate

Finding No.: 25-11

Referenced Directive: NFPA 75 Section 4-2.1 and 2-6

Finding:

Computer cables in underfloor areas in computer rooms 25-166 and 25-168 are PVC coated and not fire resistant rated.

Recommendation:

Replace cables with approved and listed cables or enclose in conduit.

Estimated Abatement Cost = $ 5000.00

RAC IIC; Moderate

Finding No.: 25-12

Referenced Directive: NFPA 72A Section 2-6.7.2

Finding:

Main electrical switch for computer rooms fire detection and alarm system located in room 25-166 is not locked or secured to prevent disconnecting of power by non-authorized personnel.

Recommendation:

Provide lock for switch to prevent turning off of power to computer room fire alarm/detection systems.

Estimated Abatement Cost = $ 25.00

RAC IIC; Moderate

Finding No.: 25-14

Referenced Directive: NFPA 101 Section 5-1.3.1 and 5-1.3.2

Finding:

Horizontal exit from second floor office area is not provided with fire rated enclosure to point of discharge. Path of travel proceeds through non-fire separated shop area before discharging into separate fire area.

Recommendation:

Provide 1 hour fire rated corridor from exit door in second floor office area to point of discharge in crane bay area.

Estimated Abatement Cost = $ 2000.00

RAC IIC; Moderate

Finding No.: 25-15

Referenced Directive: NFPA 33 Section 8-8

Finding:

Solvent cleaning tank located adjacent to flammable storage room may contain flammable solvent. Tank is not provided with fire separation.

Recommendation:

Ascertain flash point of solvent used in this tank and provide protection per referenced directive or use solvent with low flash point.

Estimated Abatement Cost = $ 1000.00

RAC IIIB; Moderate

Finding No.: 25-16

Referenced Directive: NFPA 30 Section 4-4

Finding:

Storage area 1154 in crane bay contains greater than 200 gallons of flammable liquids in open air enclosure.

Recommendation:

Provide storage area meeting requirements of Section 4-4 for these flammable liquids.

Estimated Abatement Cost = $ 5000.00

RAC IIC; Moderate

Finding No.: 25-17

Referenced Directive: NFPA 101 Section 5-10.1.3

Finding:

Adequate exit signs are not provided in the second floor wire shop and in the basement near Room 25-045.

Recommendation:

Install exit signs to make egress path apparent.

Estimated Abatement Cost = $ 500.00

RAC IIIC; Minor

Finding No.: 25-18

Referenced Directive: NFPA 101 Section 31-1.3.3

Finding:

Testing and maintenance records were not available for the fire alarm system. They are necessary to determine reliability and operability of the system.

Recommendation:

Maintain records on fire alarm system testing and maintenance so that system reliability and operability can be ascertained.

Estimated Abatement Cost = $ 100.00

RAC IIIC; Minor

Finding No.: 25-19

Referenced Directive: NFPA 101 Section 31-1.3.2

Finding:

Majority of emergency lighting units in the building did not light upon test including computer room units.

Recommendation:

Test all units, repair as necessary.

Estimated Abatement Cost = $ 1000.00

RAC IIIC; Minor

Finding No.: 25-20

Referenced Directive: NFPA 101 Section 31-1.1.1

Finding:

Storage in exit access corridors obstructing means of egress in the second floor corridor near Room 25-209.

Recommendation:

Remove all stored material to provide unimpeded access. Routinely inspect all areas to prevent recurrence.

Estimated Abatement Cost = $ 250

RAC IID; Minor

Finding No.: 25-21

Referenced Directive: NFPA 101 Section 31-1.3.2

Finding:

Exit signs in computer room 25-168 are not operable.

Recommendation:

Service units to ensure proper illumination.

Estimated Abatement Cost = $ 200.00

RAC IIIC; Minor

Finding No.: 25-22

Referenced Directive: NFPA 13A Section 2-8.1

Finding:

Fire department connection located in outside crane area is obstructed by stored scrap metal.

Recommendation:

Remove obstructing material to provide unobstructed access.

Estimated Abatement Cost = $ 250.00

RAC IIIC; Minor

Finding No.: 25-23

Referenced Directive: NFPA 13 Section 3-11.2.2

Finding:

Sprinklers in paint spray booth in paint shop are covered with overspray from painting operations. Paint build-up will delay activation.

Recommendation:

Replace sprinklers and provide protection such as lightweight plastic bags. Replace bags upon build-up of overspray.

Estimated Abatement Cost = $ 350.00

RAC IIIC; Minor

Finding No.: 25-24

Referenced Directive: NFPA 101 Section 5-3.4.1

Finding:

Exit access aisles in Room 25-213 are less than 36" in width.

Recommendation:

Remove obstructions to provide a minimum of 36" clear travel area.

Estimated Abatement Cost = $ 200

RAC (IIID); Negligible

Finding No.: 25-25

Referenced Directive: NFPA 75 Section 2-1.3

Finding:

Doors to corridors from computer rooms 25-166 and 25-168 are substantial but are not labeled as fire rated doors.

Recommendation:

Provide documentation of testing and approval or replace doors with ones of one hour fire rating.

Estimated Abatement Cost = $ 1500.00

RAC IIIC; Minor

Finding No.: 25-26

Referenced Directive: NFPA 30 Section 4-3.2 (b)

Finding:

Flammable liquid storage cabinet in wood shop located on mezzanine storage are near ceiling tiles has plug missing from vent hole. Hole should be sealed.

Recommendation:

Install plug in vent hole.

Estimated Abatement Cost = $25.00

RAC IIID; Negligible

Date Identified: July 03, 1991

Finding No.: 25-27

Referenced Directive: NFPA 75 Section 7-3

Finding:

Emergency power shut off for computer room 25-166 is located in locked plastic enclosure. It is not readily accessible in the event of an emergency.

Recommendation:

Remove locked box arrangement to provide unrestricted access. Relocate switch if required.

Estimated Abatement Cost = $100.00

RAC IIIC; Minor

Finding No.: 25-28

Referenced Directive: NFPA 101 Section 5-1.7.3

Finding:

Exit door at rear of room 25-168 is obstructed by computer equipment.

Recommendation:

Relocate equipment to facilitate clear width of exit.

Estimated Abatement Cost = $500.00

RAC IIIC; Minor

Finding No.: 25-29

Referenced Directive:

Finding:

Dike around tank labeled "Waste Cutting Oil Tank" filled with water and oil and oil is running out onto ground. (Located by Servemart loading dock)

Recommendation:

Remove tank if no longer required and clean up contaminated soil

Estimated Abatement Cost = $2000

RAC IVA-3 Moderate (Risk is to the environment)

Finding No.: 25-30

Referenced Directive:

Finding:

Locker 1154 in old machine shop area contains 6-700 gallons of solvent and Locker 1152 contains acids. Areas are diked but material appears to be unused for some time.

Recommendation:

Return to supply or dispose of

Estimated Abatement Cost = $500

RAC IIC-3 Moderate

Finding No.: 25-31

Referenced Directive:

Finding:

Kodamatic 42 Processor (Second floor photo lab) has a hose that empties (what?) into a floor drain

Recommendation:

Determine if drainage system and materials is environmentally acceptable

Estimated Abatement Cost = Nil

RAC IIC-4 Minor (Risk is to the environment)

Finding No.: 25-32

Referenced Directive: 29CFR 1910.111

Finding:

Tank of Anhydrous Ammonia stored in Blueprint Room (25-201E)

Recommendation:

Remove tank to an outside storage area and plumb for distribution to blueprint room

Estimated Abatement Cost = $1000

RAC IIIC-4 Minor

Finding No.: 25-33

Referenced Directive: 29CFR 1910.252

Finding:

Makeshift canopy hood over welding area in basement pipefitting shop does not appear to have the attributes required to capture fumes adequately.

Recommendation:

Perform capture and flow test on this hood and replace if required

Estimated Abatement Cost = $300 for testing

RAC

APPENDIX B
BUILDING PROFILE

BUILDING PROFILE

I. GENERAL BUILDING INFORMATION

1. Building name and address: Building 25 Naval Surface Warfare Center White Oak, MD	2. Building Number:
3. Building Contact: David Hensley (301) 394-1222	4. Number of stories of building: Above grade: 2 Below grade: 1
5. Lease information (if applicable): Lease expiration date: N/A Lessor :	6. Date of previous survey:
7. Previous findings not corrected:	8. Floors the Federal Government occupies: All
9. Height of highest federally occupied floors above the lowest level of fire department access (in feet): 40 FEET	10. Types of Federal occupancies on each floor (NFPA101 classifications): Industrial
11. Types of non-Federal hazardous occupancies on each floor: None	12. Approximate gross area per floor (Federally occupied floors): 37,000 SQUARE FEET
13. Number of Federal occupants: 235 Agency(ies) USN	

II. FIRE PROTECTION INFORMATION

1. Building name / address: Building 25 Naval Surface Warfare Center White Oak, MD.	14. Construction Type (NFPA 220 Classification): TYPE I (332) a. Describe floor/ceiling construction: Reinforced Concrete b. Describe roof construction:Built-up on reinforced concrete c. Describe column construction: Concrete encased steel
15. Location of significant fuel loads on Federally occupied floors: Basement storage areas	16. Describe fire-rated subdivision of floors: None
17. Fire suppression capability (describe as listed below): a. Sprinklers - location(s):Entire building except crane bay areas and second floor,Pre-action in computer rooms b. Waterflow alarm(s), type and location: Pressure switch, Retard chamber c. Control valves, type and typical location: PIV, Yard,OS&Y Riser d. Valve tamper switches, type and typical location:None e. Standpipe - riser size, location, and number:4"Min.,throughout bldg. f. Location(s) and manufacturer / model of fixed CO_2, dry chemical and / or halon fire suppression systems:N/A g. Fire pump data: N/A Rated capacity (gpm): Rated net pressure (psi): Primary power supply: Secondary power supply:	Fire pump data(continued) Manufacturer: Supply static pressure: Discharge static pressure: Separate controller for fire pump and jockey pump? h. Water supply to building:Single feed each for wet pipe and pre-action systems i. Water supply information:Unavailable Test Date Hydrant location Static pressure(psi): Flow (gpm): Residual pressure(psi): Low hydraulic gradient where applicable (ft.):

18. Computer room fire protection (each location):

Location 1: Room 25-168
a. Describe suppression system(s):Pre-action sprinklers
b. Detection system: Yes
Appropriate type detectors for intended use: Yes
Type and manufacturer:Ionization/Simplex
Control equipment location: Room 25-166
Control equipment manufacturer:Simplex
Describe connection to building fire alarm system.
Connected
c. Type of emergency lighting: Battery packs
d. Emergency power shutdown switches provided: Yes
How many and location in rooms: 2-Near doors
Separated switch for computer power and air conditioning? Yes
e. Fire extinguisher type (s) and number: None
f. Describe computer room enclosure (fire rating, construction and shielding): 1 hour with non-labeled doors, not shielded

Location 2: Room 25-166
a. Describe suppression system(s):Pre-action sprinklers
b. Detection system: Yes
Appropriate type detectors for intended use: Yes
Type and manufacturer:Ionization/Simplex
Control equipment location: Room 25-166
Control equipment manufacturer: Simplex
Describe connection to building fire alarm system.
Connected
c. Type of emergency lighting: Battery packs
d. Emergency power shutdown switches provided: Yes
How many and location in rooms: 1-outside exit door
Separated switch for computer power and air conditioning? Yes
e. Fire extinguisher type (s) and number: None
f. Describe computer room enclosure (fire rating, construction and shielding): 1 hour with non-labeled doors, not shielded

19. Day Care Center: None
a. Location:
b. Describe exits:
c. Describe sprinkler system:
d. Fire Alarm/Detection System:
Pull station locations:
Smoke detector locations:
Equipment manufacturers:
Control equipment location:
Describe connection to building fire alarm system:

20. Smoke detectors (not computer room detectors) None
a. Location (s)
b. Appropriate type for intended use:
c. Type and manufacturer:
d. Control equipment location:
e. Control equipment manufacturer:
f. Describe connection to building fire alarm system:

21. Heat detectors: None
a. Location (s)
b. Appropriate type for intended use:
c. Type and manufacturer:
d. Control equipment location:
e. Control equipment manufacturer:
f. Describe connection to building fire alarm system:

22. Other detectors: None
a. Location (s)
b. Appropriate type for intended use:
c. Type and manufacturer:
d. Control equipment location:
e. Control equipment manufacturer:
f. Describe connection to building fire alarm system:

23. Communication features:

a. Type of fire alarm system - general, pre-signal, coded with limited number of rounds, etc.: General
b. Central station (company name):Base fire department
c. Describe emergency telephone system: None
d. Describe secondary power source: Battery
e. Control panel Information:
Location:1st floor
Manufacturer / model: King Fisher Model KFRTI-52
Operating voltage: 24 vdc
f. Manual station locations:Near exit doors ,corridors
g. Style of alarm initiating circuit wiring:A(Assumed)
h. Type of alarm indicating appliances (visual and / or audible) and locations:Visual/Audible
i. Style of alarm indicating circuit wiring: W(Assumed)
j. Notification system: Entire bldg., floor, above and below or other: Entire
Devices that actuate general alarm (list all types): Manual pull stations,Waterflow,computer room detectors
k. System interfaced with:
Elevators:No
Smoke control:No
Electric door locks:N/A
Other (describe): N/A

24. Emergency lighting:
a. Type: Battery Packs
b. Locations: Corridors,stairs,shop/storage areas
c. Secondary power source: N/A

25. Exit signs:
a. Locations: Corridors, Near stairs,shop/storage areas
b. Secondary power source: None

26. Emergency generator: None
a. Power source:
b. Capacity:
c. Location:

27. Means of egress:

a. Number of exits: 2 from second floor, multiple around perimeter for basement and first floors
b. Where do they discharge?Second floor to first floor corridor and crane bay mezzanine area,Remainder outside at ground level
c. Exit capacity: 351
d. Exit remoteness: Adequate
Maximum diagonal dimension of typical floor (identify for others if different than typical floors): 436 FT.
Exit door separation distance: 408 FT.
How is distance measured? Straight line
e. Exit access:Not rated
f. Exit enclosure: Not rated
g. Exit discharge protection:None
h. Exit dimensions - width, tread, riser: Stair 1; 56",10.0",7.5"
i. Exit time calculations:N/A
j. Handrails: Provided
k. Dead ends: None
l. Common paths of travel:None

28. Elevator features:
a. Number of elevators: 1 freight
b. Emergency elevator operation:
- Phase I operation (automatic and manual recall)? None
- Phase II operation (firefighter's service)? None
- Designated recall level: N/A
- Alternate recall level: N/A
- What other alarms in building, other than elevator lobby smoke detectors, will recall elevators? N/A
c. Certificate date: Issued 6-91
d. Telephone within cab? Yes
Who answers telephone? Base line

29. Hazard of exposure buildings: None

31. Local fire department pre-fire plan:Yes

30. Occupant emergency plan (OEP):None
a. Date of last revision / update: None
b. Are the persons designated in the plan current and have they had training? N/A
c. Does it contain procedures to evacuate handicapped individuals? N/A

32. HVAC system design:
a. Source of heat:Steam Site-wide boilers
b. Source of chilled water:Physical Plant
c. Location of fans:Outside ground level
d. Presence of fire dampers:None
e. Presence of duct smoke detectors:None
f. Return air routing:Duct
g. Supply air routing:Duct
h. Smoke control features:None
i. Rated cable if used in plenum?N/A

33. Maintenance of fire protection equipment.
a. Report the general condition of the equipment as whether
maintenance records and frequency conform to appropriate
National Fire Protection Association (NFPA Standards:
- Fire extinguishers - Good
- Fire alarm - Unavailable
- Sprinklers - Unavailable
b. Who maintains which types of equipment:
- Fire extinguishers - Fire Dept.
- Fire alarm - Alarm Maintenance
- Sprinklers - Public Works

34. Boiler inspection: N/A
a. Certificate(s) (who inspected?):
b. Date(s):

35. Locations of other special occupancies:
a. Laboratories: N/A
b. Printing plants: N/A
c. Parking garages: N/A
d. Storage areas > 1000 square feet: Basement
e. Computer rooms: Rooms 25-166/168
f. Telephone frame rooms: N/A
g. Child / Day care: N/A