

U.S.C.G. Merchant Marine Exam

DDE-Unlimited HP

Q623 Engineering Safety-Environmental Protection

(Sample Examination)

Choose the best answer to the following Multiple Choice Questions

1. Which abbreviation represents the height of the center of buoyancy?

- (A) BM
- (B) CB
- (C) BK
- (D) KB

If choice D is selected set score to 1.

2. Which of the methods shown in the illustration is the correct way to fit shoring? Illustration SF-0016

- (A) A
- (B) B
- (C) C
- (D) D

If choice A is selected set score to 1.

3. Which of the devices listed would be safe to use in a compartment with insufficient oxygen?

- (A) Wet handkerchief.
- (B) Self-contained breathing apparatus.
- (C) Dust or gas mask.
- (D) Canister type mask.

If choice B is selected set score to 1.

4. Which of the following statements is true concerning carbon dioxide when used as a fire extinguishing agent?

- (A) Carbon dioxide should be applied slowly to a large engine room fire.
- (B) Its total cooling effect is far greater than water.
- (C) Its smothering effect is excellent for class "B" fires.
- (D) Carbon dioxide is corrosive when exposed to fire.

If choice C is selected set score to 1.

5. The most critical part of the bunkering operations, which can result in an oil spill, is when the _____.

- (A) pumping operation is first started
- (B) tanks are being topped off
- (C) system is being lined up
- (D) hose joints are made up

If choice B is selected set score to 1.

6. The spreading of fire as a result of heat being carried through a vessel's ventilation system is an example of heat transfer by _____.

- (A) conduction
- (B) convection
- (C) radiation
- (D) windage

If choice B is selected set score to 1.

7. Good housekeeping on a vessel prevents fires by _____.

- (A) allowing better access in an emergency
- (B) eliminating potential fuel sources
- (C) eliminating trip hazards
- (D) improving personnel qualifications

If choice B is selected set score to 1.

8. Manufacturers of self-contained breathing apparatus use color-coded face pieces to indicate different sizes. Which of the following statements is true concerning the colors of SCBA face pieces?

- (A) Size "Small" is green.
- (B) Size "Large" (standard) is black.
- (C) Size "Extra Large" is red.
- (D) All of the above.

If choice D is selected set score to 1.

9. Paints and solvents used aboard a vessel should be _____.

- (A) drained into a common container after each use
- (B) returned to the paint locker after each use
- (C) stowed safely at the work site until work is completed
- (D) covered with a fine mesh screen to protect from ignition sources

If choice B is selected set score to 1.

10. When preparing to pump flammable liquids with a centrifugal pump, you should _____.

- (A) draw a small quantity of liquid to prime the pump
- (B) check for gland leakage and any fire hazard
- (C) have a standby pump running with the discharge valve closed
- (D) lift the relief valve by hand to check its operation

If choice B is selected set score to 1.

11. Life jackets should be stowed in _____.

- (A) the forepeaks
- (B) the pump room
- (C) readily accessible spaces
- (D) locked watertight containers

If choice C is selected set score to 1.

12. The upper explosive limit (UEL) of a mixture of flammable vapors and air is defined as _____.

- (A) that concentration above which there is just enough flammable vapor to produce an explosion
- (B) that concentration above which the mixture is too rich to burn
- (C) the percentage of flammable vapor by volume in air sufficient to create an explosion
- (D) the percentage of oxygen present in the air sufficient to support combustion

If choice B is selected set score to 1.

13. What information can be obtained from a marine chemist's certificate on a tank barge?

- (A) The number of fire extinguishers required onboard.
- (B) The tanks which are safe to enter when the certificate was issued.
- (C) The barge's stability information.
- (D) The quality of the barge's cargo.

If choice B is selected set score to 1.

14. Progressive flooding in the engine room may be minimized by securing watertight boundaries and _____.

- (A) transferring reserve feed water
- (B) evacuating the engine room
- (C) pumping out flooded compartments
- (D) dumping fuel oil

If choice C is selected set score to 1.

15. If a fire occurs in an electric cable, in which the inner layers of insulation, or the insulation covered by armor is burning, you should _____.

- (A) secure power to the cable
- (B) cut the cable with an insulated cable cutter
- (C) separate the two ends
- (D) all of the above

If choice D is selected set score to 1.

16. Which of the following statements is true concerning Halon 1301 fire extinguishing equipment?

- (A) Halon extinguishes the fire by smothering action.
- (B) The agent cannot be used on electrical fires because it leaves a residue.
- (C) The agent is highly toxic at normal room temperature.
- (D) For portable extinguishers, the agent is only available in a 2 pound unit.

If choice D is selected set score to 1.

17. If a life raft should capsize, _____.

- (A) climb onto the bottom
- (B) swim away from the raft
- (C) right the raft using the righting straps
- (D) inflate the righting bag

If choice C is selected set score to 1.

18. Bunker "C" is classified as a grade _____.

- (A) "A" liquid
- (B) "B" liquid
- (C) "E" liquid
- (D) "D" liquid

If choice C is selected set score to 1.

19. You are at sea in an inflatable life raft. In high latitudes, the greatest danger is _____.

- (A) collapse of the raft due to cold temperatures
- (B) asphyxiation due to keeping the canopy closed
- (C) hypothermia caused by cold temperature
- (D) starvation

If choice C is selected set score to 1.

20. In accordance with 46 CFR Subchapter W, life jackets must be stowed where?

- (A) Each lifeboat.
- (B) Each manned watch station.
- (C) Each fire station.
- (D) Mess room.

If choice B is selected set score to 1.

21. When fighting a liquefied natural gas fire, you should _____.

- (A) secure the source of gas, then extinguish the fire
- (B) extinguish the fire, then secure the source of gas
- (C) use only carbon dioxide
- (D) use only dry chemical

If choice A is selected set score to 1.

22. The external flotation bladder on an immersion suit should be inflated _____.

- (A) before you enter the water
- (B) after you enter the water
- (C) after one hour in the water
- (D) after you notice that your suit is losing buoyancy

If choice B is selected set score to 1.

23. The weight of the liquid displaced by a vessel floating in sea water is equal to the _____.

- (A) displaced submerged volume
- (B) weight required to sink the vessel
- (C) total weight of the vessel
- (D) reserve buoyancy

If choice C is selected set score to 1.

24. While retrieving the survival craft, the engine should be stopped _____.

- (A) when the craft clears the water
- (B) when the cable has been attached
- (C) on approach to the platform
- (D) at the embarkation

If choice A is selected set score to 1.

25. The highest concentration of a harmful substance to which a person may be exposed without danger to health, is termed the _____.

- (A) vapor pressure
- (B) tolerance point
- (C) threshold limit value
- (D) odor threshold

If choice C is selected set score to 1.

26. Victual waste is _____.

- (A) the final waste product of a manufacturing process
- (B) the resultant sludge that is collected after water washing a boiler
- (C) the final discharge of sewage treatment plants
- (D) any garbage that comes from food or food provisions

If choice D is selected set score to 1.

27. To activate an air regeneration canister on a survival craft, you _____.

- (A) put it into a container of water
- (B) tear off the tabs on the canister
- (C) turn it upside down
- (D) push "on" button

If choice B is selected set score to 1.

28. You may improve a vessel's stability by _____.

- (A) keeping at least one fuel tank empty for slops
- (B) keeping the fuel tanks at least half full
- (C) increasing the free surface effect
- (D) keeping the fuel tanks topped off

If choice D is selected set score to 1.

29. If the cause of severe list or trim of a vessel is due to off-center ballast, counter-flooding into empty tanks will _____.

- (A) increase list or trim
- (B) increase the righting arm
- (C) increase the righting moment
- (D) decrease list or trim

If choice D is selected set score to 1.

30. To prevent the spread of fire by convection you should _____.

- (A) cool the bulkhead around the fire
- (B) shut off electrical power
- (C) close all openings to the area
- (D) remove combustibles from direct exposure

If choice C is selected set score to 1.

31. In the event of a fire, the doors to a stair tower must be closed to prevent the spread of fire by _____.

- (A) convection
- (B) conduction
- (C) radiation
- (D) ventilation

If choice A is selected set score to 1.

32. U.S. flag ships may obtain an Oil Record Book from the _____.

- (A) Environmental Protection Agency
- (B) U.S. Customs Agency
- (C) local MSO/COTPs/MIO's
- (D) local courthouse

If choice C is selected set score to 1.

33. Span gas is used aboard liquefied natural gas carriers to _____.

- (A) odorize the cargo
- (B) inert the barrier spaces
- (C) calibrate the gas leak detectors
- (D) detect leaks in cargo piping

If choice C is selected set score to 1.

34. Stability is determined principally by the relationship of the center of gravity and the _____.

- (A) keel
- (B) center of buoyancy
- (C) center of flotation
- (D) aft perpendicular

If choice B is selected set score to 1.

35. An oxygen indicator will detect _____.

- (A) the presence of harmful amounts of carbon monoxide
- (B) concentrations of explosive gas
- (C) an oxygen deficiency in a space
- (D) all of the above

If choice C is selected set score to 1.

36. A large fire has developed in the HFO centrifuge room accessed by door "E". To combat the fire you should _____ . Illustration SF-0013

- (A) only need to set up a hose team to cool the door, then open the door and extinguish the fire using a type B-II extinguisher
- (B) advance the hose team into the room without any additional preparatory action
- (C) cool adjoining horizontal and vertical surfaces before opening the door to extinguish the fire
- (D) keep the door tightly closed until all the oil has been consumed by the fire

If choice C is selected set score to 1.

37. A flat block placed under the end of a shore for the purpose of distributing pressure is referred to as a _____ .

- (A) strong back
- (B) shole
- (C) shore foot
- (D) butt piece

If choice B is selected set score to 1.

38. After ballasting a fuel tank, which of the listed valves should you close FIRST?

- (A) Sea suction valve
- (B) Tank manifold filling valve
- (C) Deck filling valve
- (D) Pump discharge valve

If choice A is selected set score to 1.

39. One of the main concerns when fighting a galley fire is _____ .

- (A) the loss of stability
- (B) contaminating food with extinguishing agent
- (C) the igniting of a grease fire in the range hood ventilation system
- (D) spreading of fire through the engineering space

If choice C is selected set score to 1.

40. The airborne concentrations of substances (such as hydrogen sulfide) under which nearly all workers may be repeatedly exposed without adverse effects are called _____ .

- (A) exposure limits
- (B) concentration limits
- (C) threshold limit values
- (D) substance limit values

If choice C is selected set score to 1.

41. The Pollution Prevention Regulations, (33 CFR Subchapter O) require a meeting before starting any oil transfer operation. That meeting must be between which of the following people?

- (A) person in charge of the oil transfer operations on the vessel and the person in charge of the oil transfer operations at the facility
- (B) master of the vessel and the terminal superintendent
- (C) terminal supervisor, master of the vessel and the Coast Guard
- (D) master and chief engineer of the vessel and the terminal supervisor

If choice A is selected set score to 1.

42. You are in compartment "A", shown in the illustration, and suspect a fire in compartment "B". In order to check for and confirm the fire in compartment "B" you should _____. Illustration SF-0005

- (A) feel the bulkhead
- (B) tap the bulkhead
- (C) open the watertight door
- (D) move a lighted candle along watertight door seal

If choice A is selected set score to 1.

43. In a typical automatic fire alarm system, all zone circuits are always connected _____.

- (A) to the detecting cabinet
- (B) to the trouble alarm supervising resistor
- (C) in parallel
- (D) in series

If choice A is selected set score to 1.

44. The wooden plug fitted tightly in the vent of a damaged tank may prevent the tank from _____.

- (A) collapsing
- (B) developing free surface moments
- (C) developing free surfaces
- (D) filling completely

If choice D is selected set score to 1.

45. When pumping sour crude, which gas should be tested for prior to entering the cargo pump room to repair a leaking pump?

- (A) Benzene
- (B) Carbon monoxide
- (C) Hydrogen sulfide
- (D) Tetraethyl lead

If choice C is selected set score to 1.

46. When checking the level of a volatile liquid in a tank on the weather deck of a tank vessel, you should position yourself _____.

- (A) on the windward side of the opening
- (B) on the leeward side of the opening
- (C) at a right angle to the wind direction
- (D) so that the obstruction of your body will protect you from the fumes

If choice C is selected set score to 1.

47. In figure 1 of the illustration, fire would spread to compartment "B" by _____. Illustration SF-0013

- (A) convection
- (B) radiation
- (C) conduction
- (D) impingement

If choice C is selected set score to 1.

48. A high velocity fog nozzle will produce the most effective spray pattern when the water pressure is not less than _____.

- (A) 35 psi (241.3 kPa)
- (B) 60 psi (413.6 kPa)
- (C) 75 psi (517.0 kPa)
- (D) 100 psi (689.4 kPa)

If choice D is selected set score to 1.

49. Recharging a previously used cartridge-operated dry chemical fire extinguisher is accomplished by _____.

- (A) replacing the propellant cartridge and refilling it with powder
- (B) authorized fire equipment servicing personnel only
- (C) recharging the cartridge and refilling it with powder
- (D) puncturing the cartridge seal after installation

If choice A is selected set score to 1.

50. A liquid, as listed on a Material Safety Data Sheet (MSDS), having a flash point below 100°F (37.78°C) is called a/an _____.

- (A) explosive liquid
- (B) combustible liquid
- (C) flammable liquid
- (D) viscous liquid

If choice C is selected set score to 1.

51. The important stability parameter "KG" is defined as the _____.

- (A) height of the center of buoyancy above the keel
- (B) height of the center of gravity above the keel
- (C) metacentric height
- (D) height of the metacenter above the keel

If choice B is selected set score to 1.

52. Which of the following statements represents the correct action to take when three crew members discover a fire?

- (A) One man report the fire, one man fight the fire, and one man act as a safety observer.
- (B) One man reports the fire, and the other two men fight the fire.
- (C) One man reports the fire, one man fights the fire and one man evacuates and secures the area.
- (D) All three men fight the fire and report it immediately after it is extinguished.

If choice C is selected set score to 1.

53. Which of the gases listed is the poisonous gas most likely to be found in a closed compartment involved in a fire?

- (A) Nitrogen
- (B) Hydrogen
- (C) Carbon dioxide
- (D) Carbon monoxide

If choice D is selected set score to 1.

54. When amendments are made to the shipboard oil pollution emergency plan, all revisions must be submitted to the Coast Guard _____.

- (A) six months prior to the end of the approval period
- (B) one month prior to the anniversary date of the plan
- (C) and can be implemented without immediate approval as long as final approval is received within six months of submittal
- (D) and cannot be implemented without approval

If choice D is selected set score to 1.

55. When combating a major electrical fire at sea, the main consideration is _____.

- (A) preventing salt water damage to electrical equipment
- (B) reducing the possibility of electrical shock to personnel
- (C) preventing a total loss of electrical power
- (D) eliminating the toxic fumes from burning insulation

If choice B is selected set score to 1.

56. (2.5.13.6-2) A vessel trimmed down by the bow has _____.

- (A) a low mean draft
- (B) a greater draft aft than forward
- (C) zero trim
- (D) a greater draft forward than aft

If choice D is selected set score to 1.

57. When fighting a shipboard fire, crew members securing doorways, hatches, and applying cooling water to adjacent decks and bulkheads, while monitoring the spread of heat and smoke, are setting a _____.

- (A) safety perimeter
- (B) cooling zone
- (C) fire boundary
- (D) buffer zone

If choice C is selected set score to 1.

58. What standard mathematical formula is commonly used to calculate a vessels waterplane area for stability purposes?

- (A) Reynolds Number Rule
- (B) Simpsons Rule
- (C) Pythagorean Rule
- (D) Standard Logarithmic Rule

If choice B is selected set score to 1.

59. To determine if all requirements of the Declaration of Inspection are met for oil transfer operations just prior to bunkering from a shore side facility, _____.

- (A) vessel and facility are independently inspected by their respective designated person in charge
- (B) vessel and facility must be inspected by a representative of the Coast Guard captain of the port
- (C) vessel and facility are jointly and independently inspected by the designated persons in charge
- (D) facility is inspected by the designated person in charge of the vessel and vice versa for the vessel

If choice C is selected set score to 1.

60. Your ship has run aground and it is necessary to determine whether or not a compartment has flooded. Therefore, you should _____.

- (A) tap the bulkhead with a hammer to check for a water level
- (B) open the watertight door and take a quick look
- (C) feel the bulkhead to see if it is hot
- (D) open the hatch dogs on the side away from the hinges

If choice A is selected set score to 1.

61. Low velocity water fog is used in firefighting as a _____.

- (A) barrier against radiant heat
- (B) smothering agent
- (C) cooling agent
- (D) all of the above

If choice D is selected set score to 1.

62. The longer an oil fire is permitted to burn, the _____.

- (A) easier it is to extinguish
- (B) less chance there is of re-ignition
- (C) harder it is to extinguish
- (D) easier it is to control

If choice C is selected set score to 1.

63. Your vessel is taking on bunkers from a shore side facility. If oil begins flowing from one tank vent, which of the following actions should be taken FIRST?

- (A) Close the valve on the tank vent line.
- (B) Set out drip pans and sawdust and begin to mop up the spill.
- (C) Signal the shore control point to shutdown.
- (D) Open the intake valve to an adjacent tank.

If choice C is selected set score to 1.

64. Combustible gas indicators incorporate the use of a/an _____.

- (A) Wheatstone bridge
- (B) inflatable bag
- (C) vapor-detecting carbon compound
- (D) sensitive liquid chemical

If choice A is selected set score to 1.

65. Your vessel is equipped with totally enclosed lifeboats. Which of the following statements is correct should the boat be enveloped in flames?

- (A) The ventilators will automatically close by the action of fusible links.
- (B) The diesel engine will take its air supply from outside the lifeboat to prevent asphyxiation of the crew.
- (C) A water spray system to cool the outside of the boat is operated by a high-volume manual pump.
- (D) A pressurized air tank will provide approximately ten minutes of air for the survivors and the diesel engine.

If choice D is selected set score to 1.

66. The device shown in the illustration is carried aboard tank ships for _____. Illustration SF-0028

- (A) connecting shore side and ship's fire main
- (B) blanking cargo hoses after transfer operations are completed
- (C) use as a universal oil transfer connection
- (D) adapting ANSI and non-ANSI fuel hose flanges

If choice A is selected set score to 1.

67. When required to work in an area where explosive gases may accumulate, you should use tools which are _____.

- (A) approved by the Coast Guard
- (B) high carbon steel
- (C) fixed with a ferrous cover
- (D) non-sparking

If choice D is selected set score to 1.

68. The advantage of using a dry chemical fire extinguishing agent is _____.

- (A) its good stability and non-toxicity
- (B) its excellent cooling ability
- (C) permanent extinguishment regardless of the re-ignition sources
- (D) all of the above

If choice A is selected set score to 1.

69. The explosive range of methane is 5% to 15% by volume in air. This means a vapor/air mixture of _____.

- (A) 3 percent methane by volume is too rich to burn
- (B) 5 percent methane by volume will give a reading of 100 percent LEL on a combustible gas indicator
- (C) 10 percent methane by volume is too rich to burn
- (D) 20 percent methane by volume is too lean to burn

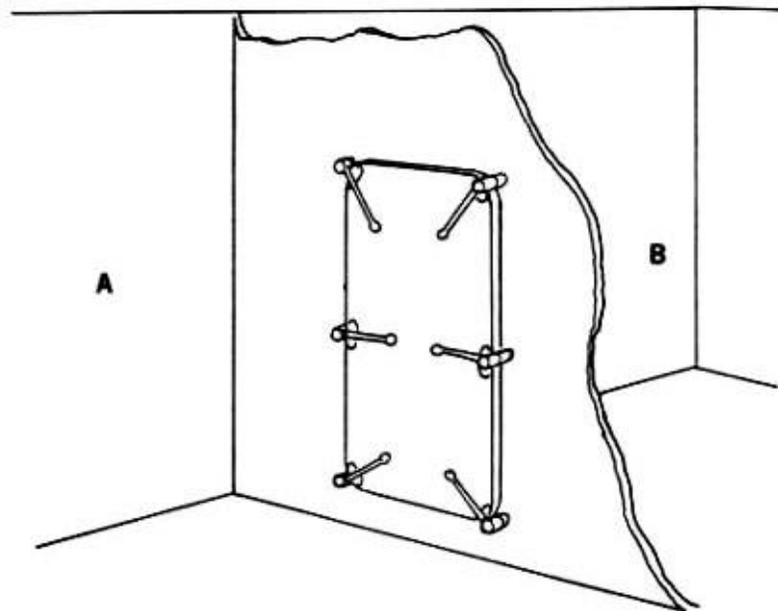
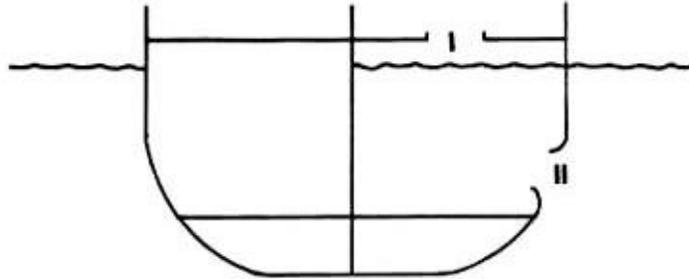
If choice B is selected set score to 1.

70. In cleaning up an oil spill, the use of straw or reclaimed paper fibers would be an example of which type of oil removal?

- (A) Mechanical removal
- (B) Chemical agent removal
- (C) Absorbent removal
- (D) None of the above

If choice C is selected set score to 1.

SF-0005



SF-0013

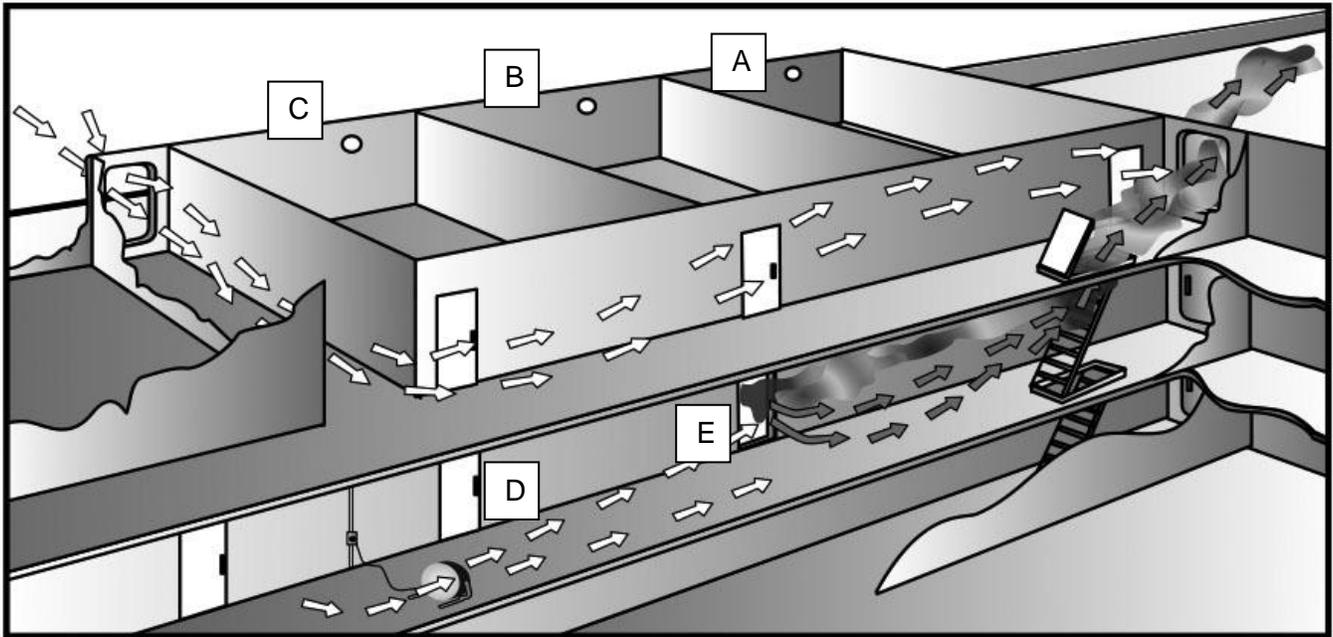


Figure 1

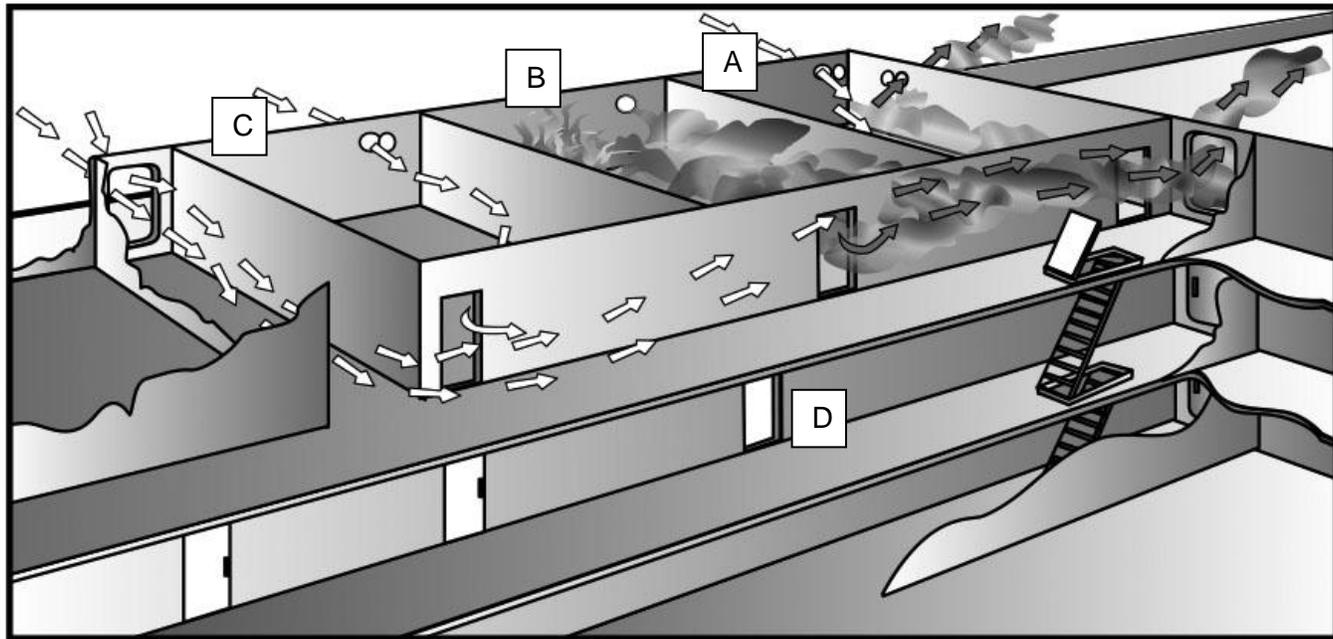
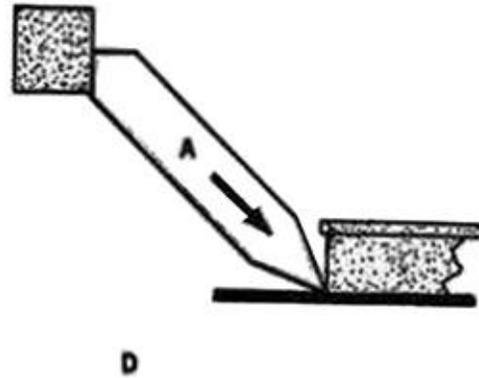
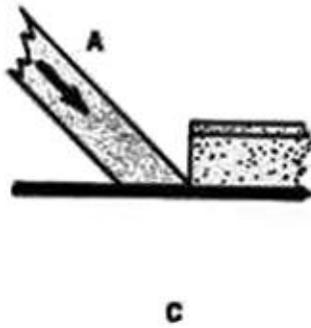
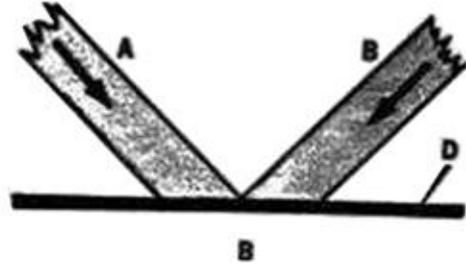
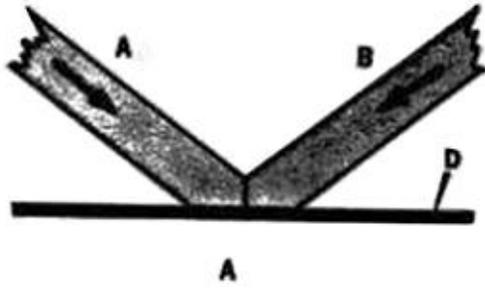


Figure 2

SF-0016



SF-0028

International Shore Connection

