APPENDIX B

OBSERVATION SITE SPECIFICATIONS

B.1 Introduction. This Appendix contains siting and equipment orientation standards for initiating a new fixed-location or mobile upper-air site. In addition, the standards required for operating a safe hydrogen program have been included.

B.2 Site Standards. The optimum location for an upper-air observing site would be on an immense flat plateau with no trees or buildings, far away from any population concentrations or industries, and with the surrounding land gently sloping away in all directions for a long distance. Since such locations are practically nonexistent, the alternative choice is a site as closely approximating the prime location as possible. There are three major factors to consider when selecting any site for radiosonde observations:

- The problem of terrain features or structures interfering with the tracking of the balloon/instrument.
- The suitability of the balloon release area to ensure safety of personnel.
- The absence of hazards which would interfere with the free flight of the balloon train, e.g. wires, trees, ship superstructure, etc.

The site of the observing equipment (tracking or receiving antenna) is regarded as the point of observation. The point of observation ***shall*** be selected to minimize the probability of data loss due to fixed obstructions such as buildings, trees, and towers. Obstructions around radiosonde sites may affect the ability of the antenna to track the instrument or receive the signal whenever the angular altitude and bearing of the obstruction is approached by that of the target. Therefore, insofar as possible, heights of obstructions ***should*** be less than that of the tracking antenna. The site for rawinsonde equipment ***should*** be on high ground with the horizon as free from obstructions as possible. In addition, the launching area terrain ***should*** be flat, smooth, well drained, and free of obstructions and vegetation that would constitute hazards to personnel during balloon launches. Since the flight-trains can range from 26 to 36 meters (85 to 120 feet) in length, the observer ***shall*** insure considerable maneuvering room, especially during strong surface wind releases. In the case of observations made aboard ships, releases ***should*** be made downwind from the superstructure even if it necessitates a brief alteration of the ship's course. There ***should*** be no extensive obstructions subtending an angle exceeding six degrees at the observation point. A symmetrical hill with a downward slope of about six degrees for a distance of 400 meters, in a hollow surrounded by hills rising to one or two degrees elevation, affords a good site because it would eliminate ground echoes beyond the short range. The site ***should*** be provided with a firm foundation on which the buildings and equipment can rest.

Mobile upper-air sites ***should*** follow the same guidelines that apply to fixed sites. In addition, the following general considerations ***should*** be taken: fixed man-made obstructions, dense trees, or other

topographic features ***should not*** be less than 18 meters (60 feet) from the point of observation. Individual agencies ***should*** refer to manufacturer's instructions regarding detailed setup guidelines.

Requirements for equipment operating on low radio-frequencies (e.g. NAVAID systems) are more exacting since the effect of ground reflections is more pronounced. The site in such cases ***should*** be flat and have a largely obstruction-free horizon. There ***should*** be no conducting objects or irregularities, such as large machinery (i.e. electrical motors, farm implements, etc.), trees, hedges, or outlying buildings within a radius of about 500 meters in order to avoid reflections of the signal.

B.2.1. Surveying the Site. A complete survey of the site ***shall*** be performed to determine fixed compass points and landmarks in relation to the location of the ground tracking-antenna. The survey ***shall*** be performed in accordance with established surveying methods and the critical points ***shall*** be documented and made part of the station record. Stations using RDF systems ***should*** utilize the pertinent surveying points to orient the tracking antenna towards a known fixed point. If this equipment moves for any reason, a new survey ***shall*** be conducted.

B.2.2 Posting the Location of Wires Antennas, and Other Obstructions. The location of wires, antennas, buildings, and other critical obstructions throughout a 360 degree circle and within 1/4 mile of the launch site ***shall*** be charted and prominently posted by the upper-air unit. All observers ***shall*** be familiar with the meaning and importance of this chart. They ***shall*** be made aware that severe burns and possibly death could result from coming into contact with wires and antennas or from holding the radiosonde train if it comes into contact with them. The station manager ***shall*** advise all of the staff of the inherent dangers of trying to disentangle radiosonde equipment from wires of any kind that carry an electrical current.

B.2.3 Developing the RDF Limiting Angles Table. Limiting angles refer to angles either side of and above obstructions extending above the horizon which, when reached, would cause errors in the RDF antenna's position. Typical values are not less than six degrees. Equipment manufacturers ***should*** be consulted for specific system constraints. Errors are normally caused by radio interference and multipath propagation of the radiosonde's signal causing the position of the antenna to 'bounce" or be erratic. RDF systems require the generation of a limiting angles table for the purpose of determining the minimum elevation angle associated with every whole azimuth angle around the horizon. These angles are normally plotted to produce a Limiting Angles Plot diagram that ***should*** be posted conspicuously within the workplace. The limiting angles zone is, by definition, the area below each limiting angle in the plot. Angles in this zone are not representative of the radiosonde's true position and ***should***, therefore, be eliminated. Agencies ***should*** develop, maintain, and follow specific guidelines for the Limiting Angles Plot. (See para. 4.5.1.3.)

B.2.4 Developing the Surface Elevation/Launch Elevation Pressure Correction Table. When the release location and the location at which the surface pressure is determined are not collocated correction factors ***shall*** be applied to adjust pressure readings accordingly.

B.3 Equipment Orientation Checks. The orientation of the equipment in reference to true north ***should*** be checked at least every three months if wind data are obtained by RDF systems. This is done by either comparing RDF antenna readings with those taken simultaneously with an optical theodolite or by using a high resolution range/angle recorder.

RDF equipment ***should*** be checked daily by using a signal from a fixed distant object (if possible) whose location is accurately known. The range reading ***should*** be correct to within 20 meters and azimuth correct to within 0.05 degrees.

For meteorological purposes, all equipment used for determining direction is oriented with respect to true North. This includes orientation of Rawinsonde antennas, pibal theodolites, target antennas, and limiting angle diagrams required for radio direction finding systems. If using a compass to do this, care ***shall*** be taken to ensure the correct orientation by accounting for the local magnetic variation. To accomplish the correct orientation, knowing the current local magnetic variation, the following ***shall*** be performed:

1) The wind-finding antenna and theodolite ***shall*** be oriented such that a zero degree azimuth points to magnetic (compass) north.

2a) If the local variation angle is x degrees east, the antenna ***shall*** be rotated x degrees counter-clockwise, or

b) If the local declination angle is x degrees west, the antenna ***shall*** be rotated x degrees clockwise.

Figure B-1 presents an example of the large-scale magnetic variation (declination) for the coterminous U.S. Since the magnetic pole possesses a secular position drift, care ***should*** be taken to employ a current value for the local declination. Local magnetic variation can be obtained from current sectional aeronautical charts or USGS topographic maps.

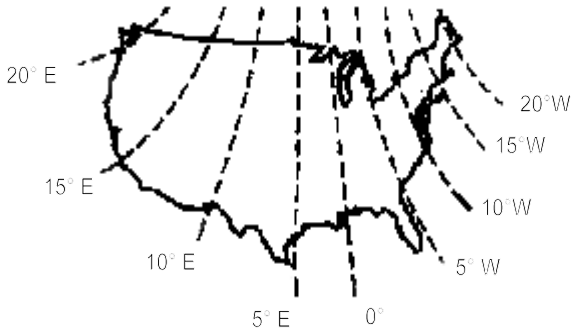

Figure B-1. Sample compass declination chart.

B.4 <u>Equipment and Shelter Considerations</u>. As long as VLF facilities continue to be maintained, some simplification in user equipment responsibilities can be expected to result from the choice of a NAVAID system. Although a stable platform is not required for such systems, it *may* be necessary to install a directional telemetry antenna to maintain a reliable radiosonde-to-ground station communication link. To allow rapid acquisition of phase differences after launch or to use the differential VLF technique, facilities ***should*** be equipped to receive the NAVAID signals locally at the ground station.

To allow for better signal reception and to maximize the field of view, RDF systems are normally located on top of a shelter inside of a fiberglass dome called a radome. The radome prevents the elements, such as salt air, from degrading the system and reduces maintenance problems.

NAVAID antennas are much smaller in size than RDF systems and can be situated anywhere that provides good reception.

B.5 Inflation Gasses. Hydrogen or helium gas ***should*** be used at all upper-air facilities, unless the use of hydrogen is determined to be unsafe or impractical by the agency. The determination of the source of hydrogen gas to use for balloon inflation ***shall*** be made on the basis of operational and economic feasibility. Helium gas ***shall*** be substituted for hydrogen gas at facilities determined to be impractical or unsafe for hydrogen.

B.5.1 Hydrogen Cylinders. When bottled gas is used, *only* commercial suppliers regulated by the U. S. Department of Transportation ***shall*** be used. Hydrogen cylinders ***shall*** be stored in nonmetallic racks and secured with cables with nonmetallic surfaces.

A manifold ***shall not*** be used on hydrogen cylinders under any circumstances. Further, only valving approved for hydrogen by the National Fire Protection Association (NFPA) or the American Gas Association ***shall*** be used. Such valves are normally a diaphragm type. Whenever possible, stainless steel tubing with stainless steel swagelock fittings ***should*** be used in hydrogen systems.

Cylinders ***shall*** be inspected upon arrival to assure that they have been pressure tested in accordance with the American Society of Mechanical Engineers pressure vessel codes. A pressure test is required every five to ten years depending upon the specific rating of the vessel and the supplier ***should*** know how often the vessels ***should*** be tested. The agency ***should not*** accept delivery of cylinders which have not been tested according to applicable Department of Transportation regulations. Cylinders which will require testing in the near future ***should*** be used first.

B.5.2 Pressure Regulation. Pressure regulators ***shall*** be the double-stage type and be approved by the Underwriters Laboratories (UL), Factory Mutual Insurance Company (FM or FMIC), or another testing company of comparable stature.

B.5.3 Heat/Leak Detectors. Heat detectors are required for all hydrogen cylinders and generators. Temperature sensitive tabs or crayons ***should*** be used to mark all hydrogen cylinders, and tabs ***should*** be used to mark all hydrogen generator cell head bolts to enable detection of hydrogen fires. Leak detecting fluids ***should*** be stored in the inflation building so that hydrogen gas leaks can be easily detected. Each agency ***shall*** determine the best gas heat/leak detectors for the type of generation method being used.

B.5.4 Inflation Equipment/Hydrogen Cylinders. Upper-air sites using hydrogen from cylinders ***shall*** inflate balloons using only one cylinder at a time. The cylinders ***shall never*** be moved during inflation and ***should*** be kept within the storage room. Cylinders ***shall*** be properly secured so that they won't fall over or generate sparks. A UL or FM approved multi-stage regulator ***should*** be attached to the cylinder in use and hydrogen ***should*** be routed to the balloon at low pressure via the special piping. Valves ***shall*** be kept closed on all cylinders not being used for inflation and the protective cap ***should*** be kept in place. If a cylinder's

protective cap cannot be removed or the valve opened using normal hand exertion, mark the cylinder as defective and have the supplier pick it up. Use only approved spark-proof tools for cap removal.

Cylinder valves ***shall*** be kept closed while attaching or removing a regulator. Never let hydrogen escape into the free atmosphere. Improper practices which allow hydrogen to bleed from the cylinder are dangerous and could result in an unexpected ignition. Whenever a leak is suspected, test for escaping hydrogen gas by using a solution formulated for detecting leaks. Should a leak be discovered, mark the cylinder as defective and have the supplier pick it up immediately.

B.5.5 Inflation Equipment - Hydrogen Generators. The intelligent and safe use of the hydrogen generator requires special training. Operators of hydrogen generating equipment ***shall*** satisfactorily complete an upper-air operator's training course, or be certified by the station manager to have demonstrated proficiency. Hydrogen Generator Operating Instructions ***shall*** be posted in plain view in close proximity to the generator itself within the inflation building. Each agency ***shall*** ensure that all persons working with the hydrogen generator are familiar with the operating and safety instructions.

B.6 Safety Standards for Hydrogen Gas. Agency facilities ***shall*** comply with the National Fire Protection Association (NFPA) Codes and Standards. NFPA 50A is the Standard for Gaseous Hydrogen Systems at Consumer Sites and the NFPA 220 is the Standard on types of Building Construction. These two NFPA Standards along with the sections that follow describe the standards required for the construction of the inflation shelter and the proper and safe use of hydrogen gas. To reduce the risk of accidental death, personal injury, or property damage from accidental hydrogen ignitions and/or explosions, the guidelines and safety practices detailing the proper and safe use of hydrogen gas and related equipment outlined in this manual ***shall*** be strictly adhered to! Individual agencies ***should*** produce more specific standards for their unique situations, as required.

Agency facilities ***shall*** comply with the NFPA Codes and Standards. The minimum distance a facility ***should*** be in feet from a hydrogen system, in a separate building or in a special room which is part of or attached to a building, is specified in NFPA No. 50A, Table 2 (for a hydrogen system less than three thousand cubic feet, ten feet to a wood frame or a protected wood frame building or structure).

B.6.1 Grounding. The nozzle, weights, cutoff valve, regulator, and cylinder ***shall*** be connected to a common ground by a qualified person trained for this task. Grounding straps are required around the fill bench to assure passive grounding of the operator during filling operations. This requirement is particularly vital when the ambient relative humidity is below 50 percent. Grounding straps ***should*** also be provided for balloons during the fill operation and ***should*** remain connected to the balloon while it is secured to the fill bench awaiting release. A passive grounding strap arrangement is required around the drain port of the hydrogen storage tank on hydrogen generators.

The proper functioning of all grounds ***shall*** be ensured and documented by the agency every six months. The agency ***shall*** ensure that all grounds are inspected visually by the observer before each filling and that any defective ground is repaired immediately. The balloon fill nozzle ***shall*** be grounded to a common ground with the frame of the building and the remainder of the fill system. The grounding system ***should*** have a resistance of less than twenty-five ohms.

B.6.2 The Hydrogen Safety Switch. At stations where fill-line freeze-up is not a possibility, the hydrogen safety switch ***shall*** be used. Where line freeze-up is likely to occur, the switch ***should not*** be used; however, the inflation process ***should*** be closely monitored.

B.6.3 Electrical Components. All electrical equipment, except the hydrogen safety switch, ***shall*** have successfully met all Class I, Division 2, Group B specifications in the National Electrical Code (NEC), available from the NFPA, Battery Park, Quincy, MA, 02269.

Hydrogen systems ***shall*** be securely fastened, electrically grounded, and protected from damage due to falling objects. All interior wiring, receptacles, light switches, and light fixtures ***shall*** successfully meet all Class I, Division 2, Group B specifications in the NEC.

B.6.4 Hydrogen Housing. All buildings housing hydrogen cylinders or generators need to be well ventilated to take maximum advantage of hydrogen's most vital safety property, which is its ability to disperse to a non-flammable mixture in air in a matter of seconds. There ***should*** be at least four ventilation openings, having a minimum total area of one square foot per thousand cubic feet of room volume, for inflation buildings using hydrogen; the openings ***should*** be directed towards the open air. Ceilings of inflation buildings with radomes above the inflation building ***shall*** be gas-tight to prevent hydrogen from entering the radome.

B.6.5 Storage of Flammable Materials. Flammable materials ***shall not*** be stored in rooms where hydrogen gas is stored or used. A minimum distance of sixteen meters (fifty feet) is required between hydrogen and fast burning solids such as lumber, excelsior, or paper. Trash storage receptacles are not allowed inside an inflation building. The following are the standards for hydrogen systems and the shelter vents: a minimum distance of eight meters (25 feet) is required between hydrogen systems of less than 3,000 cubic feet and vent or fill openings of below ground flammable and combustible liquid storage tanks; a minimum distance of three meters (10 feet) is required between hydrogen systems of less than 3,000 cubic feet and up to 1000 gallons of flammable and combustible liquids in above-ground storage tanks or up to 15,000 cubic feet of flammable gas storage; and eight meters (25 feet) is required for larger flammable storage containers.

B.6.6 Fire Extinguishers. A twenty-pound or larger fire extinguisher ***shall*** be placed near an exit of the fill room. It ***shall*** be capable of extinguishing type A (ordinary combustibles that leave an ashen residue), type B (liquid/chemical), and type C (electrical fires). Fire extinguishers approved by the agency ***shall*** be placed in the radome room and in any other room with extensive electrical equipment. To prevent static electrical shock, plastic or fiber nozzles of extinguishers ***shall*** be grounded to the metal handle or body of the extinguisher. At stations where ambient temperature does not drop below -17.7° Celsius (0°F), approved extinguishers ***shall*** be used at locations with extensive electrical equipment. Hydrogen fires are not normally extinguished until the supply of hydrogen has been shut off. Re-ignition may occur if a metal surface adjacent to the flame is not cooled. The fire protection provided ***shall*** be determined by an analysis of local conditions. HYDROGEN FLAMES ARE PRACTICALLY INVISIBLE, so special care must he taken to assure that the fire is noticed and extinguished.

B.6.7 Additional Equipment. Only equipment, tools, and supplies required for balloon inflation ***should*** ever be stored in the inflation building and they ***should*** be placed in non-flammable storage cabinets when not in use. The use of the inflation building for storing extraneous materials and equipment can be a fire hazard and ***should*** be avoided.

B.6.7.1 Space Heaters. Any device used to heat the inflation building or the radome above the inflation building ***shall*** have met Class I, Division 2, Group B specifications in the NEC.

B.6.7.2 Spark-Proof Tools. Spark-proof tools ***should*** be used in making all repairs and adjustments near hydrogen tanks and generators. Insulated, spark-proof tools ***should*** be used when working on hydrogen generators when there is a danger of electrical shock. Even the so-called spark-proof tools, if used improperly, can provide an invisible spark sufficient to ignite hydrogen gas. Consequently, all repairs ***shall*** be carried out carefully and thoughtfully.

B.6.7.3 Radomes. Radomes ***should*** be vented at their apex, where feasible, as an added safety feature in the event of a failure of the gas tight seals between the fill room and the radome. Any device used to heat the radome ***shall*** have met Class I, Division 2, Group B specifications in the NEC.

B.7 Procedure for Ground Equipment. Only emergency maintenance ***should*** be performed on tracking equipment during balloon inflation periods. If an emergency repair becomes necessary while a balloon is being inflated, inflation ***shall*** stop, the hydrogen equipment ***shall*** be turned off, and the balloon ***shall*** be released without the radiosonde and parachute. The emergency maintenance ***shall*** be completed before any other filling operations are conducted. The presence of personnel in roof-top radomes or on the roof of the inflation building ***should*** be avoided during balloon inflation and release periods.

B.8 Hydrogen Generator Maintenance. Agencies ***shall*** establish and maintain records on maintenance and document the safe operation of the hydrogen generator unit. The procedures and format ***should*** be based on the experience gained within their respective agency. This allows each maintenance program to include characteristics unique to each agency. At a minimum, checklists ***should*** be established and the required safety check and maintenance thoroughly carried out by responsible people within the time limits established for the various elements of equipment. All procedures established ***shall*** be reviewed and approved prior to their implementation.

B.9 General Safety. Each agency ***shall*** continuously evaluate safety at upper-air facilities. The agency ***should*** designate a person who is responsible for all aspects of safety at their upper-air facilities, including carrying out recommended changes in procedure as well as any technical changes that can be handled locally. To assist in this safety task, the agency ***should*** designate a local safety representative to assure safe operation on a daily basis.

B.9.1 Smoking. Smoking or the lighting of flammable materials ***shall be*** absolutely prohibited within a distance of twenty-five (25) feet from buildings where hydrogen is stored or generated. "Hydrogen! No Smoking!" warning signs ***shall*** be posted on all exterior sides of the inflation shelter and at least one sign in all interior spaces.

B.9.2 Safety Instructions. Agencies ***shall*** provide General Rules for Hydrogen Fire Prevention posters to their upper-air units. Recommended emergency instructions are given in Exhibits B.1 through B.3 on the following four pages. They describe the general safety rules to be followed. Such rules ***shall*** be posted in plain view in the inflation building. The agency ***shall*** ensure that all persons involved in balloon

inflation with hydrogen become familiar with these rules. Agencies ***should*** revise these guidelines to meet their particular safety requirements.

B.9.3 Inflation Building Safety Inspections. Agencies ***should*** establish and follow a daily routine of safety inspection prior to balloon inflation to minimize risks of hydrogen accidents. In addition, Agencies ***shall*** periodically inspect upper-air units to ensure that policies and standards are being followed.

B.9.4 Daily Inspections. No flammable materials ***shall*** be brought into or stored in the building other than those required for balloon inflation. All heat detectors ***shall*** be visually checked for indications of fire when entering the inflation room.

B.9.5 Annual Inspections of Inflation Facilities. Agencies ***shall*** develop a checklist that resembles the following recommended procedures. The check ***should*** be performed at least annually:

a. Check to see that all space heating devices have met Class I, Division 2, Group B specifications in the NEC. (Note: The same limitation applies to radomes above inflation buildings.)

b. Check to see that there are neither trash nor trash storage receptacles in the building.

c. Check to see that all wiring, receptacles, light switches, light fixtures, and electrical equipment other than the hydrogen safety switch are functioning properly and have met Class I, Division 2, Group B specifications in the NEC.

d. Check to see that only spark-proof tools are used and/or stored.

e. Check for adequate numbers and proper placement of heat detectors.

f. Check for presence of leak detector fluids.

g. Check for existence, proper placement, and proper connection to the common ground of passive grounding wires.

h. Check for proper grounding of the runners from the overhead door to the common ground.

i. Check for documentation stating that a semi-annual safety check conducted by an electronics technician has been done certifying that all grounds are functioning properly.

j. Check for use of a nonflammable cabinet for storing all equipment, tools, and supplies.

k. Check for posting of " Hydrogen! No Smoking!" warning signs on all exterior sides and interior spaces.

l. Check for placement of a twenty pound or larger fire extinguisher near the exit of the building.

m. Check for proper grounding of the fire extinguisher nozzle to the fire extinguisher handle or body.

n. Check for posting of emergency instruction signs (see Exhibits B1 through B3).

o. Check for posting of general rules for hydrogen fire prevention (see Exhibit B3).

p. Verify that all upper-air operators have passed an operator qualification test.

q. When applicable, check for use of tested and approved two stage pressure regulators on all cylinders when being used for inflation.

r. When applicable, check for use of nonmetallic racks and securing cables with non-metallic surfaces.

s. When applicable, check for installation of venting hoods over cylinders (to catch and vent hydrogen gas) when there are less than four roof vents.

t. When applicable, check for posting of general safety rules for cylinders (see Exhibit B1).

u. When applicable, check for posting of generator operating instructions (see Exhibit B2).

v. When applicable, check for presence of salt or other chemicals to melt ice.

w. When applicable, check for a passive grounding strap around the drain port of the hydrogen storage tank on the hydrogen generator.

x. Check for smooth and proper operation of all doors.

y. Check for proper operation of the hydrogen safety switch.

z. Check the condition of all supply hoses and initiate action to replace those that have deteriorated.

EXHIBIT B.l

GENERAL SAFETY RULES FOR CYLINDERS

1. **NO SMOKING OR OPEN FLAME IS PERMITTED IN THE VICINITY OF HYDROGEN CYLINDERS.**

2. **MARK A CYLINDER AS DEFECTIVE IF THE HANDWHEEL CANNOT BE TURNED BY HAND TO OPEN THE VALVE.**

3. **MARK A CYLINDER AS DEFECTIVE IF THE CAP CANNOT BE REMOVED BY HAND. USE NO TOOL TO REMOVE THE CAP.**

4. **ONLY MOVE CYLINDERS WHEN ABSOLUTELY NECESSARY. ALWAYS HANDLE WITH CARE, NEVER DROPPING OR JARRING.**

5. **ALL CYLINDERS *SHOULD* BE STRAPPED, CHAINED, ETC... TO PREVENT ACCIDENTALLY KNOCKING OVER THE CYLINDER.**

6. **CAPS *SHOULD* BE LEFT ON CYLINDERS WHILE THEY ARE EITHER FULL OR EMPTY IF THEY ARE NOT CONNECTED TO THE SUPPLY HOSE.**

7. **NEVER OPEN A VALVE UNTIL THE BALLOON IS CONNECTED TO THE HOSE AND THE HOSE TO THE CYLINDER. NEVER "CRACK" THE VALVE, PERMITTING HYDROGEN TO ESCAPE INTO THE FREE ATMOSPHERE.**

8. **CHECK THE SUPPLY HOSE AND CORRECT TWISTS AND KINKS.**

9. **FULLY CLOSE THE VALVE AFTER A CYLINDER IS EXHAUSTED. MARK THE TANK AS EMPTY.**

10. **CYLINDERS THAT ARE DENTED, LEAKING, OR EXPOSED TO FIRE ARE CONSIDERED DEFECTIVE UNTIL RE-TESTED AND APPROVED FOR USE.**

EXHIBIT B.2

GENERAL RULES FOR HYDROGEN FIRE PREVENTION

1. **GROUND YOURSELF FREQUENTLY.**

2. **FILL THE BALLOON SLOWLY, USING APPROVED GAUGE ONLY.**

3. **ENFORCE NO SMOKING RULES.**

4. **USE ONLY HEATING DEVICES APPROVED FOR A CLASS I, GROUP B ENVIRONMENT.**

5. **DO NOT STORE ANY FLAMMABLE MATERIALS IN THE INFLATION BUILDING.**

6. **DO NOT USE POWER TOOLS INSIDE THE INFLATION BUILDING.**

7. **TURN OFF ELECTRICAL POWER AT THE MAIN BREAKER IF ELECTRICAL WORK MUST BE DONE, EVEN IF ONLY CHANGING A LIGHT BULB!**

8. **DO NOT PERMIT BATTERY-OPERATED DEVICES IN THE BUILDING UNLESS THEY HAVE BEEN APPROVED FOR CLASS I, GROUP B USE.**

HYDROGEN-FED FIRE

1. **IF POSSIBLE, TURN OFF THE SUPPLY OF HYDROGEN.**

2. **EVACUATE THE BUILDING IF THE FIRE CONTINUES AFTER TURNING OFF THE HYDROGEN OR IF YOU ARE UNABLE TO REACH THE CUTOFF.**

3. **NOTIFY:**

   B. FIRE DEPARTMENT _____

   B. STATION MANAGER_____

   C. OTHER _____

4. **TURN OFF ELECTRICAL POWER AT THE MAIN BREAKER IF POSSIBLE.**

5. **DO NOT ATTEMPT TO EXTINGUISH A HYDROGEN-FED FIRE WITH A FIRE EXTINGUISHER. THE RESULTING CHEMICAL INTERACTION COULD CAUSE UNBURNED HYDROGEN TO DISPERSE AND FORM AN EXPLOSIVE MIXTURE.**

EXHIBIT B.3

NON-HYDROGEN FIRE

1. **EXIT THE BUILDING.**

2. **NOTIFY:**

   A. FIRE DEPARTMENT _____

   B. STATION MANAGER _____

   C. OTHER _____

   OR ACTIVATE THE FIRE ALARM.

3. **YOU MAY RETURN TO TRY TO EXTINGUISH THE FIRE, BUT IF YOU HAVE ANY DOUBT OF YOUR ABILITY TO DO SO, STAND CLEAR OF THE BUILDING.**

BALLOON RUPTURE

1. **TURN OFF THE SUPPLY OF HYDROGEN IF AUTOMATIC SHUT-OFF VALVE IS NOT IMPLEMENTED.**

2. **EXIT THE BUILDING.**

3. **NOTIFY:**

   A. STATION MANAGER _____

   B. OTHER _____

   FOR ASSISTANCE IF NECESSARY.

4. **ALLOW ADEQUATE VENTING AND FOLLOW AGENCY GUIDELINES BEFORE RE-ENTERING THE INFLATION BUILDING .**