1.0 Policy
Work activities involving welding and cutting shall be conducted in a safe manner.

2.0 Purpose
To define the safety requirements for welding, cutting, brazing, metals grinding, and other hot work.

3.0 Scope
Applies to all Sunbelt Controls work site where welding and cutting operations are required.

4.0 Definitions
Authorized Persons – the senior Sunbelt Controls employee for the work area or a designated Site Safety Coordinator for that work site

Authorized Free-Burn Area – a work area where no sources of combustion are present; therefore, no 'Hot Work Permit' would be required.

Combustible – any material that has the possibility of catching fire or supporting a fire.

Fire Watch – employee(s) trained and assigned to monitor or watch for potential fire hazards and generally warn others in the event of an emergency or unsafe condition.

Hot Work – the performance of operations capable of providing a source of ignition, e.g. riveting, welding, cutting, grinding, soldering, burning and heating

5.0 Requirements

5.1 General
- Authorized hot work areas for welding and cutting shall be free of flammable and combustible materials, provided with adequate fire extinguishing equipment, and properly screened off to prevent viewing of welding operations.
- Operators of equipment should familiar with fire prevention and protection (OSHA 29 CFR 1910.252) and arc welding and cutting (OSHA 29 CFR 1910.254). Workers in charge of oxygen or fuel-gas supply equipment must be instructed and judged competent for such work.
- Any equipment defect or safety hazard shall discontinue use of equipment until its safety has been assured.

5.2 Hot Work Permits
Permits for Hot Work are required for all welding, cutting and brazing operations exclusive of those areas designated as authorized free-burn areas.

When hot work is to be performed outside of a hot work area, the employee or contractor performing the hot work shall complete a Hot Work Permit (reference Appendix 31-B) before commencing work. Upon completion of the work, the permit shall be turned in to the permit issuer.

Permit issuers shall retain returned permits for a minimum of two (2) months from the date of return.

A new permit shall be completed where there is an interruption in the work process, such as meal breaks, shift changes, work condition changes or generally left unmonitored for significant periods of time.

Before beginning hot work activities, the affected area(s) shall be inspected and granted authorized welding and cutting operations. Results shall be documented on the Hot Work Permit.

Only authorized and trained personnel are allowed to use flame or spark producing equipment.

Air monitoring shall be conducted in accordance with the established procedures and regulations.

5.3 Fire Prevention and Protection

If the object to be welded or cut cannot be readily moved to an area designated for hot work, all moveable fire hazards in the vicinity shall be moved at least 35 feet from the work site.

Combustibles and flammables that cannot be relocated shall be isolated from ignition sources by flameproof covers or otherwise shielded with metal or fire-resistant guards or curtains. If welding cannot be conducted safely, the welding and cutting shall not be performed.

Appropriate fire extinguishing equipment shall be readily available for use whenever hot work is performed.

A fire watch standby shall be provided when welding or cutting is performed where there is a potential for a fire for a minimum of thirty (30) minutes at the completion of hot work activities.

5.4 Confined Spaces

Hot work performed in confined spaces shall also conform to the policies outlined in Section twelve [12] of this manual – Confined Spaces.

5.5 Compressed Gas Cylinders

Empty cylinders shall be labeled as such and kept separate from full cylinders. Use cylinders in an upright position, particularly those containing liquefied gas or acetylene. When transporting cylinders, they shall be secured, gauges removed, kept in an upright position and capped. Cylinders shall be secured against being knocked over with a non-combustible restraint such as a chain.

Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially gasoline, oil or grease) for a minimum of twenty (20) feet or by a non-combustible barrier, at least five (5) feet in height having a fire-resistance rating of at least one-half hour.

The metal cylinder cap shall be in place to protect the valve when a cylinder is not connected for use. Make sure the threads on a regulator or union corresponds to those on the cylinder valve outlet. **Do Not** force connections that do not fit.

Open cylinder valves slowly. A cylinder not provided with a hand wheel valve shall be opened with a spindle key or a special wrench or other tool provided or approved by the gas supplier or manufacturer. **Do Not** use a cylinder of compressed gas without a pressure-reducing regulator attached to the cylinder valve, unless the attachment is to a manifold that contains its own regulator.

Before making connections to a cylinder valve outlet, "crack" the valve for an instant to clear the opening of particles of dust or dirt. Always point the valve and its opening away from the body and not toward anyone else. **Never** crack a fuel gas cylinder valve near other welding work, sparks, open flames or other sources of ignition.

Use regulators and pressure gauges only with the gases for which they were designed and intended; **do not** attempt to repair or alter cylinders, valves or attachments. The glass face of gauges shall be kept intact or replaced prior to use. Gauges shall be turned off and hoses shall be 'bled' when not in use.

All fuel-gas welding, burning, cutting equipment shall be equipped with a check valve, preferably located at the torch-end of the system.

5.6 Energy Control (Lockout)

When systems must be shut down to accomplish the hot work, the shutdown shall be performed in accordance with the policies outlined in section fourteen [16] sub-section (5.3) of this manual – Energy Control (Lockout Procedures – in order of action).

5.7 Welding or Cutting of Containers and Piping

No hot work shall be performed on used drums, barrels, tanks, or other containers until it can be determined that no flammable materials or other materials are present which, when subject to heat, might produce flammable or toxic vapors. Containers shall be adequately vented to the atmosphere to prevent explosion. When containers do contain flammable or toxic materials, the following precautions shall be taken:

- Piping to the containers shall be disconnected or blanked off
- The container shall be cleaned of the flammable or toxic materials; and/or
- The container shall be purged with an inert gas
- After purging is completed, the atmosphere in the container shall be sampled to ensure it is safe for hot work

If the above precautions cannot be accomplished, the container shall be completely filled with water before the hot work is performed.

5.8 Fire Watch

5.8.1 Training

Personnel assigned to perform "Fire Watch" duties shall be trained prior to assignment to perform such duties. Training shall include:

- Use of fire fighting equipment such as extinguishers and water hoses
- Emergency notification procedures
- Property of fires

- Duties of a "Fire Watch"
- Potential hazards
- Use of emergency equipment

5.8.2 Responsibilities

5.8.2.1 Supervisors

Supervisors are responsible for ensuring personnel assigned to perform "Fire Watch" duties have received adequate instruction and training.

5.8.2.2 Fire Watch Personnel

The primary responsibility of a "Fire Watch" is to monitor for potential fire hazards and the presence of fire during operations such as welding and cutting. This includes:

- Having the ability to communicate to employees (including all languages spoken by employees performing work in the area being monitored)
- Continuously monitor the area surrounding the immediate work area for conditions that could result in a fire or explosion
- Immediately stop all "hot work" in the event of an emergency or other unplanned event affecting the safety of employees
- Know the permit requirements relative to fire protection and ensure they are being followed as work is being performed
- Extinguish fires when they occur if possible. When a fire occurs all work must be discontinued and the supervisor or designated contact must be notified immediately
- When a fire or fire potential is not controllable, follow applicable emergency procedures
- Remain at the assigned location at all times, except when evacuating
- Perform no other work that will interfere with fire watch duties
- Remain at the work site for at least 30 minutes after welding, torch cutting and other such hot work operations have ceased to ensure smoldering other potential fire conditions do not exist
- Upon completion of work and it is determined smoldering fires are not present, the "Fire Watch" is responsible for returning and/or storing fire fighting equipment to it's original location as directed by the supervisor or other responsible person

5.9 Ventilation

Adequate ventilation (natural, mechanical, or respirator) shall be provided for all welding, cutting, brazing and related operations to ensure permissible exposure levels are not exceeded.

Before welding, cutting or grinding is commenced on any surface covered by a preservative coating whose composition is not known, a test shall be made by a competent person for hazard determination. Work processes shall be modified based on the test results.

When welding, cutting or burning galvanized or cadmium plated metal a local exhaust ventilation or a respirator shall be required.

5.10 Protection of Employees

All outer clothing shall be free from oil or grease and synthetic or plastic clothing shall not be worn. Welding helmets and face shields shall be used to protect the face, forehead, neck and ears from direct radiant energy from the arc and from weld spatter. Sleeves and collars shall be kept buttoned. Pockets shall be emptied of flammable or readily combustible material. Pants shall not have cuffs and shall not be turned up on the outside. Pants shall overlap shoe tops to prevent spatter from getting into shoes.

If respiratory protection is required, respirators shall be used in accordance with the policies outlined in Section twenty-three [23] of this manual – Respiratory Protection.

Fire resistant screens or curtains shall be used around the welding area to protect-passers-by from flying sparks and direct view of the arc.

When welding or cutting with covered electrodes using alternating current (AC) single-phase transformer-rectifier arc welding machines and under electrically hazardous conditions, the welding operator shall use dry gloves and clothing, non-conductive footwear, avoid accidental contact with live electrical parts, and be properly trained in the safe operations of their equipment.

Filter Lens Shades shall be selected in accordance with Appendix 31-A.

First aid equipment shall be available at all times.

6.0 References

OSHA 29 1910 Subpart Q
OSHA 29 1926 Subpart J