

Cosmic Giggle Fire Safety Plan

The primary concern with the fire effects at Cosmic Giggle is safety. To ensure the safe operation of the fire effects at all times, the following safety plan and guidelines must be followed.

Setup Procedure

Proper setup is the first step to safety with the fire effects. The following checklist must be used to ensure proper setup.

- ☐ Inspect all nozzles, accumulators, hoses, adapters, valves, tanks and fittings after unpacking. Any wear and tear or defects must be addressed before setup can continue.
- ☐ Any hose or fitting that is attached at setup time must be leak checked with soapy water or propane leak detector fluid prior to operation. **Do not use open flame as a leak detector.**
- ☐ All towers must be secured to the ground. On the playa, towers should be staked to the ground with rebar. Off playa, they should be secured with heavy sandbags. The towers should also be secured to each other to provide additional stability and security.
- ☐ All puffer nozzles must be secured to the tower.
- ☐ All pilot tubing must be secured to the nozzle.
- ☐ The large puffers with attached accumulators must be sitting on level ground and be stable within the tower.
- ☐ Nozzles should be pointed up and away from observers and combustible materials.
- ☐ Hoses and wires suspended on the tower structures and struts must be secured with zip ties or similar device.
- ☐ Hoses and wires on the ground must be buried or secured.
- ☐ All wire ends that could produce a spark must be covered with an UL listed device.
- ☐ If the tank heater is used, it should be set to 25° C and powered on prior to ignition of the flame effects.

Startup Procedure

Only trained individuals may ignite the fire effects. The only person who can train individuals is Chad Berkley. No one else may give permission to anyone to ignite the fire effects or activate any valves or switches to initiate ignition. If anything does not look right or if you just have a bad feeling, shut the system off at the master valve immediately and get help. **The operator of the flame effects must be sober.** The following checklist should be performed whenever igniting the fire effects.

- ☐ Ensure that no flammable items are around the puffers and that the area is free from debris and obstructions.
- ☐ Ensure that the **wind is calm** and that forecast does not call for wind.
- ☐ Walk around the puffers. Inspect the hoses and fittings for damage or wear. **Do not ignite the flame effects if any damage or wear is observed.** Make sure all of the flame effect nozzles are pointed in the correct direction away from people and structures.
- ☐ Turn on the tank warmer.
- ☐ Ensure that all ball valves are closed (the handle should be perpendicular to the pipe or hose that is feeding it). The master ball valve is closest to the source tank and should not be opened until all other valves are closed.
- ☐ Open the source tank valve by turning it several turns to the left. The pressure dial on the regulator should output pressure of 30-60 psi.
- ☐ Open the master ball valve.

- ☐ Ignite a propane torch, then have a helper open the source valve on puffer #1. Gas will now be flowing to the pilot for puffer 1. Raise the torch to the pilot to ignite it.
- ☐ Have a helper open the valve on puffer 1 that goes to puffer 2, then open the input valve on puffer 2. Ignite puffer 2.
- ☐ Repeat for puffer 3, and mini puffer 1 and mini puffer 2.
- ☐ Extinguish the propane torch.
- ☐ Take a minute to look around. Does everything look ok? Is the wind still calm? **If anything does not look normal, shut off the master valve** and reassess whether the puffers should be ignited. Ask for help if you are unsure. If everything looks normal, continue.
- ☐ Open the valve on accumulator 1. Gas will flow into the accumulator.
- ☐ Turn on the master switch on the remote and try puffing the puffers. If the flame level is not satisfactory, open accumulator 2 and/or 3. The more accumulators that are open, the more flame that can be puffed at once.
- ☐ Continue to observe operation. Use the “smell test”. If anything smells fishy, just doesn’t look right, or gives you a bad feeling, shut down the system.

Shutdown Procedure

For normal shutdown, follow the following checklist.

- ☐ Shut off the tank warmer.
- ☐ Close the main tank valve.
- ☐ Allow the gas that is accumulated in the system to burn off. You can just let the pilots burn off the gas or you can burn it off quicker by puffing the effects with the remote.
- ☐ Once the gas has burned from the system, start with the master ball valve and shut off each valve in succession. All ball valves should be closed, including the accumulator valves.
- ☐ Shut off the master power to the remote.
- ☐ Disconnect the remote to disable the system from tampering.

Emergency Shutdown

In the event of an emergency, or if the system needs to be shut down quickly due to changing weather conditions or other variables, follow the following checklist.

- ☐ Shut off main source valve on puffer 1.
- ☐ Shut off the accumulator valve on puffer 1.
- ☐ Shut off the accumulator valve on puffer 2.
- ☐ Shut off the accumulator valve on puffer 3.
- ☐ All pilots should now be extinguished.
- ☐ Shut off all other valves.
- ☐ Note that this will leave gas in the accumulators. This must be purged when conditions are safe.

Normal Operation

There are two modes of operation. The first mode is manual and allows a user to fire each puffer individually using the remote. The master switch should be turned on (it will glow amber when activated). The round red buttons will then control puffers 1-3 and mini puffers 1 and 2. If you hold the remote with the buttons left to right, the buttons will align with the puffers in the structure.

The second mode is auto mode where a series of programs are run from a micro-controller. To initiate auto mode, turn the master switch off (the amber light should go out), then depress the red “auto” button on the upper left of the remote. After a few seconds, you will hear some clicking from the relays in the remote and you can

turn the master power on. You will then see the programs start to run and the puffers will ignite in different patterns. A new program runs every 60-120 seconds. The auto or master button can be turned off at any time to stop the programs from running.

Safe Operation Guidelines

As was stated earlier in this document, safe operation of the fire effects is paramount. At no time should anyone be allowed to interact with the flames themselves (i.e. catching items on fire). No persons should be within 5 feet of the towers that house the puffers. The area should be clear and calm. Anyone who appears agitated or overly affected by drugs or alcohol should be asked to leave or the system should be shut down and reignited when conditions are safe. The towers may not be climbed for any reason.

The weather must be constantly monitored. If winds pick up, the system must be shut down. If at anytime, the operator feels uncomfortable with the operation of the system, it should be shut down. Once again, use the "smell test". If something smells fishy, just turn it off.

Helpers can and should be used to monitor the situation and ensure that everyone is safe around the fire effects. The hoses, fittings, pipes, nozzles, valves and other equipment should be monitored and inspected regularly. If any wear and tear or defects are seen, the system should be shut down and not reignited until the problem is properly fixed.

BRC Rangers and law enforcement officers can order the immediate shutdown of the system. Their request must be adhered to.

Fire Extinguishers

Several fire extinguishers will be posted around the flame effect area and at the source tank. They should be used for emergencies only. They should not be used to extinguish the flame effects in normal operation. The operator must be familiar with the location of the extinguishers as well as the operation of them.

In Case Of Medical Emergency

If a medical emergency arises, contact the nearest BRC Ranger or law enforcement officer immediately. Treat any burns with ice and water only until medical attention arrives. Send someone (or multiple people) for help. The closest medical station to Cosmic Giggle is on the Esplanade at 5:00. The next closest is in the 3:00 plaza.