

## JULIAN's GEA FIREWORK NOTES

Initially written for my own use running Fireworks for GEA 1992, 3, & 4.

Revised after being last minute stand in at least twice prior to 2004 & again in 2004

Available as hints/reminders for chief launch co-ordinator  
& his fellow launchers.

All responsibility for these suggestions is disclaimed !

Make your own safety decisions & preparations !

Equipment listed is suggestions on what to find & take, Not a magic list of GEA stuff someone else will have bought for GEA & magically deliver to the field ;- ) (\*\* = GEA Property, but of course some will have been lost (as usual with GEA property that moves between people)

### Fireworks Equipment To Take

2 Metal Box Containers (eg aluminium photo equipment boxes  
(though Aluminium too burns at some temp.)

To protect against damp & rain & sparks for firework  
sorting at command post) (but nothing I know of  
is big enough to contain long rocket sticks, except  
large plastic shell suitcases (which aren't burn  
proof).

3 Blow Torches + Spare gas cylinders (\*\*)

6 gas cigarette lighters, 2 per launcher.

1 Fireworks Rubbish Bucket (White, ex paint container)

2 Buckets of wet sand

1 Bucket of lake water

3 Fire Extinguishers

### Wooden Launching Platforms To Take

6 (or 3) Rocket launching sticks

Flat planks for Vesuvius etc

3 Table Tops

12 Table legs (3 \* 4)

Main Frame (since disposed off)

2 Vertical

2 Horizontal

1 Diagonal

? Loose Horizontals

? Loose Verticals

### History:

We used to have all this extra stuff below, which  
makes for a better display, but it took too much  
space & transport, & was disposed of approx spring  
2004 When Roger S moved to Middle East (no one came  
forward to store equipment again, I had been regular  
recipient before, & panic recipient too.

### Announcement:

Whistle/ Big Bell + Clipboard + Biro

Megaphone, if available,

(In 94 there were ~350/400 people, well spread out  
round a large curve, I had to stand well back, even  
my loud voice was strained next day.

### First Aid:

Car First Aid Kit

2 x Burn Salve(\*\*)

Tap Water several litres

Bowl to immerse burnt human bits  
Cling-film to prevent air access to burn  
Smooth gauze dressing (not cloth that embeds in wounds)  
Tap water small bottle  
Eye wash solution, + Eye bath,  
Antiseptic,  
Eye Lotion,  
Brandy for launchers (afterwards, not before, think legal ! )  
    brandy also potentially useful for washing wounds  
    perhaps ? (will hurt more though, perhaps better  
    than nothing ? Ask someone who knows, not me !)

#### Launch Clothing:

Jacket that's Not plastic but cloth  
    (if it catches fire plastic merges into skin & is  
    much worse than cloth for hospital to deal with.  
Goggles  
Leather not plastic gloves (people don't use gloves  
    in practice anyway, as it causes fumbling).  
Hats hard shell, eg builders, Old Clothing that can take a burn,

#### Tools:

Hammer 2lb (for Catherine wheels etc)  
Hammer sledge (for Catherine wheel stand, rocket sticks, tables)  
Scraper (for cleaning launching boards after)  
Screwdrivers etc for Catherine wheel frame.  
Saw (speculative)  
Drill (speculative)  
Torches (several) Head mounted are useful.  
(Fluorescent Lamp + extension cable - Optional, useful for set up.)  
Warning Signs in plastic sleeves. to put on boundary sticks.  
Boundary Posts (Green plastic coated steel garden sticks)  
Boundary Tape Red/White (suppliers: Praktika, obi bau-Wa)  
Spare Nails  
Spare Screws  
Spare O ring screws for launch sticks.  
Obsolete (currently, but maybe another year):  
    Step Ladder (for hammering on tall posts)  
        - Poles now shorter so not needed.  
    Spirit Level (for flat tables)  
    Socket Set Driver - not needed as we now do simpler ground  
        laid plank as platform. (don't need the  
        height of a raised platform as audience  
        look over & down gentle slope on to launch area.  
Spanners for bolts for legs.

#### Bonfire:

Diesel Fire starter, Axes, Bow Saw, string to tie apex of frame  
The bonfire is run by Roger. Help both ways can occur.

#### Next Day:

Wheelbarrow & spade (can borrow these from gaststatte)

#### LAUNCH CHIEF:

4 months before: get committe to agree insurance, get several quotes,  
    compare the wording: will the insurance be useful ?

From: Steve\_J  
: 30 Dec 1995 00:42:05 GMT  
- - Richterspruch zu Feuerwerk

Nach einer Entscheidung des Oberlandesgerichtes Nuernberg muss derjenige, der ein Feuerwerk zuendet, fuer genuegend Sicherheitsabstand zu den umstehenden Zuschauern sorgen. Verletzt er diese Pflicht, so riskiert er hohe Schadensersatzforderungen. Das Nuernberger Gericht entschied, dass selbst 10 Meter Abstand noch zu gering sein koennten.

1 week before select Reserve Helpers

Those that are in the crowd are totally useless,  
they must be nearby the launch team,  
guys who want to spend time with their girlfriends are useless.

Criteria For Selection Of Launchers:

Engineers: higher liklihood of mechanical aptitude.

Smokers: more used to coping with wind, when igniting things  
(such as blow torches that blow out)

Drivers: Likely not to have drunk too much before.

Seek: Reliable folk who will turn up in time for building frames,  
& pre launch briefing, & tidying up after.

Don't be short handed, Team of 5 is ideal:

3 launchers, + one to de cap rockets & be on standby, +  
chief to hand out rockets, or just to stand back, not being  
too busy, to orchestrate the show (which takes about 30 mins,  
if 250 Euro fire works are bought (discounted to ~200 Euro  
for bulk purchase)

New inexperienced launch personnel need to be fully briefed,  
easiest would be to send them these notes a week before.

Buy fireworks days before.

You'll presumably start with about 10 combi family packs,  
& some bigger individual things.

Empty & sort all the family packs by type

(it takes too long in the cold or damp of the field.)

Do not buy short wide things that look more like dangerous  
mortars, that rely on level ground we don't have on a plank,  
& could be too dangerous.

Inspect fireworks days before,

Some rockets are always sub standard. Reject (or  
glue & allow time & warm air days before, for glue  
to set, so not on Saturday field) eg any rockets  
not held firmly to stick. Check the sticks are  
straight. Check the sticks dont have splinters  
that will stop their smooth acceleration & trajectory.

Reject (ie do not use for public display) rockets  
with thin spindly sticks that are perhaps good  
enough for bottle mounted in earth at Xmas, but are  
NOt stable enough for a public display. Reject  
rockets with bent sticks. Reject rockets that  
aren't aligned with sticks & will whiz left or  
right. Particularly reject rockets that will fly  
back into crowd. How to tell ? Well the launch  
stick arent vertical, but tilted so rocket body  
hangs on the downhill side of the stick. If the  
rocket tip is pointing more vertical than the stick,  
it's likely to circle backward into crowd I guess.  
Simple check: hold rocket at top of stick near fuse,  
if the tip points upward a bit, it's likely trouble.

Reject rockets with insufficient glue, (some only have their guidance stick stuck to the rocket by the paper label !). Reject rockets with weak knots in the stick.  
Reject fiddly things, eg "NICO  
Feuerwerk" packs of 50 "Knallteufel" / "Tickknaller"  
tiny bangers, useless, as need decent light. Treat rockets gently after inspection, so they don't get broken. We usually use 3 or 6 launching sticks, but wrapping rockets in groups of 3 with rubber bands is not a good move:  
too slow to take off,

too high a chance of breakage in a rush,

a pain if you want to change the combination

(eg we often either 3 of the same, or the edges the same & one in the middle different), + a cha

Also not useful if you wrap in 3's in newspaper,

as we can't see what's left, to balance remaining display between

big high rockets, lo

So just sort rockets by type, & put back in the transparent plastic family combi packs they came in.)

Get there early with plenty of daylight !

Assess which way ground level smoke will drift, place command post upwind.

Assess which way higher level wind goes, allow for this when deciding location of rocket launcher sticks, & angle of sticks.

If erratic wind, place rocket sticks at steeper angle, (to allow for windy gusts towards crowd)

Launch stick too near vertical (what goes up comes down - nearby, plus or minus a bit of wind disturbance, & depending if the rocket is how the rocket is manufactured correctly, aligned with the stick (not all are))

Firing at 20 degrees from vertical, offset from crowd is insufficient, place crowd at top of field, launch site at bottom of field near lake, & slant rocket stick so they will drop in lake or field beyond.

Ensure metal loops on launch sticks are smooth on inside (not rusty).

Ensure launch sticks have an assortment of metal loop displacements, for different size rocket sticks, so that each rocket type can rise well within 2 rings, giving it guidance, before it's down to one ring, & could start veering off course.

Identify where any medically trained people will be standing in the audience,

before not after they are needed.

Tell Gluehwein Tent people + Bonfire

what medical equipment

we have. Ask what they have.

## INSTRUCT LAUNCHERS HOURS BEFORE ON EQUIPMENT IN DAYLIGHT

(& Repeat a subset of briefing 5 mins before Launch):

It's not a chaotic democracy in the dark, but a synchronised operation, with just one boss, to calmly & quietly co-ordinate.

Get them to practice handling fireworks

& installing Roman candles & rockets in the launch

frames with eyes closed (then it'll be easier with

eyes open + torches after dark. (Tell them eg Roman

Candle slipped out of too shallow hole, & pointed

at crowd in 1992)

Restrict your alcohol consumption 'till after firework display finished.

Bring your car fire extinguisher.

Fire Extinguisher, Buckets of Sand (better than water because I have tried chucking a full bucket of water over a firework, & it makes no difference, just keeps burning).

Tell them what first aid kit we have.

When doing nothing, Return to me, & wait by me, so I can talk to you, not shout at you (audience don't benefit from shouting).

Carry gas torches flame pointing backward, to avoid blow outs,  
be very careful of flame, keep away from firework box & people.

Be disciplined, don't just run back & immediately harass me for more fire works,

Work in rota, try to synchronise things, launch rockets simultaneously.

When given 3 fireworks for the tables, if one is different from the other 2, place it on the middle table

Never rush to re light a half dead firework. If you must re light, hold blowtorch can at base with fully outstretched arm, keep maximum distance back, if it's something like a Catherine wheel, be ready for it's expected trajectory of fire.

Examine tables & fireworks before launch time, to see where fuses are, & how they fit on stands, or in which holes on the tables.

Keep rocket launch sticks fully equipped when opportunity allows.

Be very careful if removing rockets from bag, & when handling, not to stress the (often weak) glue joint between rocket & stick, (if this joint is cracked, rocket will go off at unexpected angle)

If a rocket has a broken stick it should have been checked & rejected before, but examine again before putting on launching pole

Don't launch the really small rockets - we can't avoid getting some in each packet, but they don't even fit in our launch poles, so rocket team should just take them away & give them to some small new year firework display.

Don't call loudly to each other, it gives an unprofessional appearance.  
Don't talk to me un-necessarily, I need to concentrate on planning the firing sequence.

Catherine wheel nails: Get someone with good mechanical aptitude to do this ! - Someone screwed this job once.

1 too tight, 1 broken, several not at 85% (ideally is 5 degrees downward, so plastic wheel axis rubs on low friction nail, rather than outer circumference of firework (or badly moulded plastic) braking by rubbing on wood.

Check your nails the day before: under the head should not have bits that will rub on plastic & stop the turning.

The aim is to have all Catherine wheels nailed to wood pieces with large holes on other end, The wood pieces are then hung loose on nails projecting from front of tall frame.

## 15 MINS BEFORE LAUNCH

Uncap Rockets

Remove sellotape from fuses

Keep as many fireworks under cover in aluminium box as possible

Have the rockets in box point away from crowd, not toward, in case a spark or burning fragment hits the box.

Set aside a bunch of stuff for finale.

Bonfire:

Tell Roger, 2/3 minutes before end of display, to start fire.

GRAND FINALE :

Pre-Announce that this last (mega cluster) of fireworks,  
is the end of the display.

AFTER DISPLAY ENDS:

Announce End

Keep people especially kids away from launch area (there's  
always some un ignited fireworks)

Remove barrier

starting at bonfire end, pull out poles, walking  
along line & bundling up tape, letting people  
migrate to bonfire area. (Do not remove whole  
barrier at once, or audience migrate down the  
field. Use just 1 person to roll back the line,  
(not a bunch of launch personnel doing it in  
parallel)

Do not put remaining dead fireworks on fire till end of evening,  
when everyone has left, as supposedly dead ones aren't always dead,  
& have been known to explode !,

< REPEAT EACH BIT IN GERMAN >

ANNOUNCEMENT (Do each bit in both English & German, Very Loudly

Reject quiet speakers.

Welcome

Order of events

Fireworks Launch Team: We're Anonymous because of the risk !

Bonfire: Roger Houghton

Gluehwein Tent:

often not avail till bonfire starts after fireworks

(so Gluehwein servers can watch )

Legal Bit:

Private Club Event

We disclaim all responsibility

Unqualified.

No insurance [ & club is broke ] !

No admission Fee, but contributions welcome, as fireworks cost [around] 200 Euro

Go home now if you don't like the conditions & the risk.

Safety:

Dangerous, fireworks have gone close to crowd before

(92, Roman candle

(93 rocket

Sunday clear ups often find rocket sticks

impaled in ground in spectator area !

No private fireworks are allowed, hand them in to me now,

or quickly put them in your car right now.

Please look after all kids, not just your own.

No sparkler (Wunder Kerzen) are allowed, as metal when dropped in

grass, (gets cut up when grass is collected for silage)

& can & has been ingested by a cow, farmer was Not happy !

After end of display. Keep away from display area

(danger of smoldering/ half burnt/ un-ignited fireworks)

Keep kids well back from bonfire, as sparks & burning twigs

fly a long way.

Keep outside the ring of brush & branches round the bonfire.

We have a first aid kit (hoefully in the tent), (Erste Hilfe Kasten)

Helpers are needed to join us at the Gaststatte for Sunday Lunch & clean up

the field, to keep our good name with the farmer, so we can come again.

They've been known to be rewarded for coming too - Ask in tent.

Souvenir room up the road (on your right toward the church) is warm,

sells schnapps beer candles & key holders,

& proceeds going to the church renovation.

