



LAWRENCE
LIVERMORE
NATIONAL
LABORATORY

661N1 and 661N3 Pre Shot Report

S. T. Bosson

April 14, 2004

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B-DIVISION/SITE 300 EXPLOSIVES ACTIVITY PEER REVIEW

Shot Number: 661N1 and 661N3

Ramrod: Bosson

Bunker: 851

Estimated firing date: May 4, 2004

Short description of any unusual circumstances and hazards:

Attention Ramrod/Experimenter!

For every explosives experiment to be conducted at the B-Division facilities at Site 300, you are to complete this portion and submit this form along with the following supporting documentation to Peer Reviewers for a safety assessment:

- 1) The completed Shot Material Database Input form (latest revision);
- 2) The Assembly Request (may be a copy of the original);
- 3) The completed pre-shot (except for those aspects ordinarily subject to late change). Muster/Fragment analyses, if required, are to be included with the pre-shot. Note that changes to the pre-shot that adversely affect safety will require another peer review.
- 4) A copy of each OSP and/or IWS that has been approved specifically for this experiment

Reviewers:

Signatures of **at least** two peer reviewers are required, with at least one of them from the list of B/S300-approved peer reviewers. The current list is maintained by the B-Division/Site 300 Facility Manager, with copies retained at each bunker.

As a Peer Reviewer, I have assessed the need for additional ES&H controls beyond those defined in the ES&H Manual (http://www-r.llnl.gov/es_and_h/esh-manual.html), the B Division/Site 300 FSP S300.1 (latest revision), and currently active OSPs/IWSs for activities performed at the proposed firing site. A new OSP/IWS will be required to conduct this experiment if the ES&H controls described in the accompanying pre-shot documentation are not considered adequate to meet the minimum requirements of the LLNL Health and Safety Manual, the B Division/Site 300 FSP S300.1 (latest revision), and/or currently active OSPs/IWSs for activities performed at the proposed firing site.

1) Based on my assessment, I have determined that additional safety controls **ARE / ARE NOT** (circle one) required for this experiment.

Peer Reviewer's signature: _____ Date: _____
(blue ink ONLY, please)

2) Based on my assessment, I have determined that additional safety controls **ARE / ARE NOT** (circle one) required for this experiment.

Peer Reviewer's signature: _____ Date: _____
(blue ink ONLY, please)

3) Based on my assessment, I have determined that additional safety controls **ARE / ARE NOT** (circle one) required for this experiment.

Peer Reviewer's signature: _____ Date: _____
(blue ink ONLY, please)

7		Chromium**		gm		gm	Gauges	GU		
8		Cobalt**		gm		gm	Hycam	HC		
							IC Camera	IC		
9	^^	Copper**		gm		gm	IR Temp	IR		
							Laser Fid	LF		
10	^^	Corrosives (eg.,acids, bases)		ml		ml	Micro Radar	MR		
							MUMA	M		
11		Lead**		gm		gm	Optics	O		
							Pins	P		
12		Mercury**		gm		gm	Pressure transducer	PT		
							Photonic velocimetry	PV		
13		Molybdenum**		gm		gm	Pyrometers	PY		
							Ransco	RA		
14		Nickel**		gm		gm	Recovery	R		
							Reflect Probe	RP#		
15		PCBs (e.g., in capacitors)		ml		ml	Scopes	S		
							Strain gauge	SG		
16	^^	Salt, fluoride		gm		gm	Thermocouple	T		
							Video	V		
17	^^	Salt, other lithium compnds		gm		gm	X-ray: LINAC	XL		
							X-ray: Orthogonal	XO		
18		Selenium**		gm		gm	X-ray: Scandiflash	XS		
							X-ray:450: PI	XP		
19		Silver**		gm		gm	X-ray:FXR	XF		
							other (define)			
20		Solvents		ml		ml				
21		Thallium**		gm		gm				
22		Thorium**		gm		gm				
23		Tritium (micrograms)		ugm		ugm				
24		Uranium, depleted**	3352	gm		gm				
25		Vanadium**		gm		gm				
26		Zinc**		gm		gm				
		Pounds of gas produced in the chamber for THIS Shot	Before Shot or design weight	Estimate	Before Shot measured weight	Actual	After Shot up	Picked	After Shot or not retrieved	Detonated
		CO		0.390 lb gas						
		NOX		0.006 lb gas						
		SOX								
		NH3		0.000 lb gas						
		H2S								
		HCN		0.000 lb gas						
		HF								
		HCL								
Comments (include description of unusual forms of materials):										
This completed form must be reviewed and signed by the LLNL Waste Certification Officer, certifying that the container contents are as reported on this form.										
Ramrod name (please print):			Ramrod signature (blue ink ONLY):							
Bunker rep name (please print):			Bunker Rep signature (blue ink ONLY):							
WASTE CERTIFICATION PROGRAM REPRESENTATION:										
SIGNATURE:			DATE:							

SCHEDULING REQUEST

Shot Number: 661N1 and 661N3

Ramrod: Bosson

Phone: 4-3096

Account Number: 501222

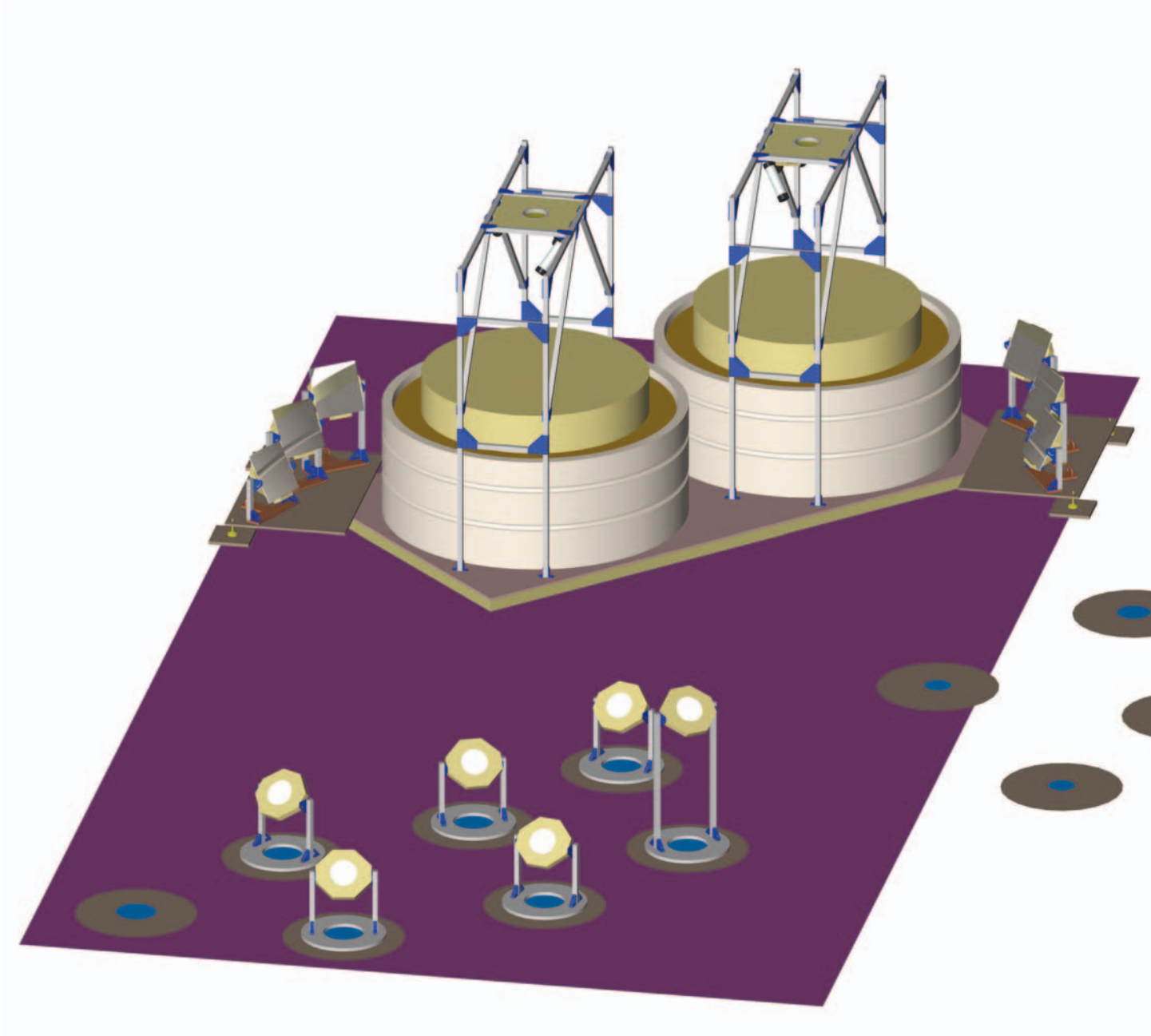
Firing Facility : 851		Start Date (estimated) : April 27, 2004		Reference Shot:661R1	
Estimated Time Required for Set Up: 1 week		Estimated Time Required for Clean Up: 3 days			
Principal Investigator: Greg Archbold		L- 016		Phone: 4-4495	
Primary Engineer: Bryan Nathan		L- 125		Phone: 2-7506	
Classification	Visual	<input type="checkbox"/> Proprietary	<input type="checkbox"/> SRD	<input type="checkbox"/> CRD	<input checked="" type="checkbox"/> UNC
	X-Ray View	<input type="checkbox"/> Proprietary	<input type="checkbox"/> SRD	<input type="checkbox"/> CRD	<input checked="" type="checkbox"/> UNC
	Digital Data	<input type="checkbox"/> Proprietary	<input type="checkbox"/> SRD	<input type="checkbox"/> CRD	<input checked="" type="checkbox"/> UNC
HE Weight <	4.1 lbs	Muster Type: Modified Local		Muster Radius: 1500'	
Toxic Materials	<input checked="" type="checkbox"/> U6Nb/D-38 <input type="checkbox"/> Be <input type="checkbox"/> LiH <input type="checkbox"/> Other				
Special OSPs required:					

RESOURCE REQUIREMENTS

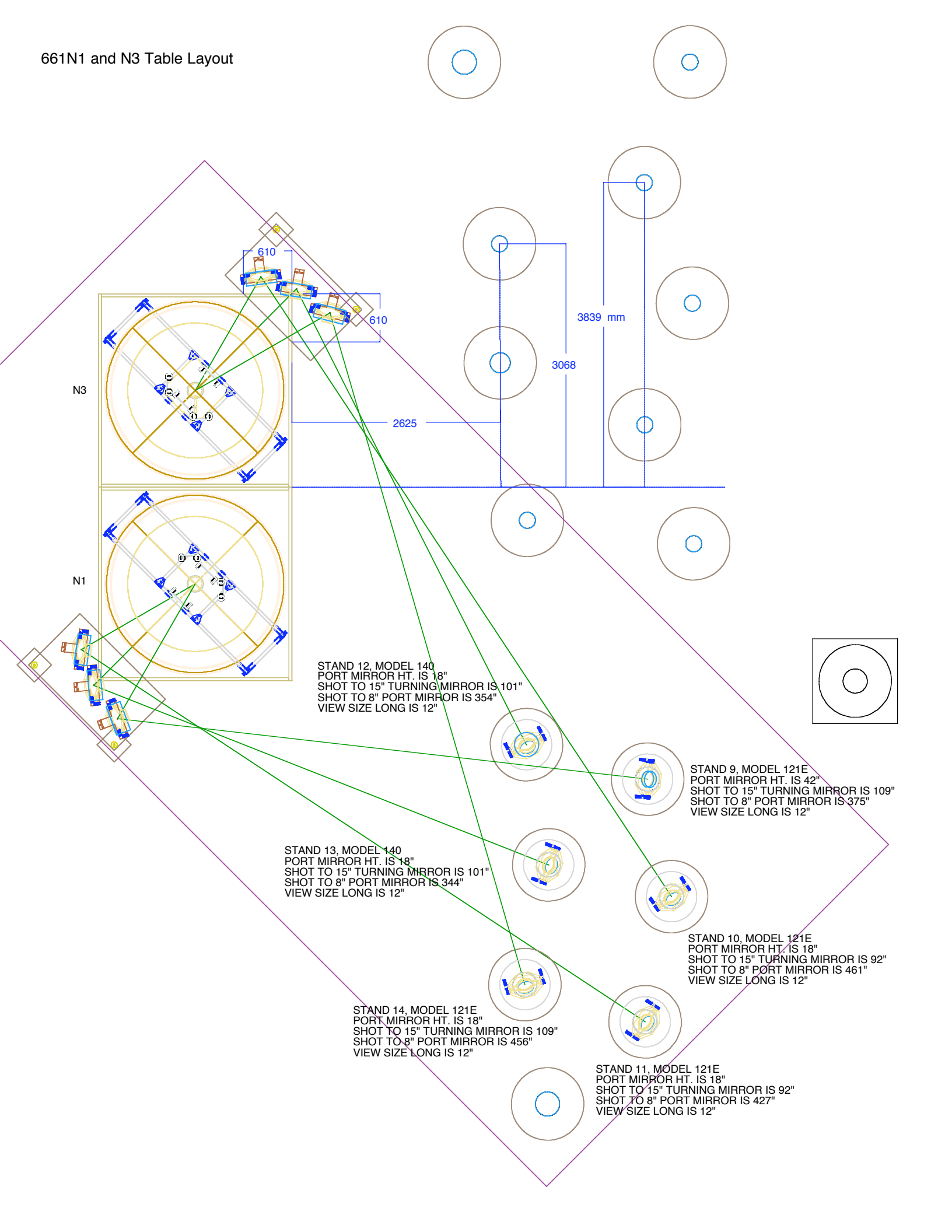
<input type="checkbox"/> AS	Auxiliary Systems						
<input type="checkbox"/> C	Candles (Argon)	Qty: 0 Small		Qty: 0 Large			
<input type="checkbox"/> CT	Cold Trap						
<input checked="" type="checkbox"/> D	Digitizers	Total Channels: 11+					
<input checked="" type="checkbox"/> FL	Flashlamps Both Banks						
<input type="checkbox"/> FS	Remote Fireset	Type:		Voltage:		V	
<input type="checkbox"/> GR	Gamma Ray Camera						
<input type="checkbox"/> HC	Hycam						
<input type="checkbox"/> I-	Fabry Perot Velocimetry	Probes:		Cameras:			
<input type="checkbox"/> IC	IC Camera						
<input type="checkbox"/> IR	IR Temperature Probe / Pyrometer						
<input type="checkbox"/> LF	LED / Laser FID						
<input type="checkbox"/> M	Vacuum/ MUMA System						
<input checked="" type="checkbox"/> O	Optics (Stand/ Model)	9/ 121-E	10/ 121-E	11/ 121-E	12/ 140	13/ 140	14/ 140
<input type="checkbox"/> P	Pins						
<input type="checkbox"/> PT	Pressure Transducer Preamplifier(s)	Qty:					
<input checked="" type="checkbox"/> R	Recovery Water Tanks						
<input type="checkbox"/> RA	Ransco , Shot Thermal Conditioning (includes temperature monitoring)					<input type="checkbox"/> Hot	<input type="checkbox"/> Cold
<input type="checkbox"/> SG	Strain Gauge Preamplifier(s)	Qty:					
<input type="checkbox"/> T	Thermocouple Preamplifier(s)	Qty:					
<input checked="" type="checkbox"/> TE	Tent	Size: 20'x40'			<input checked="" type="checkbox"/> Black?		
<input checked="" type="checkbox"/> V	Video						
<input type="checkbox"/> XF	X-Ray, FXR						
<input type="checkbox"/> XL	X-Ray, LINAC						
<input type="checkbox"/> XP	X-Ray, 450 HP / PI						
<input type="checkbox"/> XS	X-Ray, 450 Scandiflash						
<input type="checkbox"/> XO	X-Ray, Orthogonal						
<input checked="" type="checkbox"/> Other	1 PDV Probe						

Date Fired : / /	Time Fired: : AM / PM	Temperature: ° F or C
Bunker Supervisor:		
Console Operator:		

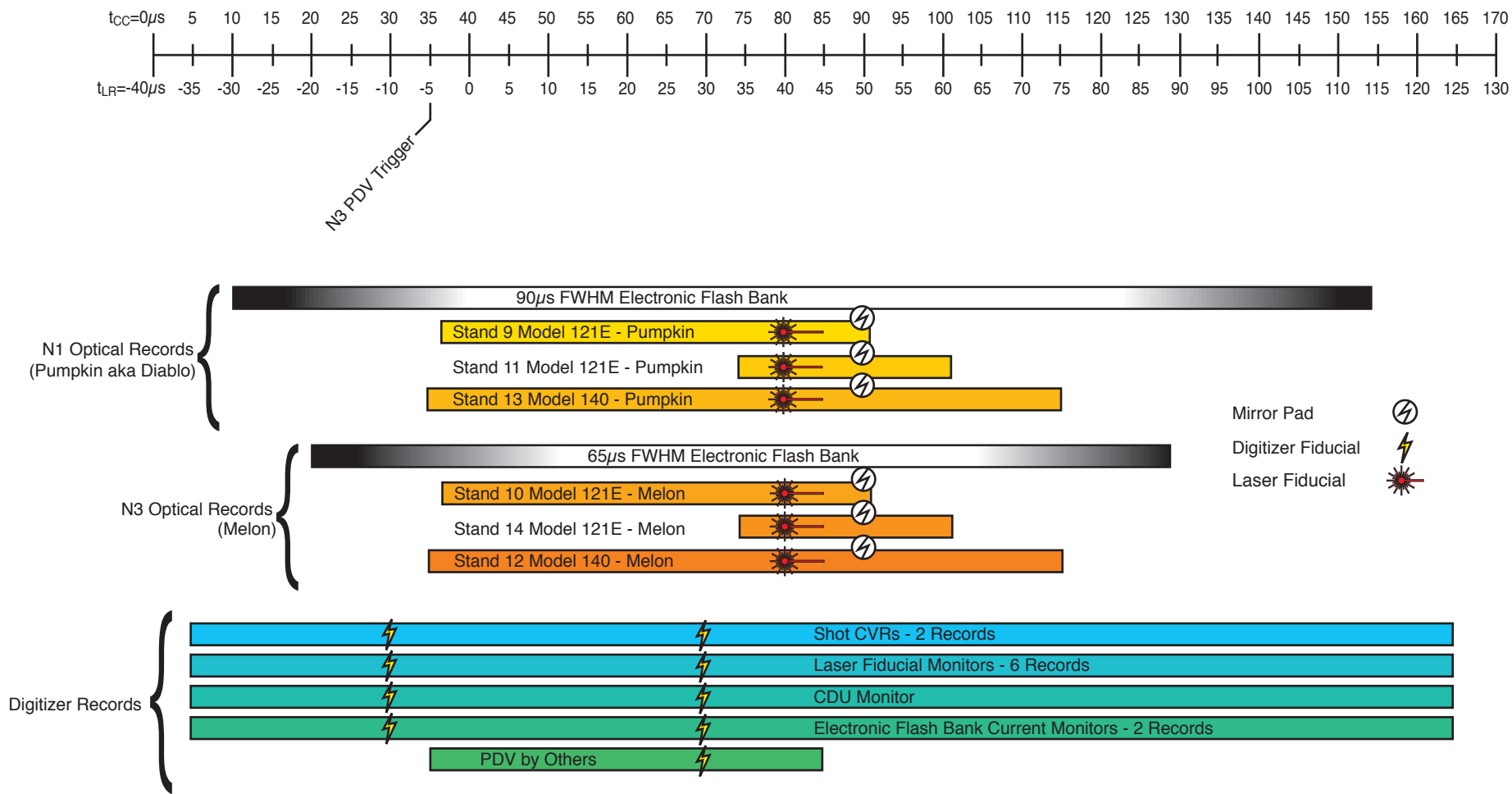
661N1 and 661N3 Table Layout



661N1 and N3 Table Layout



661N1 and N3 Timing Chart



TIMING DATA

Shot Number: 661N1 and N3

Ramrod: Bosson

Phone: 4-3096

FIRST TIMING REFERENCE: Camera Coincidence

SECOND REFERENCE:

Delay Settings

		TEST COMPONENT	TIME μ s	BEFORE or AFTER	CHOOSE TIMING REFERENCE	DELAY SETTING
Ch. 1	triggers	90 μ s FWHM EFB	10	After	First	
Ch. 2	triggers	65 μ s FWHM EFB	20	After	First	
Ch. 3	triggers	PDV System	35	After	First	
Ch. 4	fires	N1 (Pumpkin aka Diablo)	40	After	First	
Ch. 4	fires	N3 (Melon)	40	After	First	
Ch. 5	fires	Mirror Pads Stands 9, 10, 11	90	After	First	
Ch. 6	fires	Mirror Pads Stands 12, 13, 14	90	After	First	

Digitizer Settings

DIGITIZER CHANNEL	DIGITIZER FUNCTION	START AT	FROM REFERENCE	SAMPLE RATE (ns)	LENGTH (μ s)	INCLUDE FIDS
	CVRs N1, N3 (2 Ch)	5 μ s	First	5	>160	yes
	Camera Fiducials (6 Ch)	5 μ s	First	5	>160	yes
	CDU Monitor	5 μ s	First	5	>160	yes
	EFB Monitor (4 Ch)	5 μ s	First	5	>160	yes
	PDV by Others	35 μ s	First	.05	51	2nd

Fiducial Delay Settings

DELAY CHANNEL	FIDUCIALS	START AT	END AT	FROM REFERENCE	START FROM LOAD RING
	Digitizer Fiducial 1	30 μ s	30 μ s	First	-10 μ s
	Digitizer Fiducial 2	70 μ s	70 μ s	First	30 μ s
	All Camera Fiducials	80 μ s	85 μ s	First	40 μ s

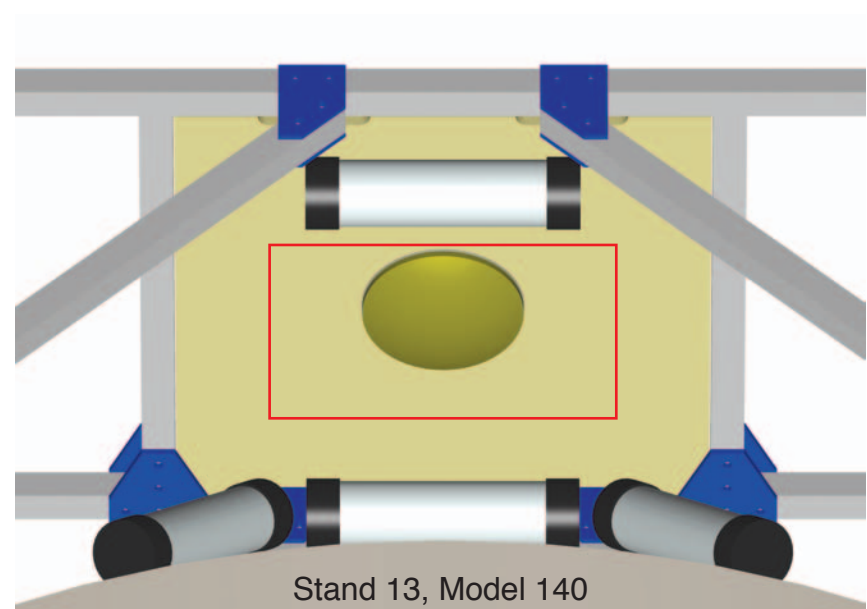
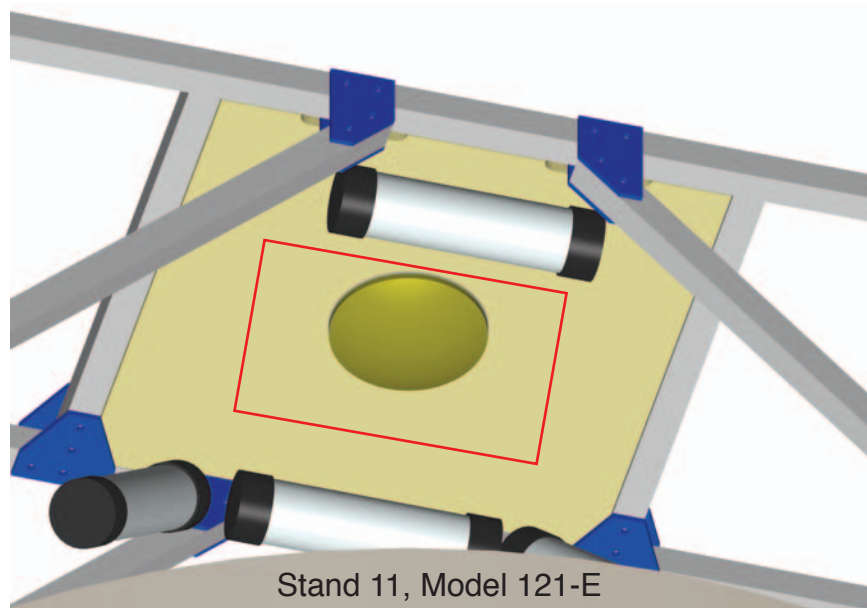
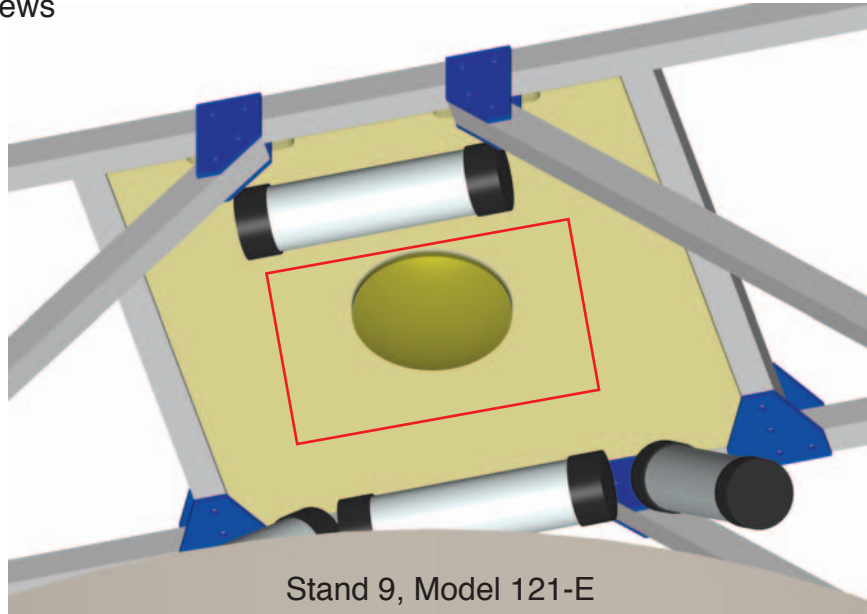
FXR / LINAC Delay (from Load Ring)

TIME FROM LOAD RING	BUNKER SETTING	DISPLAY READOUT	DIGITIZER READOUT

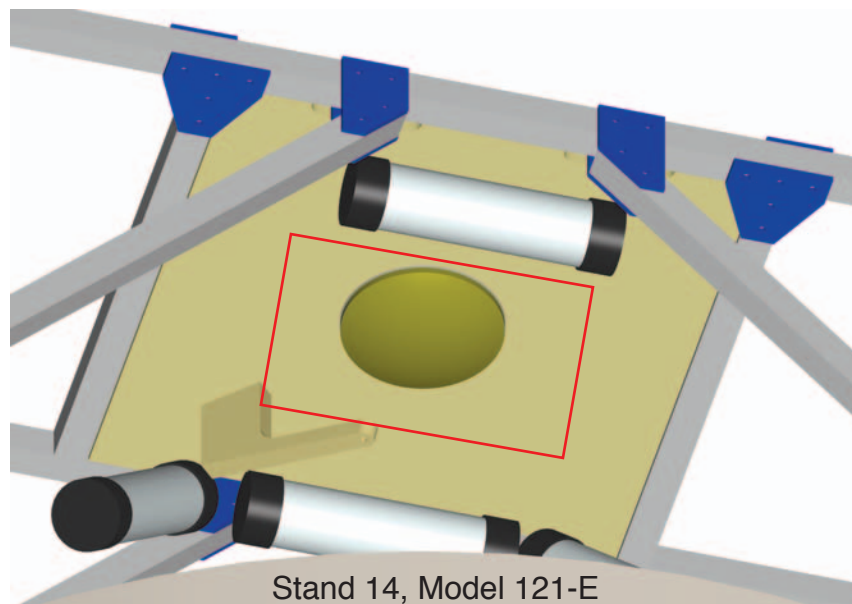
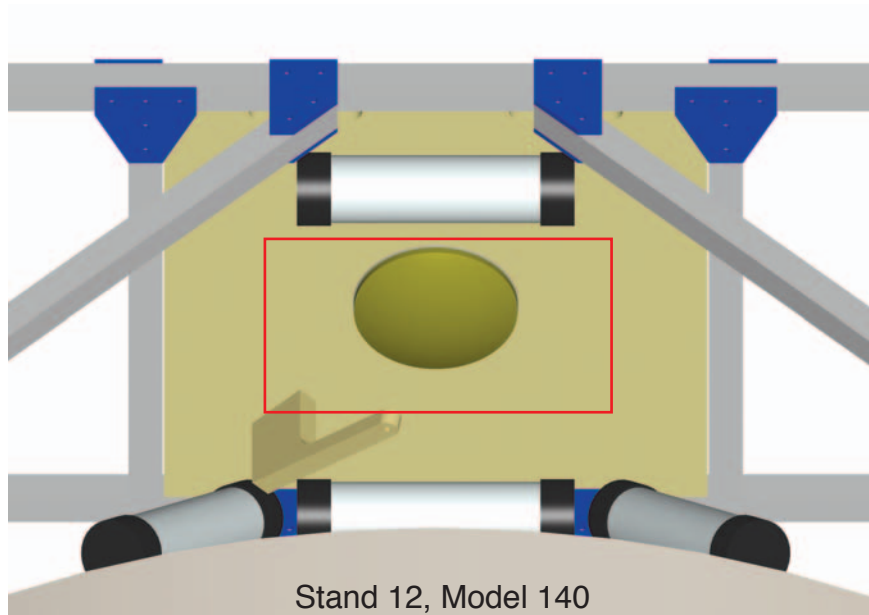
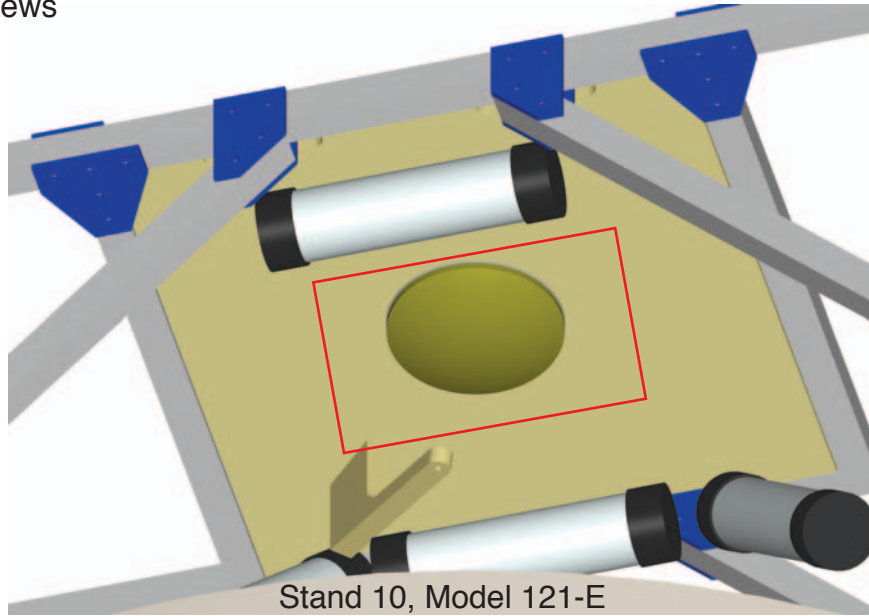
Camera Delay Settings

STAND	MODEL NUMBER	SPEED/FRAME RATE	FRAME 3 TO REF.	PHASE DELAY
9	121-E	2k/2 μ s	42 μ s	
10	121-E	2k/2 μ s	42 μ s	
11	121-E	4k/1 μ s	77 μ s	
12	140	4.16k/1 μ s	N/A	
13	140	4.16k/1 μ s	N/A	
14	121-E	4k/1 μ s	77 μ s	

661N1 Camera Views



661N3 Camera Views



REQUIRED MATERIALS

Shot Number: 661N1 and 661N3

Ramrod: Bosson

Phone: 4-3096

Account Number: 501222

Table	Qty.
8' x 8' Barn Door	2

Port Glass	Qty.
8 " Ø	6
10 " Ø	
12 " Ø	

Port Mirrors	Qty.
8 " Ø	6
10 " Ø	
12 " Ø	

Other Mirrors	Qty.
15" x 15" x 1/4"	6

Candle Supports	Qty.
Stand ()	
Stand ()	
Shelf ()	
Shelf ()	

Candles	Qty.

Flash Lamps	Qty.
MegaSun	<input type="checkbox"/>
Flashbank One	1
Flashbank Two	1
Lamps	8

Tents	Qty.
20' x 40'	<input checked="" type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>

Targets	Qty.

Target Holders	Qty.

CDU	Qty.
Protection	<input type="checkbox"/>
Type	

Signal Cables	Qty.
Light meter	2

Detonator Cables	Qty.
31C/PT (90')	8
31C/31C (Length?)	

Miscellany	Qty.
Water tank	2
80/20 shot frame	2
per drawing	
3' x 5' steel plate	2
per drawing	
T mirror base	6
per drawing	
O mirror base	6
Foam quarter	
circles per drawing	
small, 5 pound	24
large, 10 pound	4
large, 20 pound	8
Light Meters	2
PDV probe holder	1
BWs for dryrun	