



# Jefferson Lab Alignment Group

## Data Transmittal

**TO:** S. Benson, C. Hernandez-Garcia, G. Neil, R. Walker

**DATE:** 20 Nov 2007

**FROM:** Kelly Tremblay

**Checked:** (JCD)

**#:** F1144

**DETAILS:**

Data: align\data\fid\fel\ninjun\071113A & 071114A; align\data\step2b\fel\fel\071119A & 071119b

The FEL injector gun was fiducialized relative to the flanges and cathode on November, 13<sup>th</sup>, 2007. The flanges were used to determine the transverse x and y fiducial coordinates. A design distance from one of the located flanges to the cathode end was used to determine the z fiducial. From these fiducialized values, an as-found check of the gun's location relative to the ideal beamline downstream was conducted on November, 14<sup>th</sup> 2007.

The gun was then re-assembled and a preliminary survey showing the location of the gun was conducted on the morning of November, 19<sup>th</sup> 2007. The survey crew then worked with FEL staff to determine an optimum location, based on observing a light projected through the assembly. This is where the gun is currently positioned (Final). The ideal location and the 3 as-found locations of the gun are reported below.

The ideal location coordinates are in meters, with angles in degrees and are relevant to the FEL coordinate system. The location coordinates are in millimeters and orientated with the beamline looking downstream. A +dz would be too far downstream, +dx to the beam left looking downstream and a +dy is above the design location. The Angular Deltas are in degrees and are based on a right handed coordinate system and are the difference from ideal. A positive delta yaw is counter-clockwise looking from above, a positive pitch is counter-clockwise looking from beam right and a positive roll is clockwise looking downstream.

Target	Z (m)	X (m)	Y (m)	Yaw (deg)	Pitch (deg)	Roll (deg)
IDEAL	90.26078	22.87942	105.00000	200.000	0.000	0.000
Locations	dz (mm)	dx (mm)	dy (mm)	delta Yaw	delta Pitch	delta Roll
Initial 2007.11.14	-0.02	0.30	-0.30	0.231	0.121	0.053
Morning 2007.11.19	-1.04	0.24	-0.25	0.237	0.186	0.055
Final 2007.11.19	-0.11	0.24	0.55	0.229	-0.002	0.052