	<h2>Jobs Safety Analysis</h2>	Start Date: 11/9/2009
JOB/ACTIVITY NAME: Access and Maintenance Inside Linac Laser Alignment Vault		JSA # (optional):
DEPARTMENT/GROUP NAME MET/AEG	BLDG/AREA LOCATION(s): Linac/Sector 30 Loop Road Manhole	OTHER INFORMATION or REFERENCES::
SCOPE OF WORK Opening and entering linac laser alignment vault located on the access road just east of the Klystron Gallery (Sector 30)		

Steps	Potential Hazards	Controls
Contact SLAC Main Control to obtain necessary keys for entrance		
Contact SLAC Security to schedule guards for diverting and controlling traffic		
Obtain combustible gas detector		Such as Drager MiniWarn air monitoring device
Obtain approved lifting device to open manhole		
Obtain approved confined space entry permit		Precautions: <ul style="list-style-type: none"> • Pre-entry briefing on specific hazards and control methods • Verify adequate confined space training (if required) • Air flush • Lighting Rescue Procedures and Equipment: <ul style="list-style-type: none"> • Entry rescue service and equipment ready to effect a timely rescue (fire department is 300 yards away)
Meet with Security to place barriers and control traffic	Traffic	Each participant in street required to wear traffic vest (orange, lime green)

Check status of laser (ON or OFF) via switch in the Sector 30 Klystron control panel		Ensure the laser is turned OFF. The procedure described below must be followed
Remove manhole cover	Dropping or pinching limb(s), back strain	Use only approved manhole cover lifter, get help with second person to lift cover
Test for combustible gas and ensure vault ventilation is operating	Explosion, lack of oxygen	Use combustible gas indicator: hold ON button down to start instrument, attach extension hose and lower into manhole close to floor of upper chamber, wait 30 seconds for air sample to reach the meter and respond. Oxygen should read 20.9; all other readings should be ZERO.
<p>Climb down into vault</p> <ul style="list-style-type: none"> • Turn on light switches for upper and lower chamber • Turn on switch for fan • Climb down into upper vault • Open hatch to lower vault and test air again • Have attendant stay while others climb down to lower chamber 	Falling off ladder, limited visibility, confined space	<p>Wear a body harness, primarily for easier retrieval of person</p> <p>Inspect ladder, focus on climbing and follow SLAC ladder safety training guidance (e.g. always 3 points of contact on the ladder at all times)</p> <p>Carry a flashlight, carry a two-way radio</p> <p>Have attendants stationed on surface and in upper chamber all with two-way radios. Topside person monitors for any abnormal conditions occurring that may affect underground people.</p> <p>DO NOT allow vehicles to park near the manhole with the engine running</p> <p>Radiation dosimeters must be worn</p> <p>In case of emergency in the manhole where the person cannot exit on their own power, CALL THE FIRE DEPARTMENT (911)</p>
Adjust laser	Class 3b laser (hazardous if eyes are exposed directly)	Beam path must be contained. Before turning the laser on, hold white card just after the diverging lens turn the laser on and then move the card to follow the beam towards the light pipe entrance window Once it is clear that the beam is well enough centered on the entrance window the card can be removed
Climb out, lock up	Falling off ladder	SLAC ladder procedures
Replace manhole cover	See opening manhole cover above	See above
Clear area	Traffic	Vests must be worn and SLAC security will direct traffic until all barricades have been removed and the area is clear

JOB/ACTIVITY NAME: Access and Maintenance Inside Linac Laser Alignment Vault

START DATE: 11/1/2009

***I understand & will adhere to the steps, hazards & controls as described in this JSA. I understand that performing steps out of sequence may pose hazards that have not been evaluated, nor authorized. I will contact my supervisor prior to continuing work, if the scope of work changes or new hazards are introduced.
I understand I have the authority and responsibility to stop work I believe to be unsafe.***

Worker Name (please print)

Signature

Date

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

I have reviewed the steps, hazards & controls described in this JSA with all workers listed above and authorize them to perform the work. Workers are qualified (i.e. licensed or certified, as appropriate, & in full compliance with SLAC training requirements) to perform this activity.

Georg Gassner

Supervisor

Signature

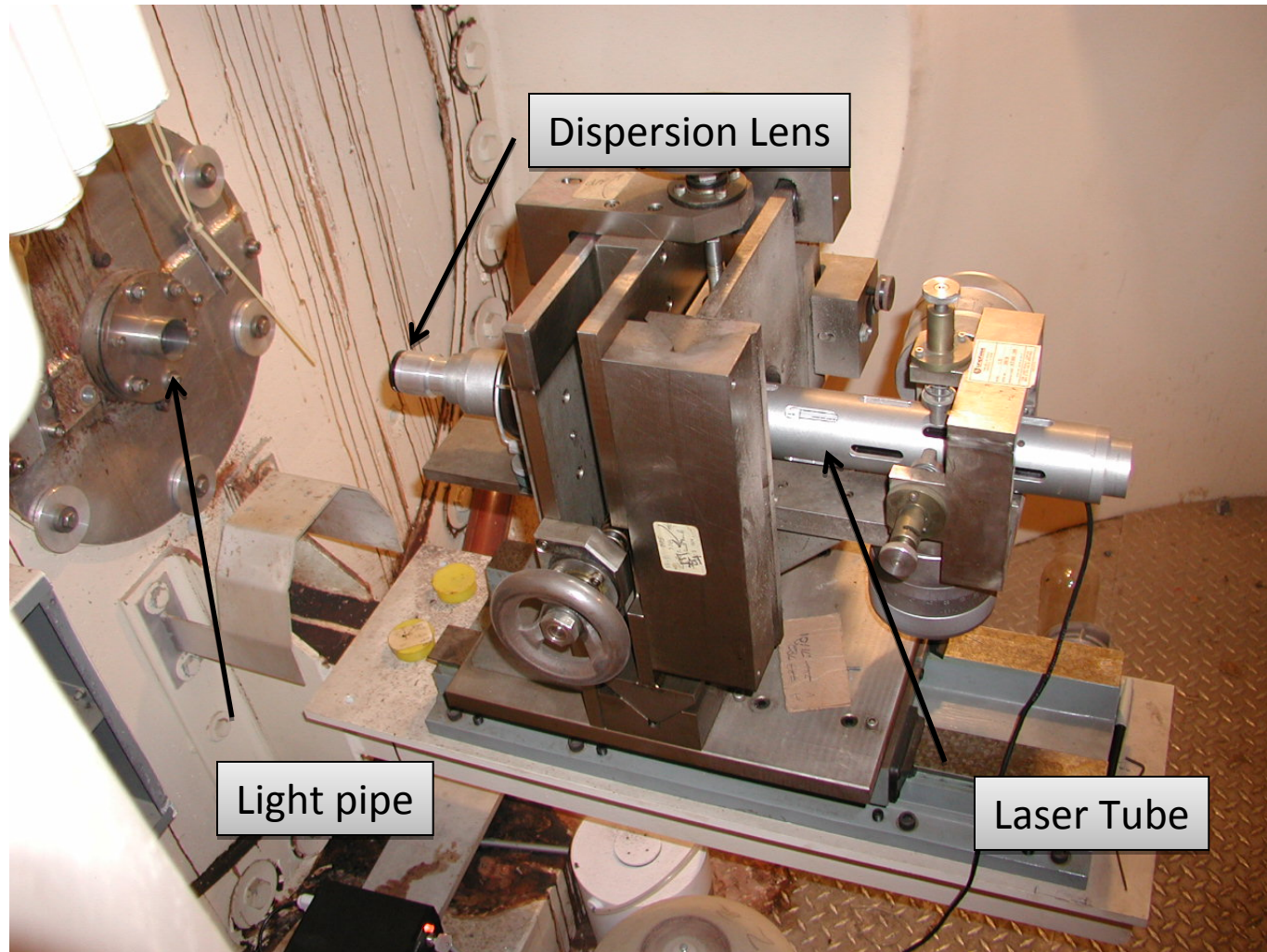
Date

I have communicated area hazards with the supervisor or listed worker(s) for this activity and have coordinated the described activity with affected occupants. The above listed workers are released to perform described scope of work in the following area(s): _____

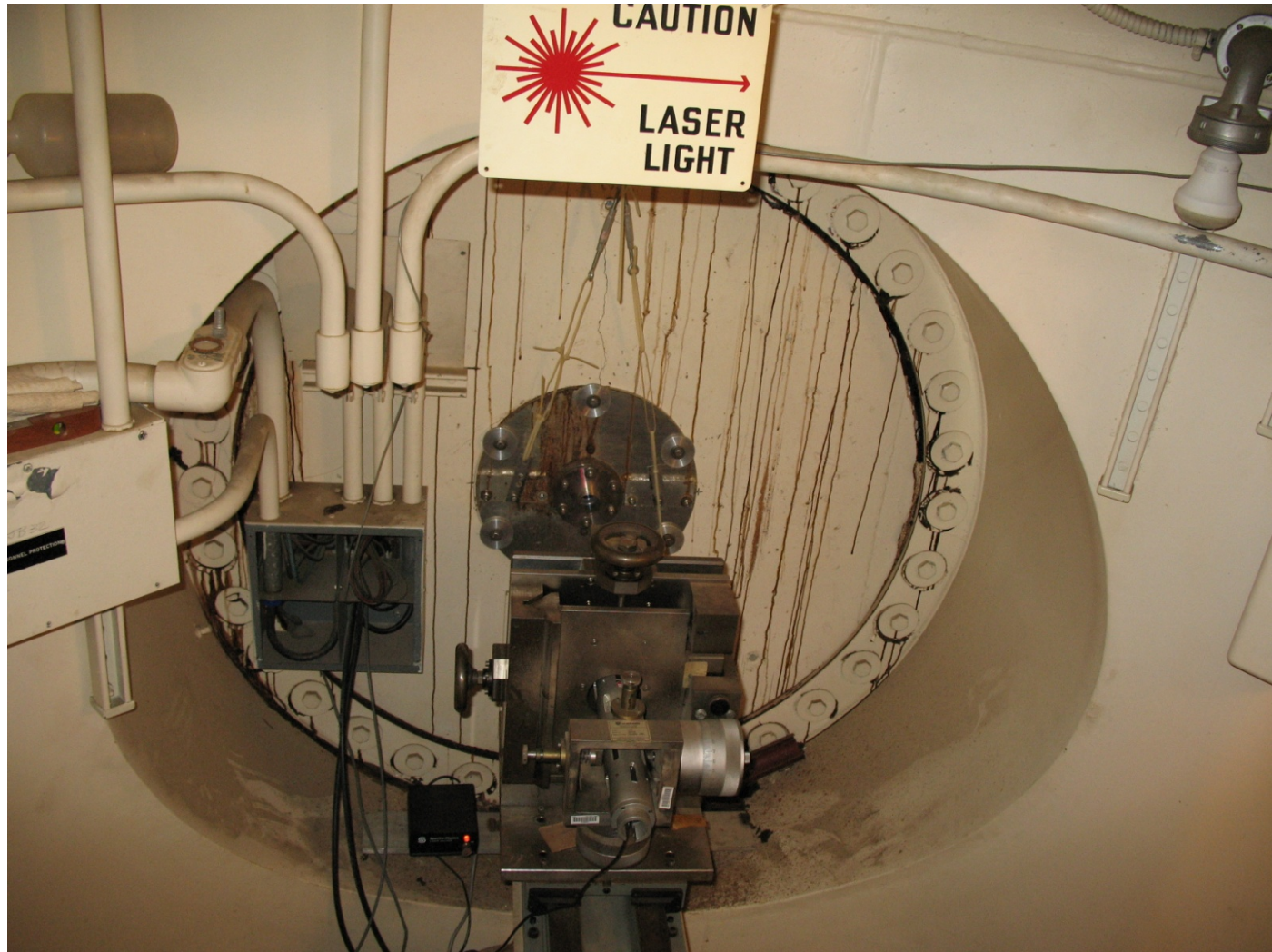
JOB/ACTIVITY NAME: Access and Maintenance Inside Linac Laser Alignment Vault
Area or Building Manager Signature

START DATE: 11/1/2009
Date

Laser on alignment fixture

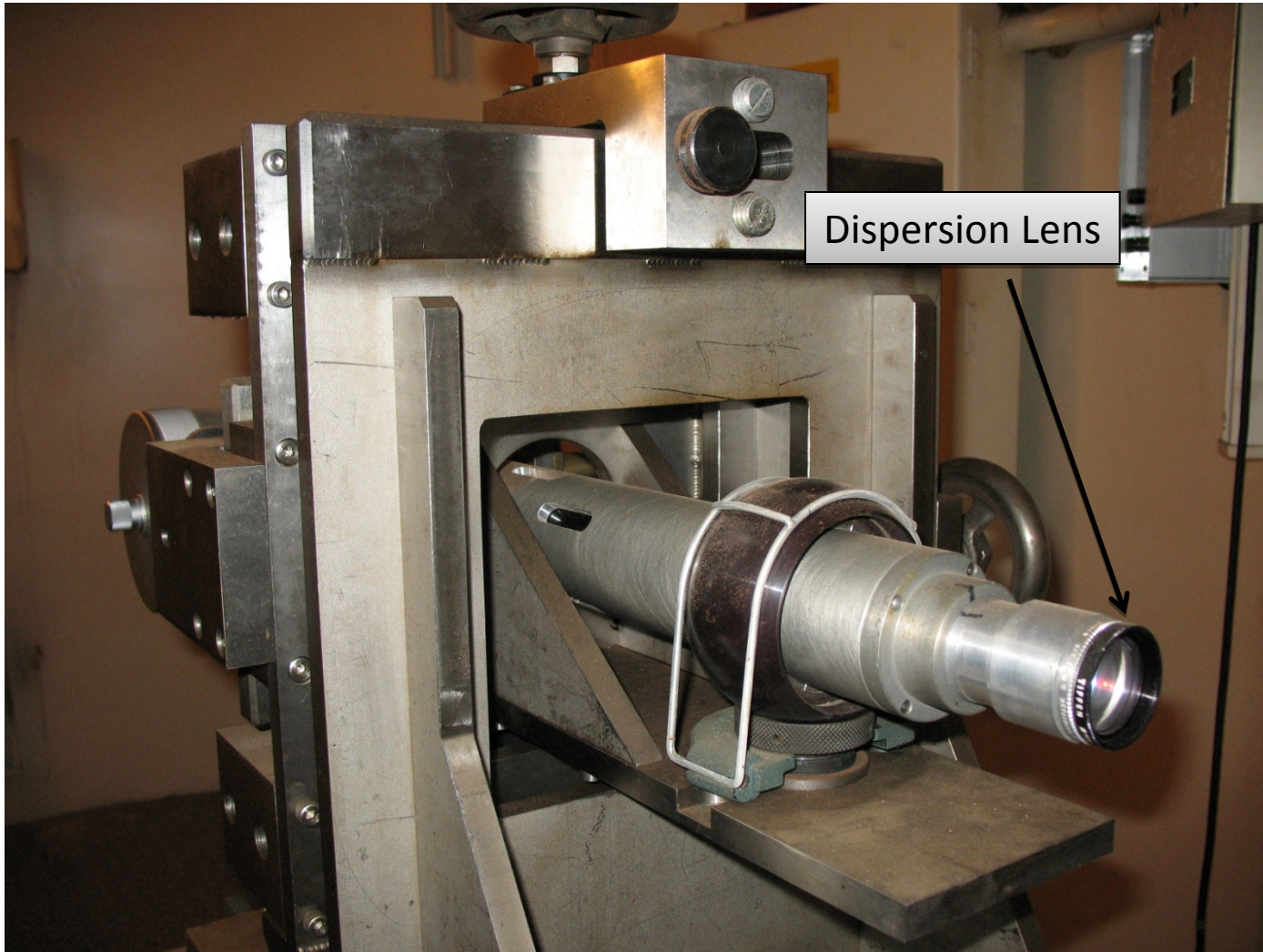


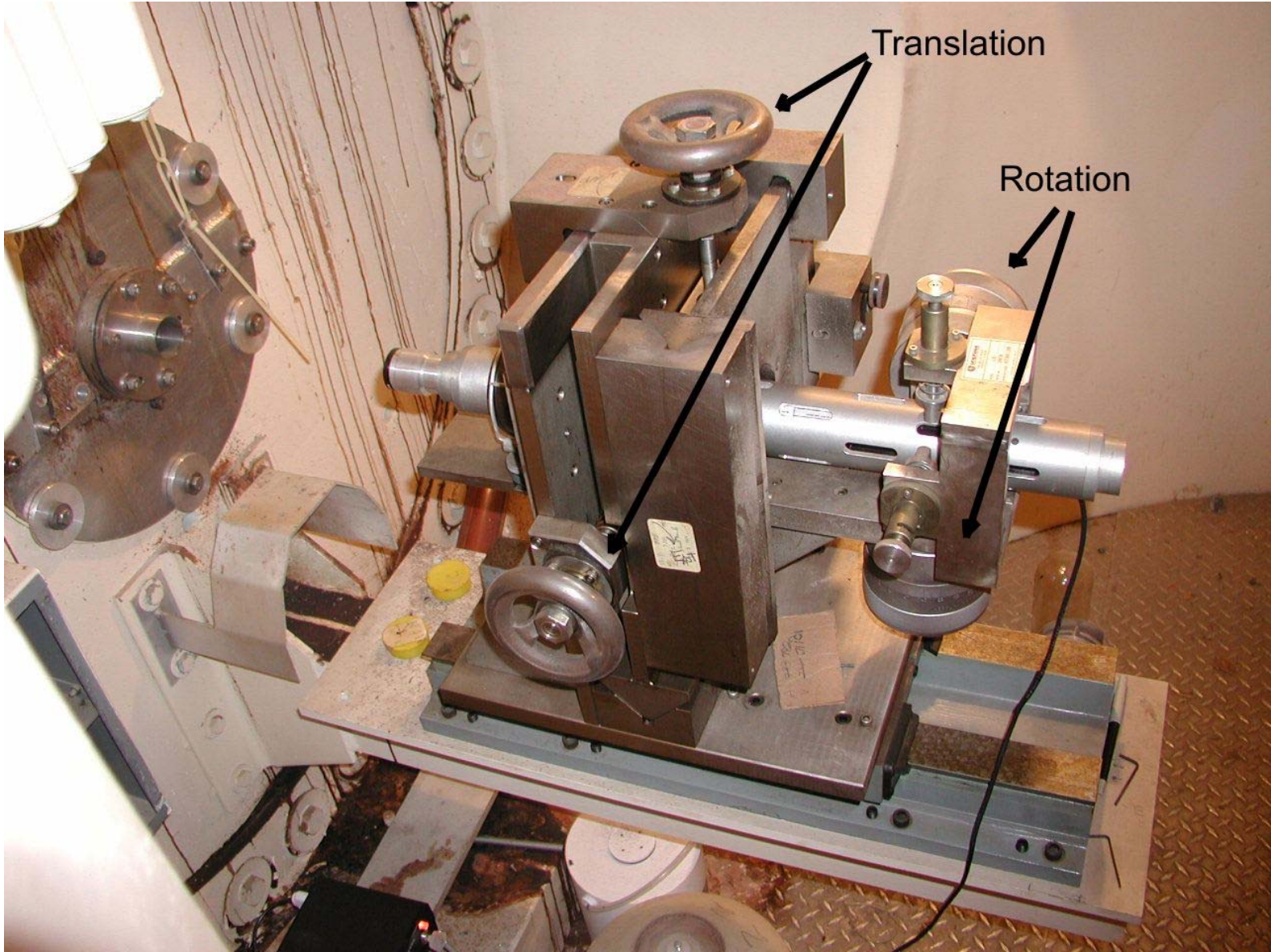
Rear View





Dispersion Lens





Translation

Rotation

Laser

Laser pictured is S-P 105-1



Laser PC info	Description
PC66214	Spectra-Physics 106-1; 20mW 633nm HeNe Class 3B
PC66215	Spectra-Physics 105-1; 10mW 633nm HeNe Class 3B
PC66216	Spectra-Physics 105-1; 10mW 633nm HeNe Class 3B
PC37808	Uniphase 1125P; 10mW 633nm HeNe Class 3B
PC37809	Uniphase 1125P; 10mW 633nm HeNe Class 3B
PC37810	Uniphase 1125P; 10mW 633nm HeNe Class 3B
PC37811	Uniphase 1125P; 10mW 633nm HeNe Class 3B
PC35302	Uniphase N35; specs unknown