Optical Lever Coordinates, H1 E1000601-v2 aLIGO Optical Lever Coordinates, H1
12/14/2010

GROUND
HEIGHT
GLOBAL -1854.2

			BEAM POSITION, mm																
			ZEMAX			GLOBAL			LOCAL										
IFO	**Mirror**	**CHAMBER**	**X**	**Y**	**Z**	**X**	**Y**	**Z**	**X**	**Y**	**Z**	**Comment**					**PATH LENGTH**	**TRANSMIT HEIGHT**	**RECEIVE HEIGHT**
	OPTLEV																		
H1	BS	BSC2	0.0	-1253.0	1230.0	1230.0	-1253.0	0.0	1230.0	-1253.0	0.0	Source	501:00:00	BS	OPTLEV	Tx		1854.2	
			0.0	-1044.4	1025.7	1025.7	-1044.4	0.0	1025.7	-1044.4	0.0	BS	OPTLEV	IN/OUT	BSC2	VP8	292.0		
			0.0	-850.0	835.3	835.3	-850.0	0.0	835.3	-850.0	0.0	BS	optlev	periscope	M1		272.1		
			0.0	-1062.1	627.6	627.6	-1062.1	0.0	627.6	-1062.1	0.0	BS	optlev	periscope	M2		296.9		
			0.0	-241.9	-175.7	-175.7	-241.9	0.0	-175.7	-241.9	0.0	BS					1148.1		
			0.0	-1062.1	664.5	664.5	-1062.1	0.0	664.5	-1062.1	0.0	BS	optlev	periscope	M2		1174.2		
			0.0	-850.0	881.4	881.4	-850.0	0.0	881.4	-850.0	0.0	BS	optlev	periscope	M1		303.4		
			0.0	-1017.4	1052.7	1052.7	-1017.4	0.0	1052.7	-1017.4	0.0	BS	OPTLEV	IN/OUT	BSC2	VP8	239.5		
			0.0	-1224.0	1264.0	1264.0	-1224.0	0.0	1264.0	-1224.0	0.0	BS	OPTLEV	Rc			295.5		1854.2
																	4021.7		
	OPTLEV																		
	PR3	WAMC1	977.4	-336.8	-5893.5	-5893.5	-336.8	-977.4	-5893.5	-336.8	-977.4	Source	344:00:00	OPTLEV	PR3	Tx		876.8	
			962.1	-334.1	-6138.2	-6138.2	-334.1	-962.1	-6138.2	-334.1	-962.1	OPTLEV	PR3	IN	WAMCB1	VP7	245.2		
			111.2	-183.4	-19740.0	-19740.0	-183.4	-111.2	-19740.0	-183.4	-111.2	PR3_RADIUS					13629.2		
			-768.7	-333.9	-6138.2	-6138.2	-333.9	768.7	-6138.2	-333.9	768.7	OPTLEV	PR3	OUT	WAMCB1	VP11	13631.1		
			-783.0	-336.3	-5918.0	-5918.0	-336.3	783.0	-5918.0	-336.3	783.0	OPTLEV	PR3	Rc			220.7		2637.2
																	27726.2		
	OPTLEV																		
	HAM2	WAMC1	913.9	514.9	-5893.5	-5893.5	514.9	-913.9	-5893.5	514.9	-913.9	Source	345:00:00	HAM2	OPTLEV	Tx		940.3	
			899.8	506.8	-6138.2	-6138.2	506.8	-899.8	-6138.2	506.8	-899.8	OPTLEV	HAM2	IN/OUT	WAMCB1	VP5	245.2		
			149.9	75.9	-19199.6	-19199.6	75.9	-149.9	-19199.6	75.9	-149.9	DLC	HAM2	OPTLEV			13090.0		
			899.7	420.1	-6138.2	-6138.2	420.1	-899.7	-6138.2	420.1	-899.7	OPTLEV	HAM2	IN/OUT	WAMCB1	VP5	13087.4		
			912.3	425.9	-5918.0	-5918.0	425.9	-912.3	-5918.0	425.9	-912.3	HAM2	OPTLEV	Rc			220.6		941.9
																	26643.4		
	OPTLEV																		
	HAM3	WAMC1	913.9	-426.9	-17957.1	-17957.1	-426.9	-913.9	-17957.1	-426.9	-913.9	Source	375:00:00	HAM3	OPTLEV	Tx		940.3	
			900.5	-415.9	-17703.1	-17703.1	-415.9	-900.5	-17703.1	-415.9	-900.5	OPTLEV	HAM3	IN/OUT	WAMCA1	VP5	254.6		
			216.3	147.1	-4700.1	-4700.1	147.1	-216.3	-4700.1	147.1	-216.3	DLC	HAM3	OPTLEV			13033.1		
			900.8	-516.0	-17703.1	-17703.1	-516.0	-900.8	-17703.1	-516.0	-900.8	OPTLEV	HAM3	IN/OUT	WAMCA1	VP5	13037.8		
			914.1	-528.9	-17957.0	-17957.0	-528.9	-914.1	-17957.0	-528.9	-914.1	HAM3	OPTLEV	Rc			254.6		940.1
																	26580.1		
	OPTLEV																		
	SR3	WAMC2	965.1	-5893.5	-367.2	-367.2	-5893.5	-965.1	-367.2	-5893.5	-965.1	Source	407:00:00	OPTLEV	SR3	Tx		889.1	
			949.6	-6138.2	-363.7	-363.7	-6138.2	-949.6	-363.7	-6138.2	-949.6	OPTLEV	SR3	IN	WAMCB2	VP5	245.2		
			95.9	-19615.0	-170.9	-170.9	-19615.0	-95.9	-170.9	-19615.0	-95.9	SR3_RADIUS					13505.2		
			-758.5	-6138.2	-365.4	-365.4	-6138.2	758.5	-365.4	-6138.2	758.5	OPTLEV	SR3	OUT	WAMCB2	VP1	13505.3		
			-774.0	-5893.5	-369.0	-369.0	-5893.5	774.0	-369.0	-5893.5	774.0	OPTLEV	SR3	Rc			245.2		2628.2
																	27500.9		
	OPTLEV																		
	HAM5	WAMC2	913.9	-5893.5	514.9	514.9	-5893.5	-913.9	514.9	-5893.5	-913.9	Source	408:00:00	HAM5	OPTLEV	Tx		940.3	
			901.2	-6138.2	506.8	506.8	-6138.2	-901.2	506.8	-6138.2	-901.2	OPTLEV	HAM5	IN/OUT	WAMCB2	VP7	245.2		
			220.7	-19249.8	74.3	74.3	-19249.8	-220.7	74.3	-19249.8	-220.7	DLC	HAM5	OPTLEV			13136.3		
			901.1	-6138.2	424.4	424.4	-6138.2	-901.1	424.4	-6138.2	-901.1	OPTLEV	HAM5	IN/OUT	WAMCB2	VP7	13133.9		
			913.8	-5893.5	430.9	430.9	-5893.5	-913.8	430.9	-5893.5	-913.8	HAM5	OPTLEV	Rc			245.1		940.4
																	26760.5		
	OPTLEV																		
	HAM4	WAMC2	913.9	-17957.1	514.9	514.9	-17957.1	-913.9	514.9	-17957.1	-913.9	Source	441:00:00	HAM4	OPTLEV	Tx		940.3	

			BEAM POSITION, mm																
			ZEMAX			GLOBAL			LOCAL										
IFO	Mirror	CHAMBER	X	Y	Z	X	Y	Z	X	Y	Z	Comment					PATH LENGTH	TRANSMIT HEIGHT	RECEIVE HEIGHT
			900.6	-17703.1	507.2	507.2	-17703.1	-900.6	507.2	-17703.1	-900.6	OPTLEV	HAM4	IN/OUT	WAMCA2	VP5	254.5		
			219.0	-4700.3	114.6	114.6	-4700.3	-219.0	114.6	-4700.3	-219.0	DLC	HAM4	OPTLEV			13026.6		
			900.4	-17703.1	425.5	425.5	-17703.1	-900.4	425.5	-17703.1	-900.4	OPTLEV	HAM4	IN/OUT	WAMCA2	VP5	13024.4		
			913.8	-17957.1	431.6	431.6	-17957.1	-913.8	431.6	-17957.1	-913.8	HAM4	OPTLEV	Rc			254.4		940.4
																	26559.8		
	OPTLEV																		
	ITMX	BSC3	685.0	155.0	38051.0	38051.0	155.0	-685.0	33471.0	155.0	-685.0	Source	474:00:00	ITMX	OPTLEV	Tx		1169.2	
			680.3	152.3	37797.0	37797.0	152.3	-680.3	33217.0	152.3	-680.3	ITMX	OPTLEV	IN	A1-A	VP3	254.1		
			79.9	-199.7	5001.1	5001.1	-199.7	-79.9	421.1	-199.7	-79.9	ITMX-RADIUS					32803.2		
			-520.6	-551.7	37797.0	37797.0	-551.7	520.6	33217.0	-551.7	520.6	ITMX	OPTLEV	OUT	A1-A	VP6	32803.2		
			-525.3	-554.5	38051.0	38051.0	-554.5	525.3	33471.0	-554.5	525.3	ITMX	OPTLEV	Rc			254.1		2379.5
																	66114.7		
	OPTLEV																		
	ITMY	BSC1	685.0	38051.0	155.0	155.0	38051.0	-685.0	155.0	33471.0	-685.0	Source	512:00:00	ITMY	OPTLEV	Tx		1169.2	
			680.3	37797.0	152.3	152.3	37797.0	-680.3	152.3	33217.0	-680.3	ITMY	OPTLEV	IN	A1-B	VP4	254.1		
			79.8	4998.1	-199.8	-199.8	4998.1	-79.8	-199.8	418.1	-79.8	ITMY-RADIUS					32806.2		
			-520.7	37797.0	-551.8	-551.8	37797.0	520.7	-551.8	33217.0	520.7	ITMY	OPTLEV	OUT	A1-B	VP1	32806.2		
			-525.4	38051.0	-554.5	-554.5	38051.0	525.4	-554.5	33471.0	525.4	ITMY	OPTLEV	Rc			254.1		2379.6
																	66120.7		
	OPTLEV																		
	ETMX	BSC9	725.0	168.4	63969.7	63969.7	168.4	-725.0	56969.7	168.4	-725.0	Source	745:00:00	ETMX	OPTLEV	Tx	IN	1129.2	
			696.5	152.1	64214.1	64214.1	152.1	-696.5	57214.1	152.1	-696.5	ETMX	OPTLEV	IN	A1-A	VP4	246.5		
			80.0	-200.2	69501.1	69501.1	-200.2	-80.0	62501.1	-200.2	-80.0	ETMX-RADIUS					5334.5		
			-536.5	-552.6	64214.1	64214.1	-552.6	536.5	57214.1	-552.6	536.5	ETMX	OPTLEV	OUT	A1-A	VP1	5334.5		
			-565.0	-568.9	63969.7	63969.7	-568.9	565.0	56969.7	-568.9	565.0	ETMX	OPTLEV	Rc			246.5		2419.2
																	11162.1		
	PHOTCAL1																		
	ETMX	BSC9	0.0	791.0	63969.7	63969.7	791.0	0.0	56969.7	791.0	0.0	Source	749:00:00	PHOTCAL1	ETMX	Tx	IN	1854.2	
			8.5	747.2	64214.1	64214.1	747.2	-8.5	57214.1	747.2	-8.5	PHOTCAL1-2	ETMX	IN	A1-A	VP5	248.4		
			191.2	-199.7	69501.1	69501.1	-199.7	-191.2	62501.1	-199.7	-191.2	ETMX-RADIUS					5374.3		
			285.6	-688.6	66773.0	66773.0	-688.6	-285.6	59773.0	-688.6	-285.6	PERI1-1	PHOTCAL	ETMX			2773.1		
			284.2	-821.4	66772.7	66772.7	-821.4	-284.2	59772.7	-821.4	-284.2	PERI1-2	PHOTCAL	ETMX			132.8		
			-8.5	-717.8	64214.1	64214.1	-717.8	8.5	57214.1	-717.8	8.5	PHOTCAL1-2	ETMX	OUT	A1-A	VP2	2577.5		
			-36.5	-707.9	63969.7	63969.7	-707.9	36.5	56969.7	-707.9	36.5	PHOTCAL1	ETMX	Rc			246.1		1890.7
																	11352.2		
	PHOTCAL2																		
	ETMX	BSC9	0.0	867.0	63969.7	63969.7	867.0	0.0	56969.7	867.0	0.0	Source	750:00:00	PHOTCAL2	ETMX	Tx	IN	1854.2	
			-1.4	819.9	64214.1	64214.1	819.9	1.4	57214.1	819.9	1.4	PHOTCAL1-2	ETMX	IN	A1-A	VP5	248.9		
			-32.4	-199.6	69501.1	69501.1	-199.6	32.4	62501.1	-199.6	32.4	ETMX-RADIUS					5384.5		
			-48.4	-726.1	66771.9	66771.9	-726.1	48.4	59771.9	-726.1	48.4	PERI2-1	PHOTCAL	ETMX			2779.6		
			-53.3	-823.1	66770.2	66770.2	-823.1	53.3	59770.2	-823.1	53.3	PERI2-2	PHOTCAL	ETMX			97.1		
			-42.0	-793.5	64214.1	64214.1	-793.5	42.0	57214.1	-793.5	42.0	PHOTCAL1-2	ETMX	OUT	A1-A	VP2	2556.3		
			-40.9	-790.7	63969.7	63969.7	-790.7	40.9	56969.7	-790.7	40.9	PHOTCAL2	ETMX	Rc			244.4		1895.1
																	11310.8		
	OPTLEV																		
	ETMY	BSC10	725.0	63969.7	168.4	168.4	63969.7	-725.0	168.4	56969.7	-725.0	Source	772:00:00	ETMY	OPTLEV	Tx	IN	1129.2	
			696.5	64214.1	152.1	152.1	64214.1	-696.5	152.1	57214.1	-696.5	ETMY	OPTLEV	IN	A-1A	VP3	246.5		
			80.4	69498.1	-200.0	-200.0	69498.1	-80.4	-200.0	62498.1	-80.4	ETMY-RADIUS					5331.5		
			-535.8	64214.1	-552.2	-552.2	64214.1	535.8	-552.2	57214.1	535.8	ETMY	OPTLEV	OUT	A-1A	VP6	5331.5		
			-564.3	63969.7	-568.5	-568.5	63969.7	564.3	-568.5	56969.7	564.3	ETMY	OPTLEV	Rc			246.5		2418.5
																	11156.1		
	PHOTCAL1																		
	ETMY	BSC10	0.0	63969.7	791.0	791.0	63969.7	0.0	791.0	56969.7	0.0	Source	776:00:00	PHOTCAL1	ETMY	Tx	IN	1854.2	
			8.5	64214.1	747.2	747.2	64214.1	-8.5	747.2	57214.1	-8.5	PHOTCAL1-2	ETMY	IN	A1-A	VP2	248.4		
			191.1	69498.1	-199.2	-199.2	69498.1	-191.1	-199.2	62498.1	-191.1	ETMY-RADIUS					5371.2		

			BEAM POSITION, mm																
			ZEMAX			GLOBAL			LOCAL										
IFO	Mirror	CHAMBER	X	Y	Z	X	Y	Z	X	Y	Z	Comment					PATH LENGTH	TRANSMIT HEIGHT	RECEIVE HEIGHT
			285.3	66774.1	-687.3	-687.3	66774.1	-285.3	-687.3	59774.1	-285.3	PERI1-1	PHOTCAL	ETMY			2769.0		
			283.9	66773.8	-820.4	-820.4	66773.8	-283.9	-820.4	59773.8	-283.9	PERI1-2	PHOTCAL	ETMY			133.1		
			-8.9	64214.1	-716.8	-716.8	64214.1	8.9	-716.8	57214.1	8.9	PHOTCAL1-2	ETMY	OUT	A1-A	VP5	2578.5		
			-36.8	63969.7	-706.9	-706.9	63969.7	36.8	-706.9	56969.7	36.8	PHOTCAL1	ETMY	Rc			246.1		1891.0
																	11346.4		
	PHOTCAL2																		
	ETMY	BSC10	0.0	63969.7	867.0	867.0	63969.7	0.0	867.0	56969.7	0.0	Source	777:00:00	PHOTCAL2	ETMY	Tx	IN	1854.2	
			-1.4	64214.1	819.9	819.9	64214.1	1.4	819.9	57214.1	1.4	PHOTCAL1-2	ETMY	IN	A1-A	VP2	248.9		
			-32.4	69498.1	-199.0	-199.0	69498.1	32.4	-199.0	62498.1	32.4	ETMY-RADIUS					5381.5		
			-48.4	66773.0	-724.8	-724.8	66773.0	48.4	-724.8	59773.0	48.4	PERI2-1	PHOTCAL	ETMY			2775.4		
			-53.2	66771.3	-822.0	-822.0	66771.3	53.2	-822.0	59771.3	53.2	PERI2-2	PHOTCAL	ETMY			97.4		
			-42.0	64214.1	-792.4	-792.4	64214.1	42.0	-792.4	57214.1	42.0	PHOTCAL1-2	ETMY	OUT	A1-A	VP5	2557.5		
			-40.9	63969.7	-789.6	-789.6	63969.7	40.9	-789.6	56969.7	40.9	PHOTCAL2	ETMY	Rc			244.4		1895.1
																	11304.9		
MC Tube viewport ref in ZEMAX																			
	WAMC1		0.0	0.0	0.0	0.0	0.0	0.0											
	WAMC2		0.0	0.0	0.0	0.0	0.0	0.0											
chamber coordinates in ZEMAX																			
	BSC1		0.0	4580.0	0.0	0.0	4580.0	0.0											
	BSC2		0.0	0.0	0.0	0.0	0.0	0.0											
	BSC3		0.0	0.0	4580.0	4580.0	0.0	0.0											
	BSC9		0.0	0.0	7000.0	7000.0	0.0	0.0											
	BSC10		0.0	7000.0	0.0	0.0	7000.0	0.0											