

D0900442 - AdvLIGO Systems, BSC1-L1 Top Level Chamber Assembly - Mass Properties BOM							SUSPENDED MASS		NON-SUSPENDED MASS	
ITEM NO.	P/N	DESCRIPTION	QTY		SUB-TOTAL	TOTAL	SUB-TOTAL	TOTAL		
1	D0900444	AdvLIGO SEI BSC1-L1, XYZ Local CS for ISI Table	1			1618.25		1618.25		
1.1	D0901182	AdvLIGO SEI BSC ISI Table Assembly	1		1618.25		1618.25			
1.2	D1003140	Lifting Bar, 3-Point, BSC Cartridge, AdvLIGO	1		0.00		0.00			
2	D0900445	AdvLIGO SUS BSC1-L1, XYZ Local CS for ITMY	1		363.49	363.49	131.00	131.00		
2.1	D0901346-03	AdvLIGO QUAD SUS Assembly Top Level TD-1084-090_ASM	1		339.02		106.53			
2.2	D1002424	aLIGO, SUS, Viobration Absorber, 5LB Vertical with O-Rings	4		12.01		12.01			
2.3		Dog Clamps Set	1		12.06		12.06			
2.4		Hardware Set	1		0.40		0.40			
3	D1002565	AdvLIGO BSC1-L1 ISI Table, Payload & Suspended Mass Assembly	1			708.94		708.94		
4	D1200112	AdvLIGO, Cable Harness Routing BSC1	1			7.13		7.13		

CARTRIDGE CONFIGURATION	
SUB-TOTAL	TOTAL
	3475.99
3279.00	
196.99	
363.49	363.49
339.02	
12.01	
12.06	
0.40	
437.61	437.61
7.13	7.13

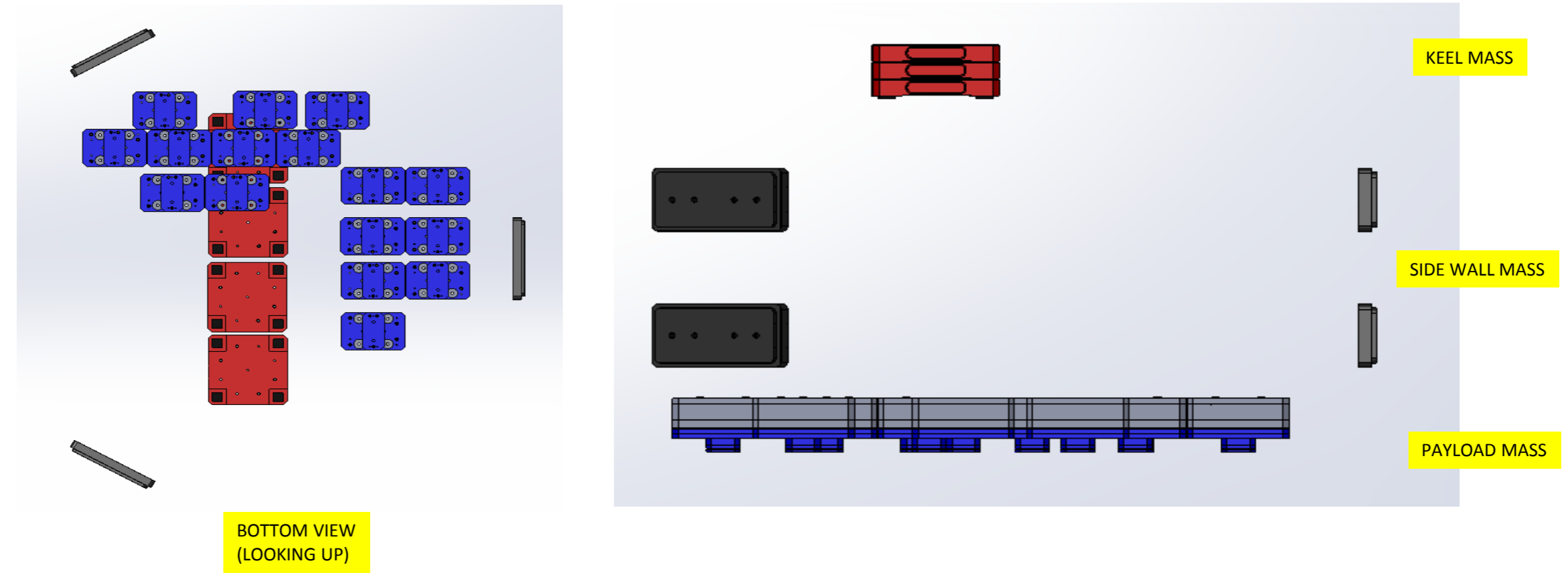
As per DCC # E1100006 (Pg 2) this is **TOTAL MASS ON STAGE 1-2 SPRINGS = 2830 Kg**
 As per DCC # E1100006 (Pg 2) this is **STAGE 2 BSC-ISI SUSPENDED MASS = 1614 Kg**
 As per DCC # E1100006 (Pg 2) this is **LEFT FOR "OPTICS + TABLE MASSES" = 732 Kg**

TOTAL [Σ(J3:J19)]	2697.81
ISO TABLE [J4]	1618.25
TOTAL PAYLOAD (J21-J22)	1079.56

2465.32

4284.22
TARGET
10000 LBS
4536 Kg

CONFIGURATIONS	COUNTERBALANCE MASS			CENTER OF GRAVITY				TOTAL COUNTERBALANCE MASS
	PAYLOAD MASS (Kg)	OUTER WALL MASS (Kg)	KEEL MASS (Kg)	X = 0.0 ± 10 mm	Y = 0.0 ± 10 mm	Z = 180.34 ± 100 mm	"Z" TARGET 7.10 in 3.10 ≤ Z ≤ 11.10	
	CG XY-Calculation (SUSPENDED Mass)	342.10	95.50	271.34	-1.43	-1.72	136.35	
CG Z-Calculation (Non-SUSPENDED Mass)	342.10	95.50	271.34	17.30	-22.26	256.88	10.11	708.94
CG XYZ-Calculation (Cartridge Configuration)	342.10	95.50	0.00	-0.20	6.31	125.20	4.93	437.61



D0900428 - AdvLIGO Systems, BSC2-L1 Top Level Chamber Assembly - Mass Properties BOM							SUSPENDED MASS		NON-SUSPENDED MASS	
ITEM NO.	P/N	DESCRIPTION	QTY		SUB-TOTAL	TOTAL	SUB-TOTAL	TOTAL		
1	D0900430	AdvLIGO SEI BSC2-L1, XYZ Local CS for ISI Table	1			1618.25		1618.25		
1.1	D0901182	AdvLIGO SEI BSC ISI Table Assembly		1	1618.25		1618.25			
1.2	D1003140	Lifting Bar, 3-Point, BSC Cartridge, AdvLIGO		1	0.00		0.00			
2	D0900431	AdvLIGO SUS BSC2-L1, XYZ Local CS for BS HR	1		204.70	204.70	164.45	164.45		
2.1	D1000392	AdvLIGO BS/FM Top Level Assembly		1	151.83		111.58			
2.2	TBD	AdvLIGO SUS BSC8-H2, BS/FM Stay Assembly		4	19.73		19.73			
2.3	D1002424	aLIGO, SUS, Vibration Absorber, 5LB Vertical with O-Rings		4	12.70		12.70			
2.4	D1200750	AdvLIGO AOS SLC BS Elliptical Baffle Assembly		1	2.25		2.25			
2.5		Dog Clamps Set		1	17.29		17.29			
2.6		Hardware Set		1	0.90		0.90			
4	D1101852	AdvLIGO BSC2-L1 ISI Table, Payload & Suspended Mass Assembly	1			865.20		865.20		
5	D1200060	AdvLIGO, Cable Harness Routing BSC2	1			5.86		5.86		

CARTRIDGE CONFIGURATION	
SUB-TOTAL	TOTAL
	3475.99
3279.00	
196.99	
204.70	204.70
151.83	
19.73	
12.70	
2.25	
17.29	
0.90	
591.34	591.34
5.86	5.86

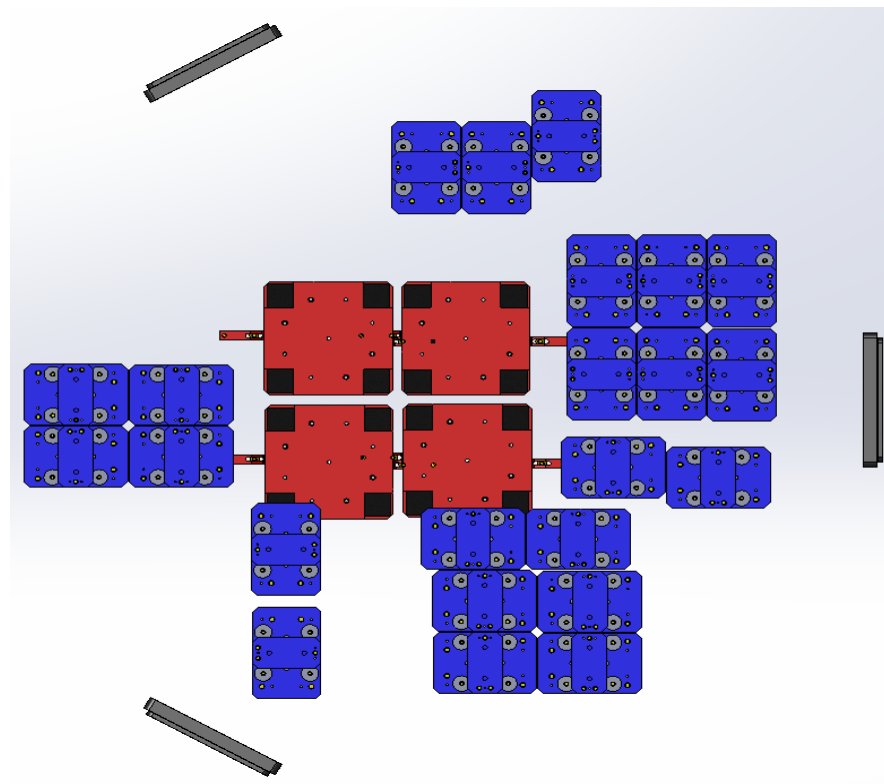
As per DCC # E1100006 (Pg 2) this is **TOTAL MASS ON STAGE 1-2 SPRINGS = 2830 Kg**
 As per DCC # E1100006 (Pg 2) this is **STAGE 2 BSC-ISI SUSPENDED MASS = 1614 Kg**
 As per DCC # E1100006 (Pg 2) this is **LEFT FOR "OPTICS + TABLE MASSES" = 732 Kg**

TOTAL [Σ(J3:J19)]	2694.01
ISO TABLE [J4]	1618.25
TOTAL PAYLOAD (J21-J22)	1075.76

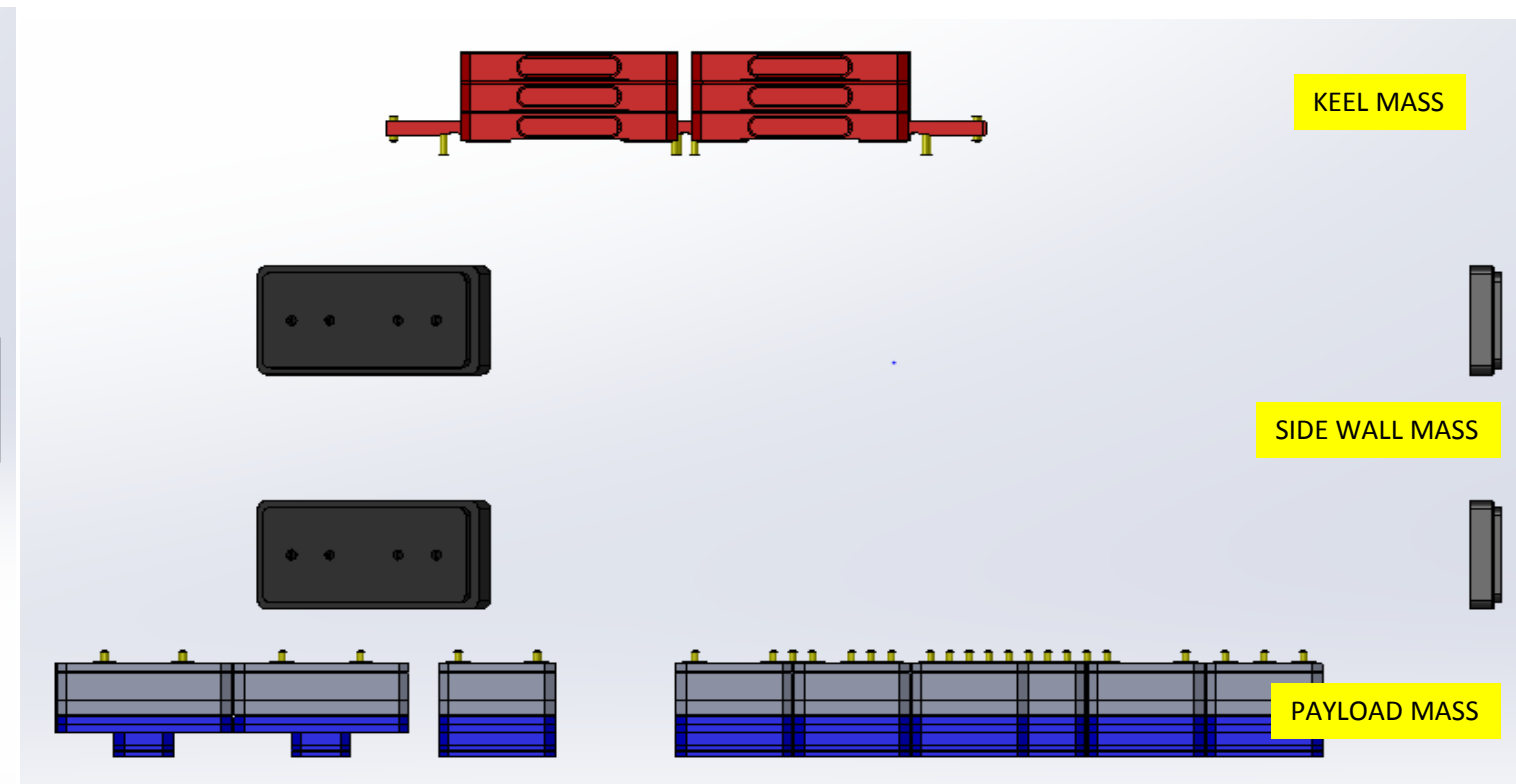
2653.75

4277.89
TARGET
10000 LBS
4536 Kg

CONFIGURATIONS	COUNTERBALANCE MASS			CENTER OF GRAVITY				TOTAL COUNTERBALANCE MASS
	PAYLOAD MASS	OUTER WALL MASS	KEEL MASS	X = 0.0	Y = 0.0	Z = 180.34	"Z" TARGET 7.10 in	
	(Kg)	(Kg)	(Kg)	± 10 mm	± 10 mm	± 100 mm	3.10 ≤ Z ≤ 11.10	
CG XY-Calculation (SUSPENDED Mass)	495.84	95.50	273.86	-1.09	0.89	200.22		865.20
CG Z-Calculation (Non-SUSPENDED Mass)	495.84	95.50	273.86	1.64	2.48	221.98	8.74	865.20
CG XYZ-Calculation (Cartridge Configuration)	495.84	95.50	0.00	1.89	0.54	164.86	6.49	591.34



BOTTOM VIEW (LOOKING UP)



KEEL MASS

SIDE WALL MASS

PAYLOAD MASS

D0900492 - AdvLIGO Systems, BSC3-L1 Top Level Chamber Assembly - Mass Properties BOM							SUSPENDED MASS		NON-SUSPENDED MASS	
ITEM NO.	P/N	DESCRIPTION	QTY		SUB-TOTAL	TOTAL	SUB-TOTAL	TOTAL		
1	D0900494	AdvLIGO SEI BSC3-L1, XYZ Local CS for ISI Table	1			1618.25		1618.25		
1.1	D0901182	AdvLIGO SEI BSC ISI Table Assembly	1		1618.25		1618.25			
1.2	D1003140	Lifting Bar, 3-Point, BSC Cartridge, AdvLIGO	1		0.00		0.00			
2	D0900495	AdvLIGO SUS BSC3-L1, XYZ Local CS for ITMX	1		363.51	363.51	130.80	130.80		
2.1	D0901346-03	AdvLIGO QUAD SUS Assembly Top Level TD-1084-090_ASM	1		339.24		106.53			
2.2	D1002424	aLIGO, SUS, Viobration Absorber, 5LB Vertical with O-Rings	4		12.01		12.01			
2.3		Dog Clamps Set	1		11.76		11.76			
2.4		Hardware Set	1		0.50		0.50			
3	D1000898	AdvLIGO BSC8-H2 ISI Table, Payload & Suspended Mass Assembly	1			699.02		699.02		
4	D1101142	AdvLIGO, Cable Harness Routing BSC6 & BSC8	1			6.96		6.96		

CARTRIDGE CONFIGURATION	
SUB-TOTAL	TOTAL
	3475.99
3279.00	
196.99	
363.51	363.51
339.24	
12.01	
11.76	
0.50	
425.16	425.16
6.96	6.96

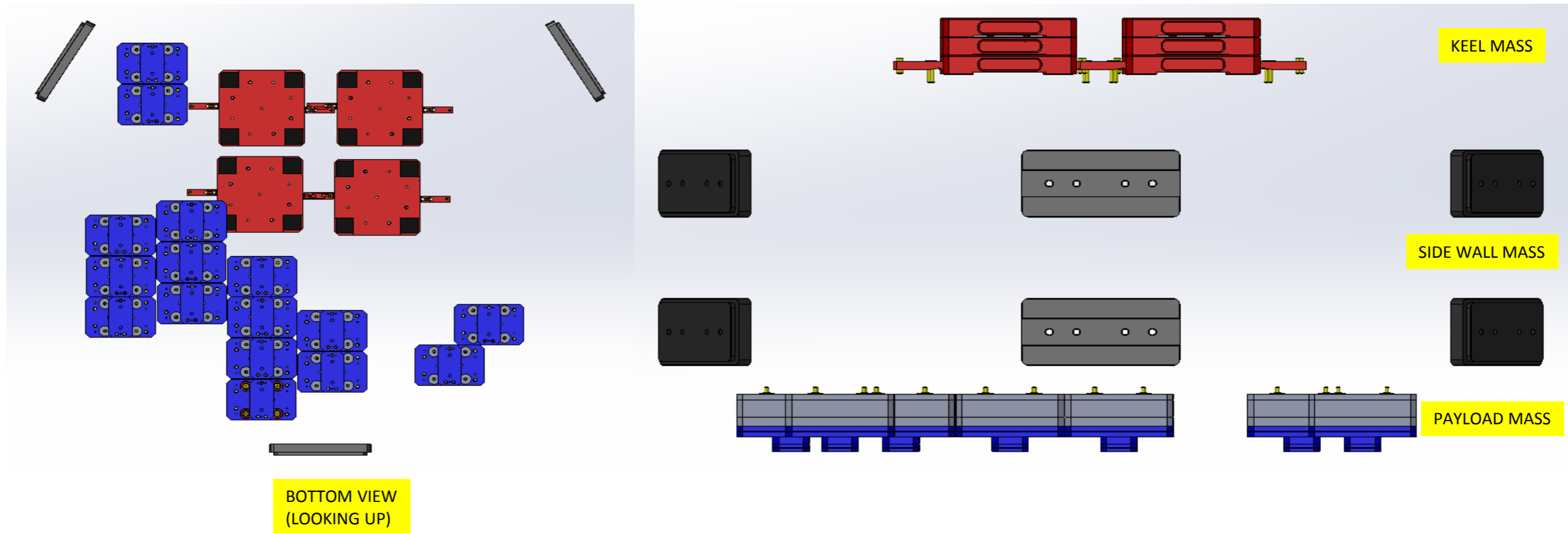
As per DCC # E1100006 (Pg 2) this is **TOTAL MASS ON STAGE 1-2 SPRINGS = 2830 Kg**
 As per DCC # E1100006 (Pg 2) this is **STAGE 2 BSC-ISI SUSPENDED MASS = 1614 Kg**
 As per DCC # E1100006 (Pg 2) this is **LEFT FOR "OPTICS + TABLE MASSES" = 732 Kg**

TOTAL [Σ(J3:J19)]	2687.74
ISO TABLE [J4]	1618.25
TOTAL PAYLOAD (J21-J22)	1069.49

2455.03

4271.62
TARGET
10000 LBS
4536 Kg

CONFIGURATIONS	COUNTERBALANCE MASS			CENTER OF GRAVITY				TOTAL COUNTERBALANCE MASS
	PAYLOAD MASS (Kg)	OUTER WALL MASS (Kg)	KEEL MASS (Kg)	X = 0.0 ± 10 mm	Y = 0.0 ± 10 mm	Z = 180.34 ± 100 mm	"Z" TARGET 7.10 in 3.10 ≤ Z ≤ 11.10	
	CG XY-Calculation (SUSPENDED Mass)	329.66	95.50	273.86	-0.53	-0.93	137.38	
CG Z-Calculation (Non-SUSPENDED Mass)	329.66	95.50	273.86	-23.94	17.91	258.72	10.19	699.02
CG XYZ-Calculation (Cartridge Configuration)	329.66	95.50	0.00	-0.20	6.31	125.20	4.93	425.16



D0900471 - AdvLIGO Systems, BSC4-L1 Top Level Chamber Assembly - Mass Properties BOM							SUSPENDED MASS		NON-SUSPENDED MASS		CARTRIDGE CONFIGURATION	
ITEM NO.	P/N	DESCRIPTION	QTY		SUB-TOTAL	TOTAL	SUB-TOTAL	TOTAL	SUB-TOTAL	TOTAL		
1	D0900477	AdvLIGO SEI BSC4-L1, XYZ Local CS for ISI Table	1			1618.31		1618.25		1618.25		3475.99
1.1	D0901182	AdvLIGO SEI BSC ISI Table Assembly		1		1618.31		1618.25		1618.25		3279.00
1.2	D1003140	Lifting Bar, 3-Point, BSC Cartridge, AdvLIGO		1		0.00		0.00		0.00		196.99
2	D0900478	AdvLIGO SUS BSC4-L1, XYZ Local CS for ETMX	1			363.23	363.23	130.04		130.04		363.23
2.1	D0901346-04	AdvLIGO QUAD SUS Assembly Top Level TD-1084-090_ASM		1		339.72		106.53		106.53		339.72
2.2	D1002424	aLIGO, SUS, Viobration Absorber, 5LB Vertical with O-Rings		4		12.01		12.01		12.01		12.01
2.3		Dog Clamps Set		1		11.00		11.00		11.00		11.00
2.4		Hardware Set		1		0.50		0.50		0.50		0.50
3	D0900435	AdvLIGO SUS BSC4-L1, XYZ Local ETM Tel Assy	1			206.08	206.08	78.94		78.94		78.94
3.1	D0901880	AOS ETM TELESCOPE UPPER SUSPENSION & STRUTURE ENV. ASSY		1		189.44		64.80		64.80		64.80
3.2	D1002424	aLIGO, SUS, Viobration Absorber, 5LB Vertical with O-Rings		2		6.14		6.14		6.14		6.14
3.3		Dog Clamps Set		1		10.00		7.28		7.28		7.28
3.4		Hardware Set		1		0.50		0.72		0.72		0.72
4	D1000898	AdvLIGO BSC8-H2 ISI Table, Payload & Suspended Mass Assembly	1				495.28			495.28		224.85
5	D1300007	AdvLIGO, Cable Harness Routing BSC4/BSC9	1				4.58			4.58		4.58

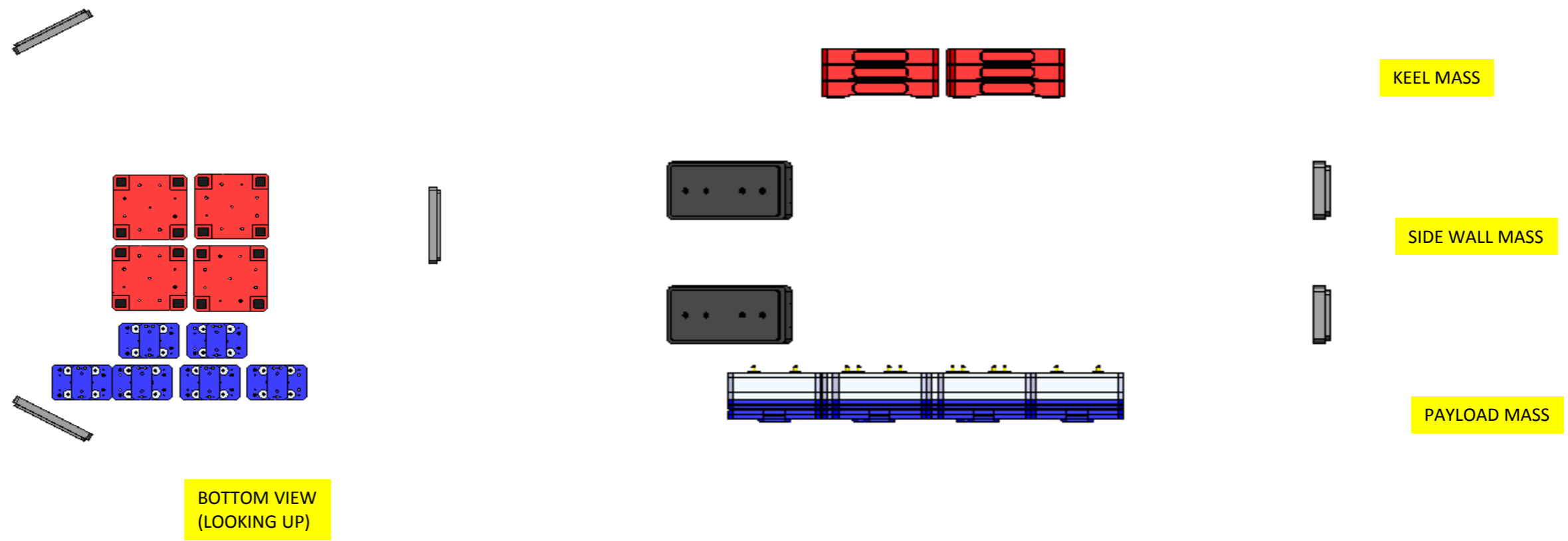
As per DCC # E1100006 (Pg 2) this is **TOTAL MASS ON STAGE 1-2 SPRINGS = 2690 Kg**
 As per DCC # E1100006 (Pg 2) this is **STAGE 2 BSC-ISI SUSPENDED MASS = 1618 Kg**
 As per DCC # E1100006 (Pg 2) this is **LEFT FOR "OPTICS + TABLE MASSES" = 1070 Kg**

TOTAL [Σ(J3:J19)]	2687.48
ISO TABLE [J4]	1618.31
TOTAL PAYLOAD (J21-J22)	1069.17

2327.09

4147.59
TARGET
10000 LBS
4536 Kg

CONFIGURATIONS	COUNTERBALANCE MASS			CENTER OF GRAVITY				TOTAL COUNTERBALANCE MASS
	PAYLOAD MASS (Kg)	OUTER WALL MASS (Kg)	KEEL MASS (Kg)	X = 0.0 ± 10 mm	Y = 0.0 ± 10 mm	Z = 180.34 ± 100 mm	"Z" TARGET 7.10 in 3.10 ≤ Z ≤ 11.10	
	CG XY-Calculation (SUSPENDED Mass)	129.35	95.50	270.43	1.25	2.94	79.83	
CG Z-Calculation (Non-SUSPENDED Mass)	129.35	95.50	270.43	-23.94	17.91	258.72	10.19	495.28
CG XYZ-Calculation (Cartridge Configuration)	129.35	95.50	0.00	-0.20	6.31	125.20	4.93	224.85



D0900506 - AdvLIGO Systems, BSC5-L1 Top Level Chamber Assembly - Mass Properties BOM							SUSPENDED MASS		NON-SUSPENDED MASS		CARTRIDGE CONFIGURATION	
ITEM NO.	P/N	DESCRIPTION	QTY		SUB-TOTAL	TOTAL	SUB-TOTAL	TOTAL	SUB-TOTAL	TOTAL		
1	D0900516	AdvLIGO SEI BSC5-L1, XYZ Local CS for ISI Table	1			1618.26			1618.26		3475.99	
1.1	D0901182	AdvLIGO SEI BSC ISI Table Assembly		1		1618.26		1618.26		3279.00		
1.2	D1003140	Lifting Bar, 3-Point, BSC Cartridge, AdvLIGO		1		0.00		0.00		196.99		
2	D0900517	AdvLIGO SUS BSC5-L1, XYZ Local CS for ETMY	1			363.36	363.36	130.17	130.17	363.23	363.23	
2.1	D0901346-04	AdvLIGO QUAD SUS Assembly Top Level TD-1084-090_ASM		1		339.72		106.53		339.72		
2.2	D1002424	aLIGO, SUS, Viobration Absorber, 5LB Vertical with O-Rings		4		12.01		12.01		12.01		
2.3		Dog Clamps Set		1		11.00		11.00		11.00		
2.4		Hardware Set		1		0.63		0.63		0.50		
3	D0900436	AdvLIGO SUS BSC5-L1, XYZ Local ETM Tel Assy	1			206.42	206.42	79.62	79.62	207.81	207.81	
3.1	D0901880	AOS ETM TELESCOPE UPPER SUSPENSION & STRUTURE ENV. ASSY		1		189.77		61.58		189.77		
3.2	D1002424	aLIGO, SUS, Viobration Absorber, 5LB Vertical with O-Rings		2		6.14		6.14		6.14		
3.3		Dog Clamps Set		1		10.00		11.00		11.00		
3.4		Hardware Set		1		0.51		0.90		0.90		
4	D1000898	AdvLIGO BSC8-H2 ISI Table, Payload & Suspended Mass Assembly	1				495.28		495.28	224.85	224.85	
5	DXXXXXX	AdvLIGO, Cable Harness Routing BSC4	1				4.51		4.51	4.51	4.51	

As per DCC # E1100006 (Pg 2) this is **TOTAL MASS ON STAGE 1-2 SPRINGS = 2830 Kg**
 As per DCC # E1100006 (Pg 2) this is **STAGE 2 BSC-ISI SUSPENDED MASS = 1614 Kg**
 As per DCC # E1100006 (Pg 2) this is **LEFT FOR "OPTICS + TABLE MASSES" = 732 Kg**

TOTAL [Σ(J3:J19)]	2687.83
ISO TABLE [J4]	1618.26
TOTAL PAYLOAD (J21-J22)	1069.57

2327.84

4276.39
TARGET
10000 LBS
4536 Kg

CONFIGURATIONS	COUNTERBALANCE MASS			CENTER OF GRAVITY				TOTAL COUNTERBALANCE MASS
	PAYLOAD MASS (Kg)	OUTER WALL MASS (Kg)	KEEL MASS (Kg)	X = 0.0 ± 10 mm	Y = 0.0 ± 10 mm	Z = 180.34 ± 100 mm	"Z" TARGET 7.10 in 3.10 ≤ Z ≤ 11.10	
	CG XY-Calculation (SUSPENDED Mass)	129.35	95.50	270.43	-0.19	-1.06	79.42	
CG Z-Calculation (Non-SUSPENDED Mass)	129.35	95.50	270.43	30.93	5.73	267.17	10.52	495.28
CG XYZ-Calculation (Cartridge Configuration)	129.35	95.50	0.00	-8.60	-12.91	89.42	3.52	224.85

