



INTRALINK NAME: D060375.PROCESS

STEP	DESCRIPTION	PART#	QTY	TIME
1	ADD THREAD INSERTS TO BASE PLATE	1-4_20X1-50 UNC.THREAD_INSERT	52	
		D060376	1	
2	ADD THREAD INSERTS TO 4 OFF D060397	1-4_20X1-50 UNC.THREAD_INSERT	3	
		D060397	1	
3	ATTACH ALL 4 STANDOFFS	1-4_20 UNC.1-001"	8	
		D060377	3	
4	ADD 2 UIM BLADE ADJUSTER BASES (D060377) MAY REQUIRE TAPPING IN WITH SOFT HEAD HAMMER	1-4_20X1-50 UNC.THREAD_INSERT	3	
5	ASSEMBLE BLADE INTO BLADE CLAMP (2 OFF)	1-4_20 UNC.1-001INCH	4	
		1-4_20 UNC.2-001INCH_ROUND	2	
		D060237	2	
		D060378	2	
		D060380-000	2	
6	ATTACH ONE BLADE ASSEMBLY TO MASS	1-4_SPHERICAL_WASHER	2	
7	BUILD UP BLADE TIP STOPS (4 OFF)	1-4_20X1-50 UNC.THREAD_INSERT	1	
		1-4_20 UNC.2-001INCH_ROUND	1	
		D060399	1	
8	PULL BLADE DOWN FLAT AND INSTALL BLADE TIP STOP (NOTE POSITION OF STOP)	1-4_20 UNC.1-001INCH	2	
		1-4_20 UNC.2-001INCH_ROUND	1	
		D060399	1	
		D060237_FLAT	1	
9	ASSEMBLE AND FLATTEN 2ND BLADE ASSEMBLY AND ADD BLADE TIP STOP	1-4_20 UNC.1-001INCH	2	
		1-4_SPHERICAL_WASHER	2	
		D060237_FLAT	1	
10	ADD LAST 2 BLADE TIP STOPS	1-4_20 UNC.1-001INCH	4	
		1-4_20 UNC.2-001INCH_ROUND	2	
		D060399	2	
11	ADD THREAD INSERTS TO TOP PLATES (2 OFF) AND ATTACH TO MASS	1-4_20X1-50 UNC.THREAD_INSERT	17	
		1-4_20 UNC.1-001INCH	8	

REV.	DATE	DCN #	DRAWING TREE #

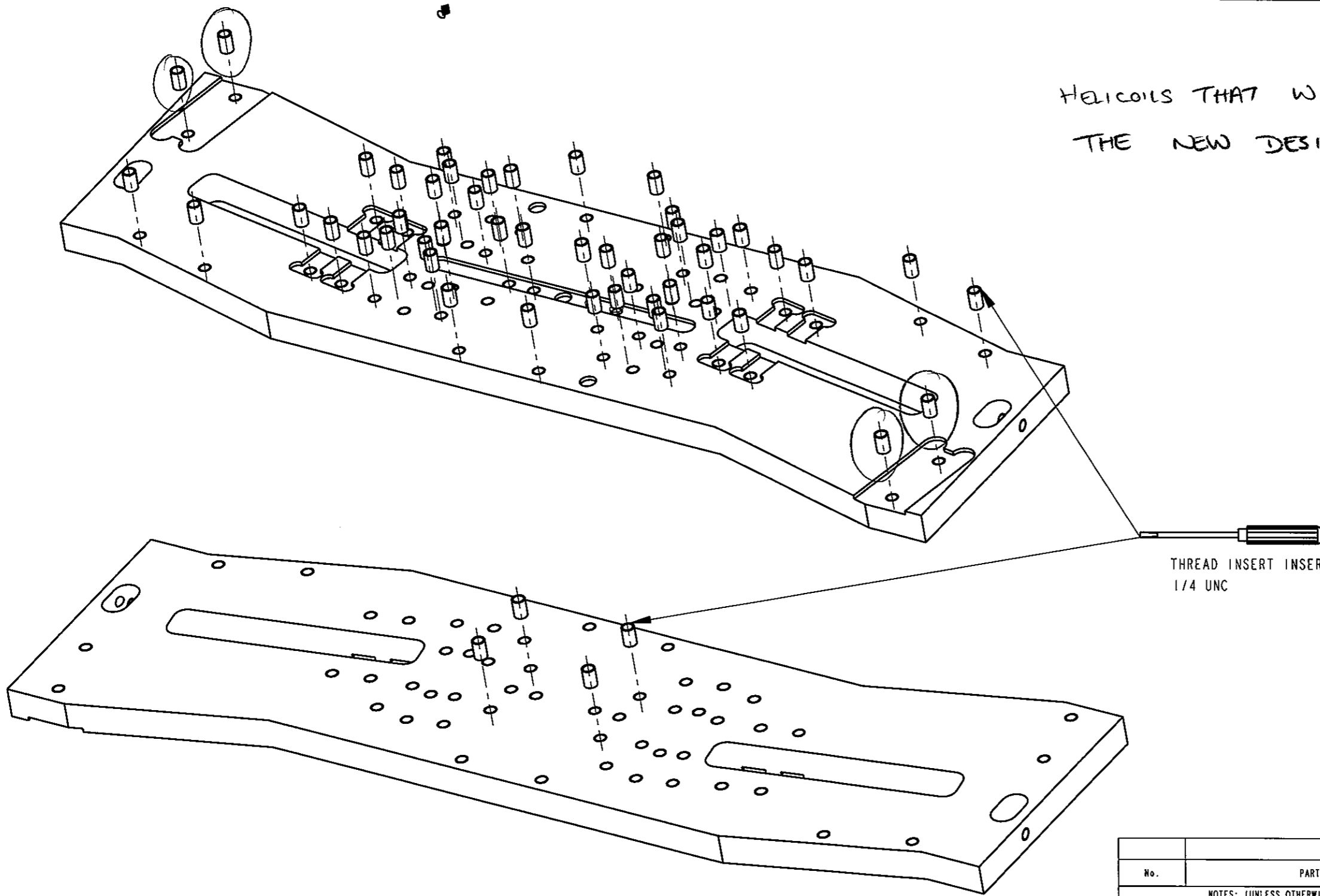
STEP	DESCRIPTION	PART#	QTY	TIME
		D060382	2	
		D060381	2	
12	ADD BLADE EDDY CURRENT DAMPERS	TD-1084-231	2	
		1-4_20X10 UNC.THREAD_INSERT	5	
13	ADD THREAD INSERTS TO TURRET AND ASSEMBLE IN PLACE WITH NOMINAL ADDED MASS	1-4_20 UNC.1-001INCH	4	
		D060398	1	
		D060359-100_0	4	
		1-4_20 UNC.1-001INCH	4	
14	ASSEMBLE BOTTOM TURET AND MASS	D060398	1	
		D060359-100_0	4	
		2-56 UNC.0-3751INCH	3	
15	ASSEMBLE 4 OFF OSEMS ONTO ADJUSTERS	8-32X1-50 UNC.THREAD_INSERT	2	
		8-32 UNC.0-6251INCH	2	
		D060336	2	
		D060388	1	
		D060389	1	
		OSEM_CORE	1	
		1-4_20 UNC.1-001INCH	10	
16	ASSEMBLE ALL OSEMS AND COUNTER WEIGHTS TO MASS	D060379	2	
		D060387	3	

No.	PART NUMBER	PART DESCRIPTION	NO. RECD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
		SYSTEM ADVANCED LIGO	
		SUB-SYSTEM SUS	
		NEXT ASSY QUAD N-PTYPE	
		PART NAME D060375 ASSY PROCESS	
		ORG. NO. D060375.PROCESS	
		SCALE 1:1 PROJECTION: 	
		SHEET 1 OF 1	

INTRALINK NAME: D060375_PROCESS

REV.	DATE	DCN #	DRAWING TREE #

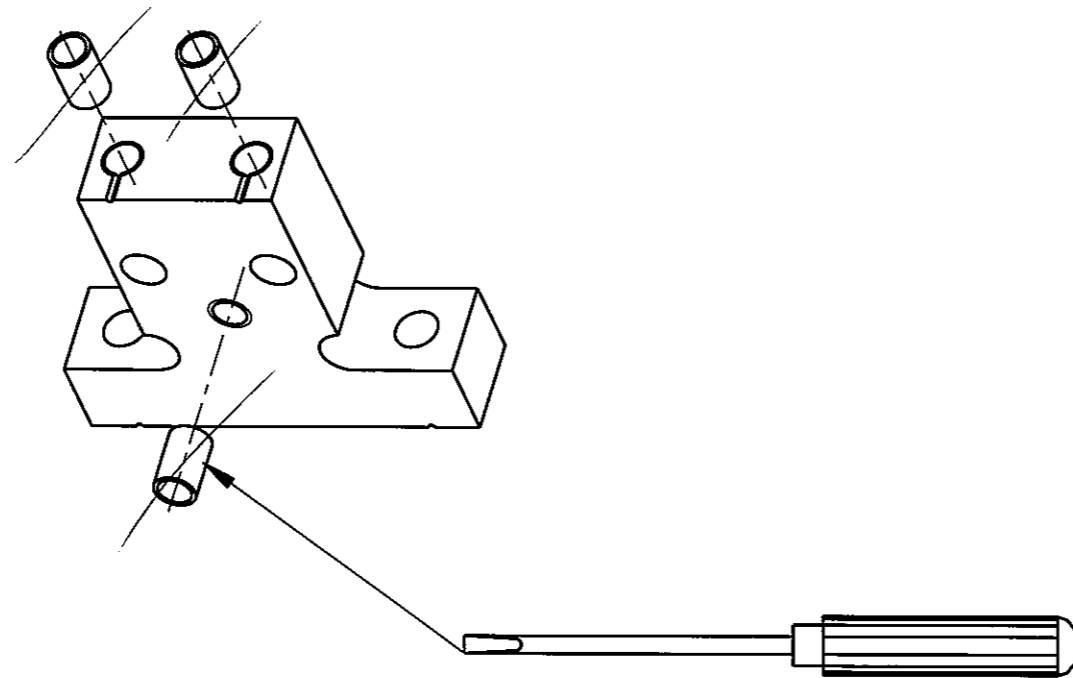
HELICOILS THAT WILL BE THERE IN THE NEW DESIGN ARE CIRCLED



No.	PART NUMBER	PART DESCRIPTION	NO. RECD								
NOTES: (UNLESS OTHERWISE SPECIFIED)											
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES SYSTEM ADVANCED LIGO SUB-SYSTEM SUS NEXT ASSY QUAD N-PTYPE PART NAME D060375 ASSY PROCESS									
	<table border="1"> <thead> <tr> <th>NAME</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>DRAWN I WILMUT</td> <td>28/Jun/07</td> </tr> <tr> <td>CHECKED IW</td> <td>---</td> </tr> <tr> <td>APPROVED ---</td> <td>---</td> </tr> </tbody> </table>	NAME	DATE	DRAWN I WILMUT	28/Jun/07	CHECKED IW	---	APPROVED ---	---	SIZE B DRG. NO. D060375_PROCESS	REV ----
NAME	DATE										
DRAWN I WILMUT	28/Jun/07										
CHECKED IW	---										
APPROVED ---	---										
SCALE 1:21 PROJECTION: SHEET 2 OF 11											

INTRALINK NAME: D060375.PROCESS

REV.	DATE	DCN #	DRAWING TREE #



THREAD INSERT INSERTION TOOL
1/4 UNC

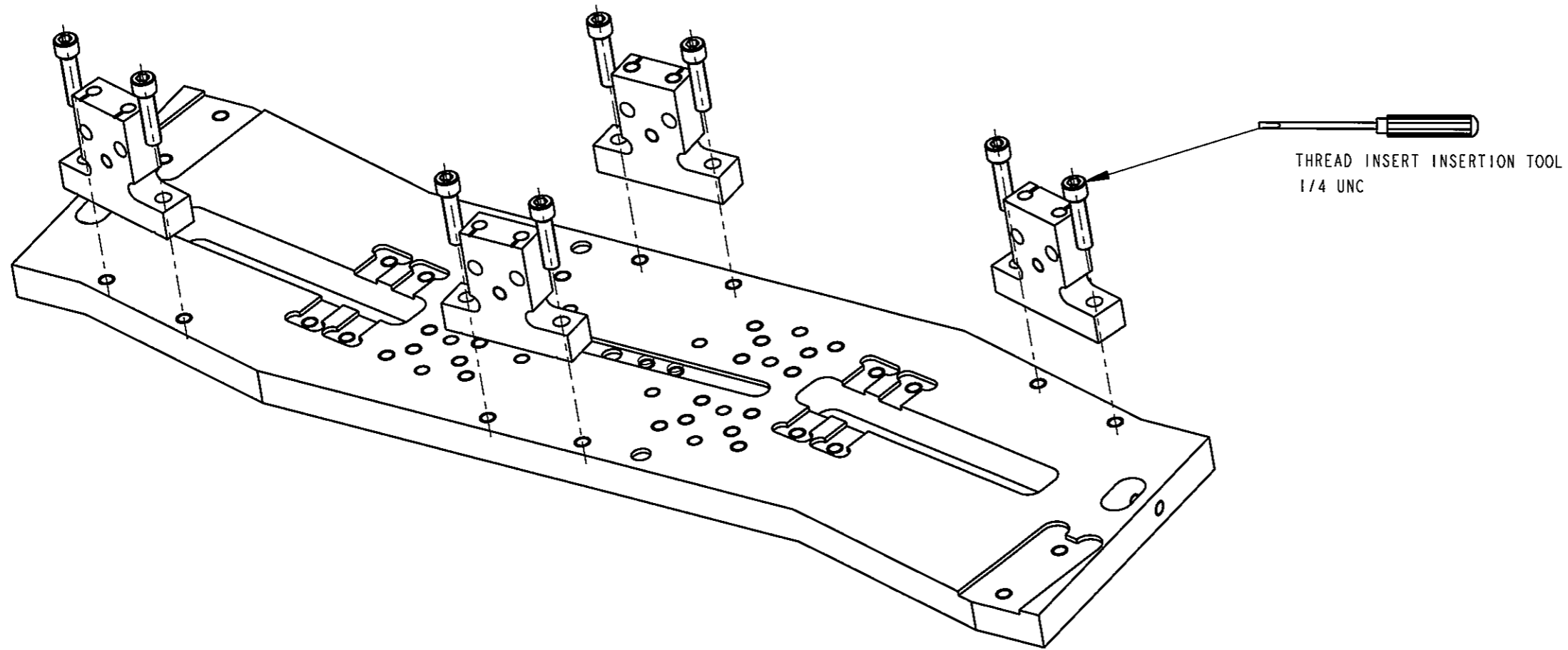
ADD THREAD INSERTS TO 4 OFF D060397

No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4_20X1-50_UNC_THREAD_INSERT	1/4-20 x 1.5D UNC THREAD INSERT	3
2	D060397	TOP MASS SPACER	1

NOTES: (UNLESS OTHERWISE SPECIFIED)		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	
		SYSTEM ADVANCED LIGO
		SUB-SYSTEM SUS
		NEXT ASSY qJAD N-PTYPE
		PART NAME
	NAME	DATE
DRAWN	---	28/Jun/07
CHECKED	---	---
APPROVED	---	---
SCALE 1:1 PROJECTION:		DRG. NO. D060375.PROCESS
		REV. B
		SHEET 3 OF 14

INTRALINK NAME: D060375.PROCESS

REV.	DATE	DCR #	DRAWING TREE #



ATTACH ALL 4 STANDOFFS

No.	PART NUMBER	PART DESCRIPTION	NO. RECD
1	1-4_20 UNC_1-00 INCH	1/4" 20 UNC X 1" CAP HEAD	8
2	D060397	TOP MASS SPACER	3

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY
NOT TO BE USED FOR MANUFACTURE

LIGO		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
SYSTEM		ADVANCED LIGO	
SUB-SYSTEM		SUS	
NEXT ASSY		QUAD N-PTYPE	
PART NAME			

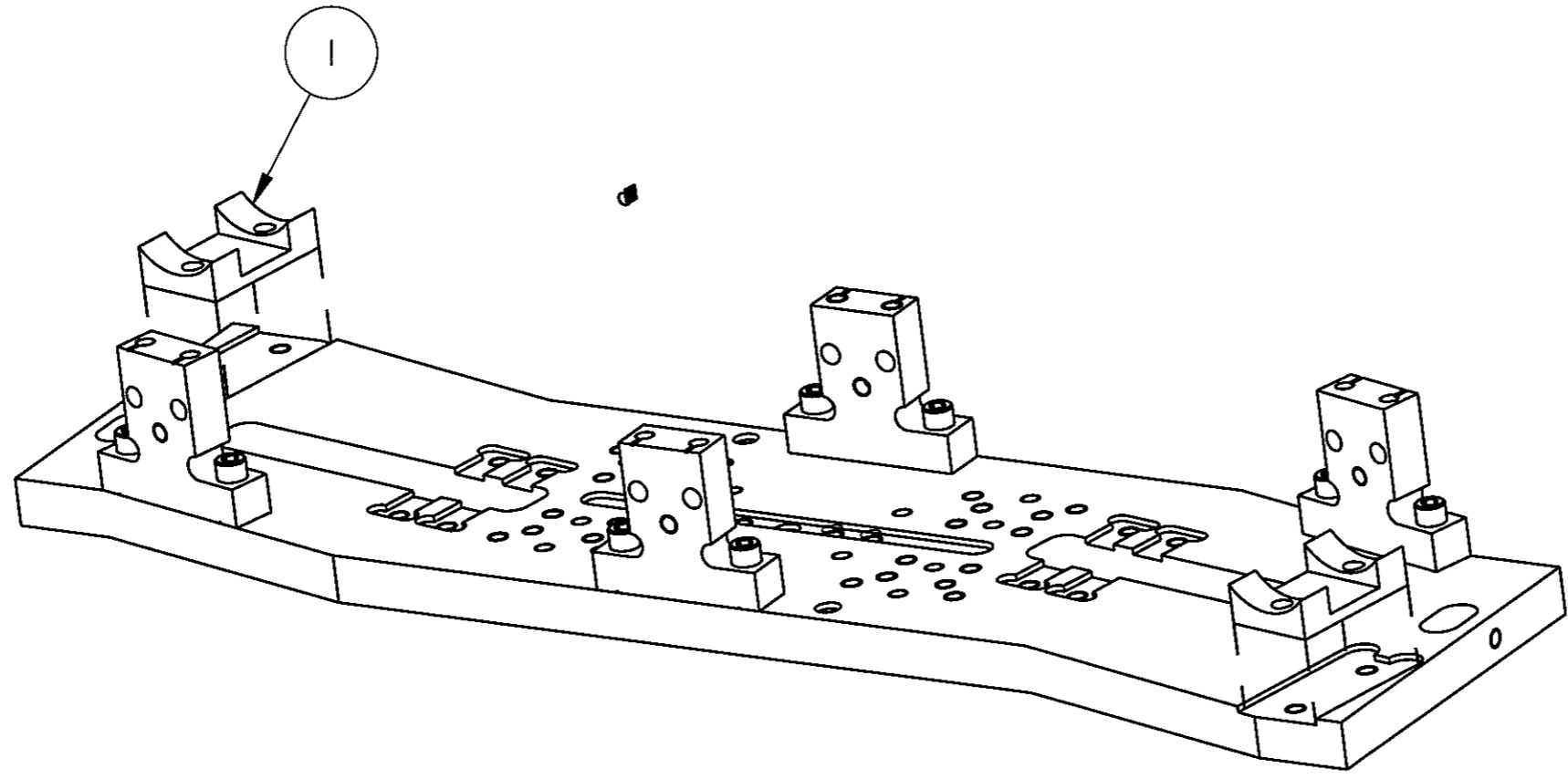
	NAME	DATE	
DRAWN		28/Jun/07	
CHECKED	---	--/--/--	
APPROVED	---	--/--/--	

DRG. NO. D060375.PROCESS


SCALE 1:2 | PROJECTION: | SHEET 4 OF 14

INTRALINK NAME: D060375_PROCESS

REV.	DATE	DCN #	DRAWING TREE #

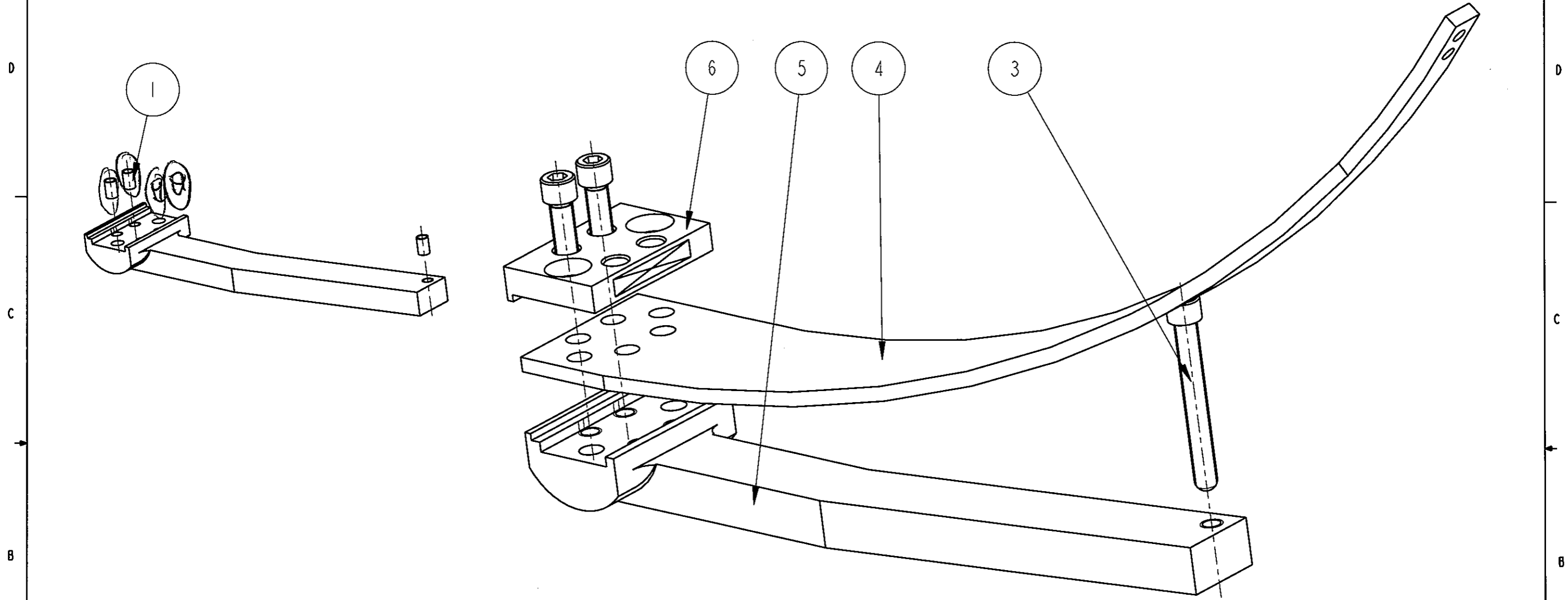


ADD 2 UIM BLADE ADJUSTER BASES (D060377)
MAY REQUIRE TAPPING IN WITH SOFT HEAD HAMMER

No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	D060377	BLADE TIP Z POSITION ADJ	2
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.		PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY 1GR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
		SYSTEM	ADVANCED LIGO
		SUB-SYSTEM	SUS
		NEXT ASSY	QUAD N-PTYPE
		PART NAME	
	NAME	DATE	SIZE
DRAWN		28/Jun/07	B
CHECKED	---	--/--/--	REV
APPROVED	---	--/--/--	
		DRG. NO.	D060375_PROCESS
		SCALE	1:2
		PROJECTION	AS SHOWN
		SHEET	5 OF 14

INTRALINK NAME: D060375.PROCESS

REV.	DATE	DCN #	DRAWING TREE #



No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4.20X1.5D.UNC.THREAD.INSERT	1/4-20 x 1.5D UNC THREAD INSERT	3
2	1-4.20.UNC.1-00INCH	1/4" 20 UNC X 1" CAP HEAD	4
3	1-4.20.UNC.2-00INCH_ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	2
4	D060237	BOTTOM BLADE SPRINGS	2
5	D060378	BLADE TIP Z POSITION ADJ	2
6	D060380-000	BLADE CLAMP	2

NOTES: (UNLESS OTHERWISE SPECIFIED)

1.

PROCESS PLAN
TO BE USED FOR ASSEMBLY ONLY
NOT TO BE USED FOR MANUFACTURE

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
1GR, GLASGOW UNIVERSITY GEO 600 GROUP
RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**
SUB-SYSTEM **SUS**
NEXT ASSY **QUAD N-PTYPE**
PART NAME

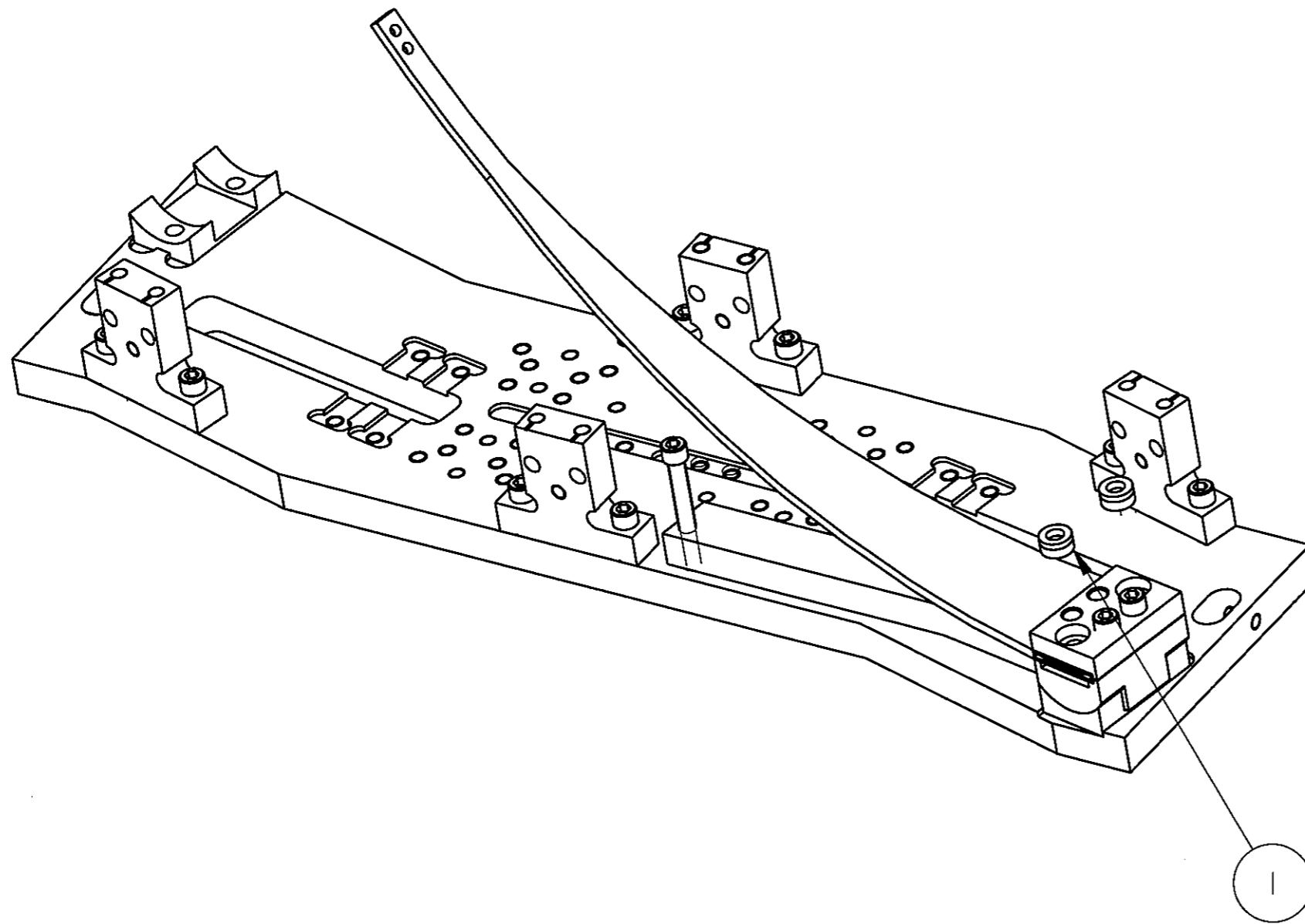
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DRAWN	---	03/JUL/07
CHECKED	---	--/--/--
APPROVED	---	--/--/--

SIZE **B** DRG. NO. **D060375.PROCESS** REV. **1**
SCALE 1:2 PROJECTION: **1** SHEET 6 OF 10

ASSEMBLE BLADE INTO BLADE CLAMP (2 OFF)

INTRALINK NAME: D060375.PROCESS

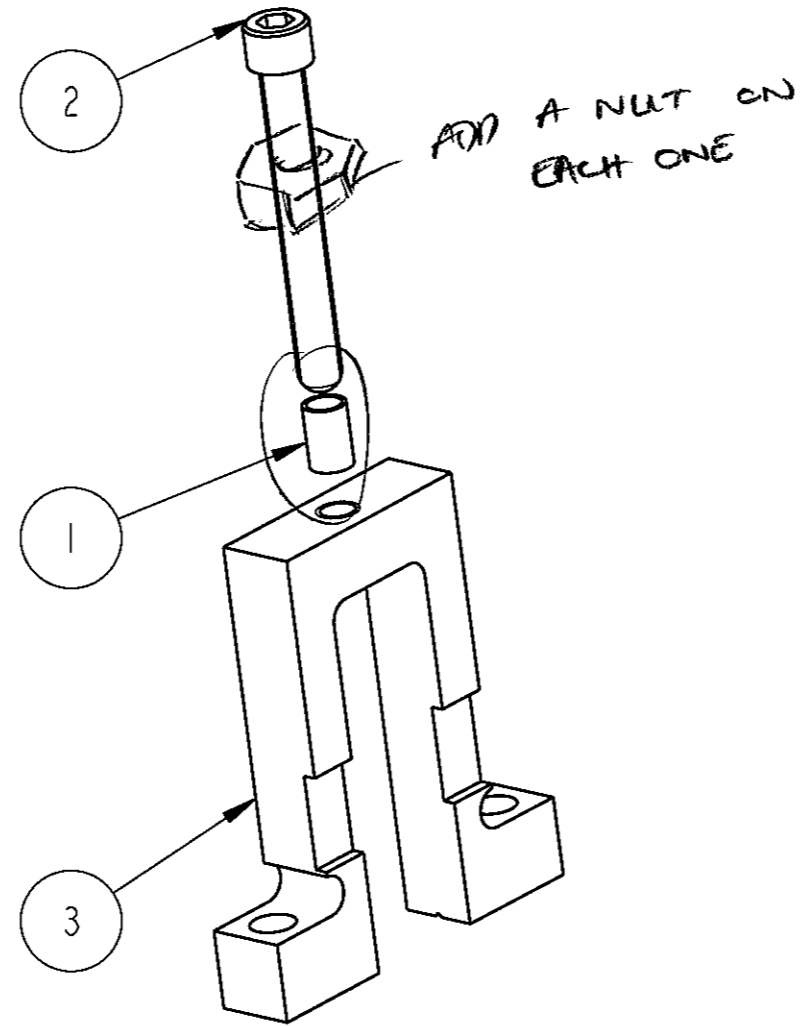
REV.	DATE	DCN #	DRAWING TREE #



ATTACH ONE BLADE ASSEMBLY TO MASS



No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4_SPERICAL.WASHER	1/4 SPHERICAL WASHER	2
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.		<p>PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE</p>	<p>CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES</p>
		SYSTEM	ADVANCED LIGO
		SUB-SYSTEM	SUS
		NEXT ASSY	QUAD N-PTYPE
		PART NAME	
	NAME	DATE	
	DRAWN	03/Jul/07	
	CHECKED	---	
	APPROVED	---	
	SIZE	B	DRG. NO. D060375.PROCESS
SCALE 1:2 PROJECTION: SHEET 7 OF 14			

REV.	DATE	DCN #	DRAWING TREE #



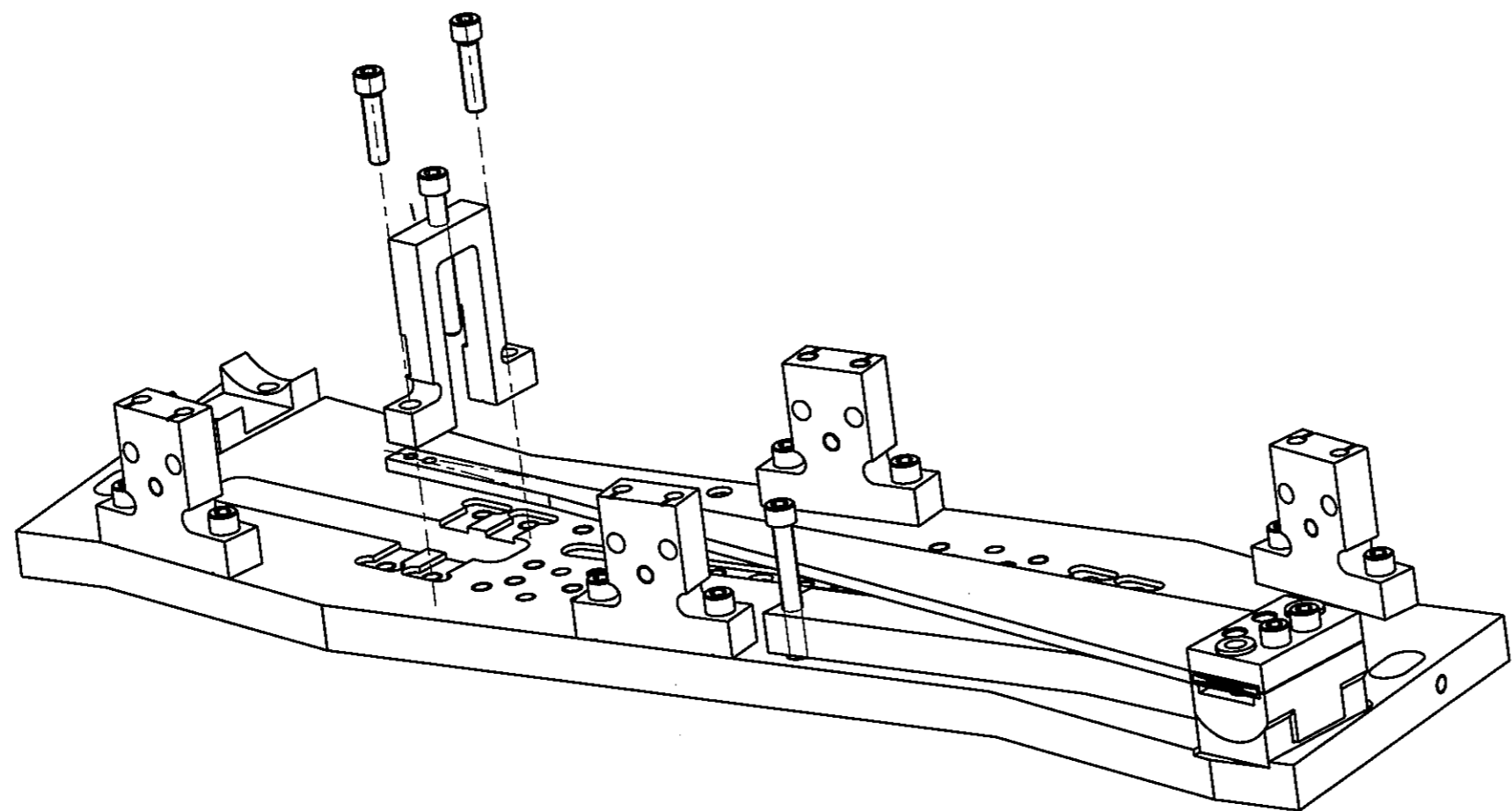
BUILD UP BLADE TIP STOPS (4 OFF)

No.	PART NUMBER	PART DESCRIPTION	NO. RECD
1	1-4_20X1-5D_UNC_THREAD_INSERT	1/4-20 x 1.5D UNC THREAD INSERT	1
2	1-4_20_UNC_2-00INCH_ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	1
3	D060399	STOP BRIDGE	1

NOTES: (UNLESS OTHERWISE SPECIFIED)		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY 1GR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		SYSTEM ADVANCED LIGO	
		SUB-SYSTEM SUS	
		NEXT ASSY QUAD N-PTYPE	
		PART NAME	
	NAME	DATE	
DRAWN	---	03/Ju1/07	
CHECKED	---	--/---/---	
APPROVED	---	--/---/---	
		SIZE B	DRG. NO. D060375_PROCESS
		SCALE 1:1 PROJECTION:  SHEET 8 OF 10	

INTRALINK NAME: D060375_PROCESS

REV.	DATE	DCN #	DRAWING TREE #



PULL BLADE DOWN FLAT AND INSTALL BLADE TIP STOP
(NOTE POSITION OF STOP)

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4_20 UNC 1-001NCH	1/4" 20 UNC X 1" CAP HEAD	2
2	1-4_20 UNC 2-001NCH_ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	1
3	D060399	STOP BRIDGE	1
4	D060237_FLAT	BOTTOM BLADE SPRINGS	1

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. PROCESS PLAN
TO BE USED FOR ASSEMBLY ONLY
NOT TO BE USED FOR MANUFACTURE

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
IGR, GLASGOW UNIVERSITY GEO 600 GROUP
RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**

SUB-SYSTEM **SUS**

NEXT ASSY **QUAD N-PTYPE**

PART NAME

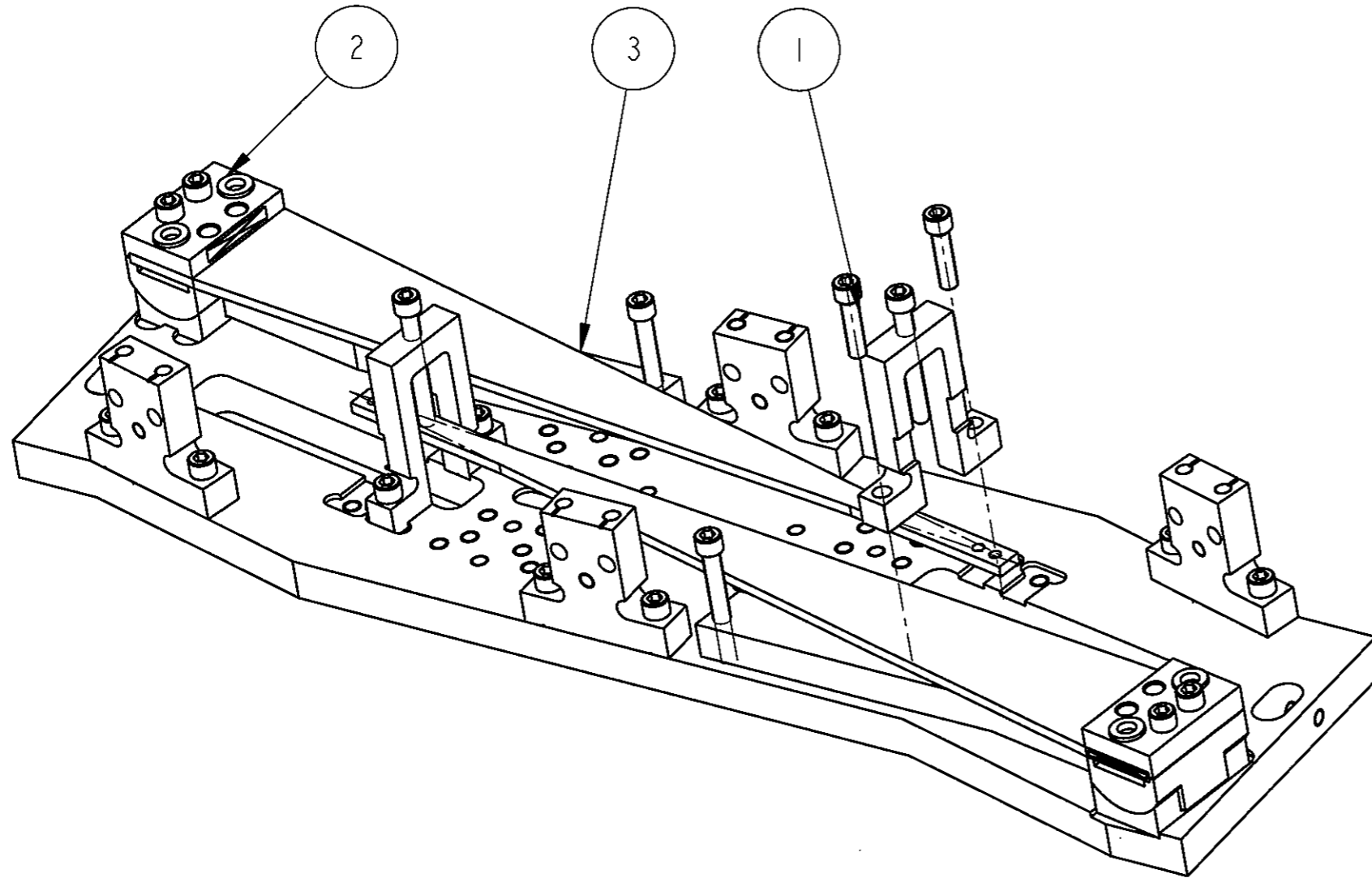
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DRAWN		03/JUL/07
CHECKED	---	--/--/--
APPROVED	---	--/--/--

SCALE 1:2 PROJECTION: SHEET 9 OF 10



DRG. NO. **D060375_PROCESS**

INTRALINK NAME: D060375_PROCESS

REV.	DATE	DCN #	DRAWING TREE #



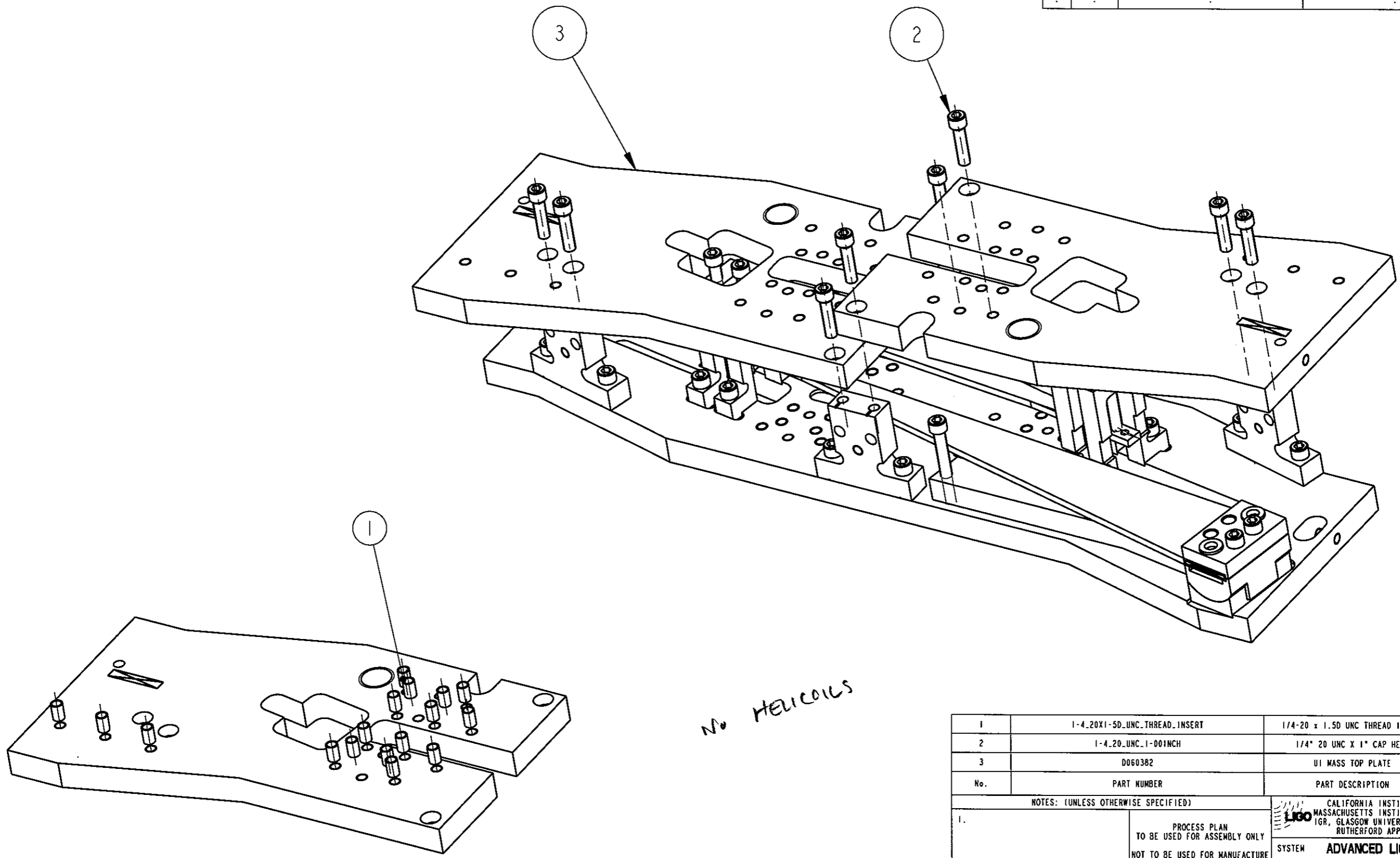
No.	PART NUMBER	PART DESCRIPTION	NO. RECD
1	1-4.20 UNC. 1-00 INCH	1/4" 20 UNC X 1" CAP HEAD	2
2	1-4 SPHERICAL WASHER	1/4 SPHERICAL WASHER	2
3	D060237_FLAT	BOTTOM BLADE SPRINGS	1

NOTES: (UNLESS OTHERWISE SPECIFIED)		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		
		SYSTEM ADVANCED LIGO
		SUB-SYSTEM SUS
		NEXT ASSY QUAD N-PTYPE
		PART NAME
	NAME	DATE
DRAWN	---	03/Ju1/07
CHECKED	---	--/---/---
APPROVED	---	--/---/---
SIZE B	DRG. NO. D060375_PROCESS	REV. -
SCALE 1:2		PROJECTION:  SHEET 10 OF 16

REV.	DATE	DCN #	DRAWING TREE #

D
C
B
A

D
C
B
A



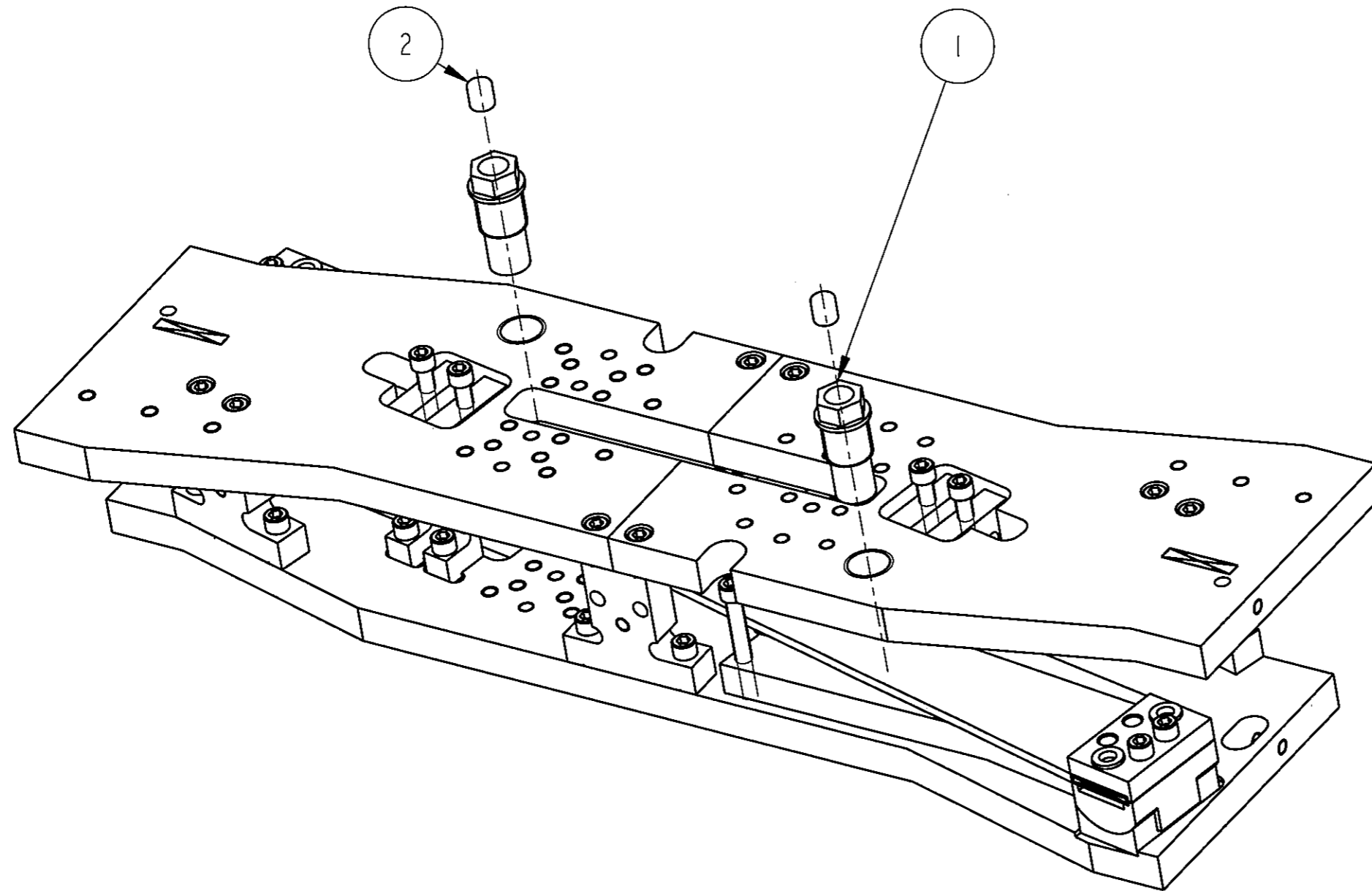
No HELICOILS

ADD THREAD INSERTS TO TOP PLATES (2 OFF) AND ATTACH TO MASS

1	1-4_20X1-5D_UNC_THREAD_INSERT	1/4-20 x 1.50 UNC THREAD INSERT	17
2	1-4_20_UNC_1-00INCH	1/4" 20 UNC X 1" CAP HEAD	8
3	D060382	UI MASS TOP PLATE	2
No.	PART NUMBER	PART DESCRIPTION	NO. RECD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY 1GR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
		SYSTEM	ADVANCED LIGO
		SUB-SYSTEM	SUS
		NEXT ASSY	QUAD N-PTYPE
		PART NAME	
		NAME	DATE
	DRAWN	---	04/JUL/07
	CHECKED	---	---/---/---
	APPROVED	---	---/---/---
	SIZE	B	DRG. NO. D060375.PROCESS
	SCALE	1:2	PROJECTION: SHEET 11 OF 16



INTRALINK NAME: D060375.PROCESS

REV.	DATE	DCN #	DRAWING TREE #



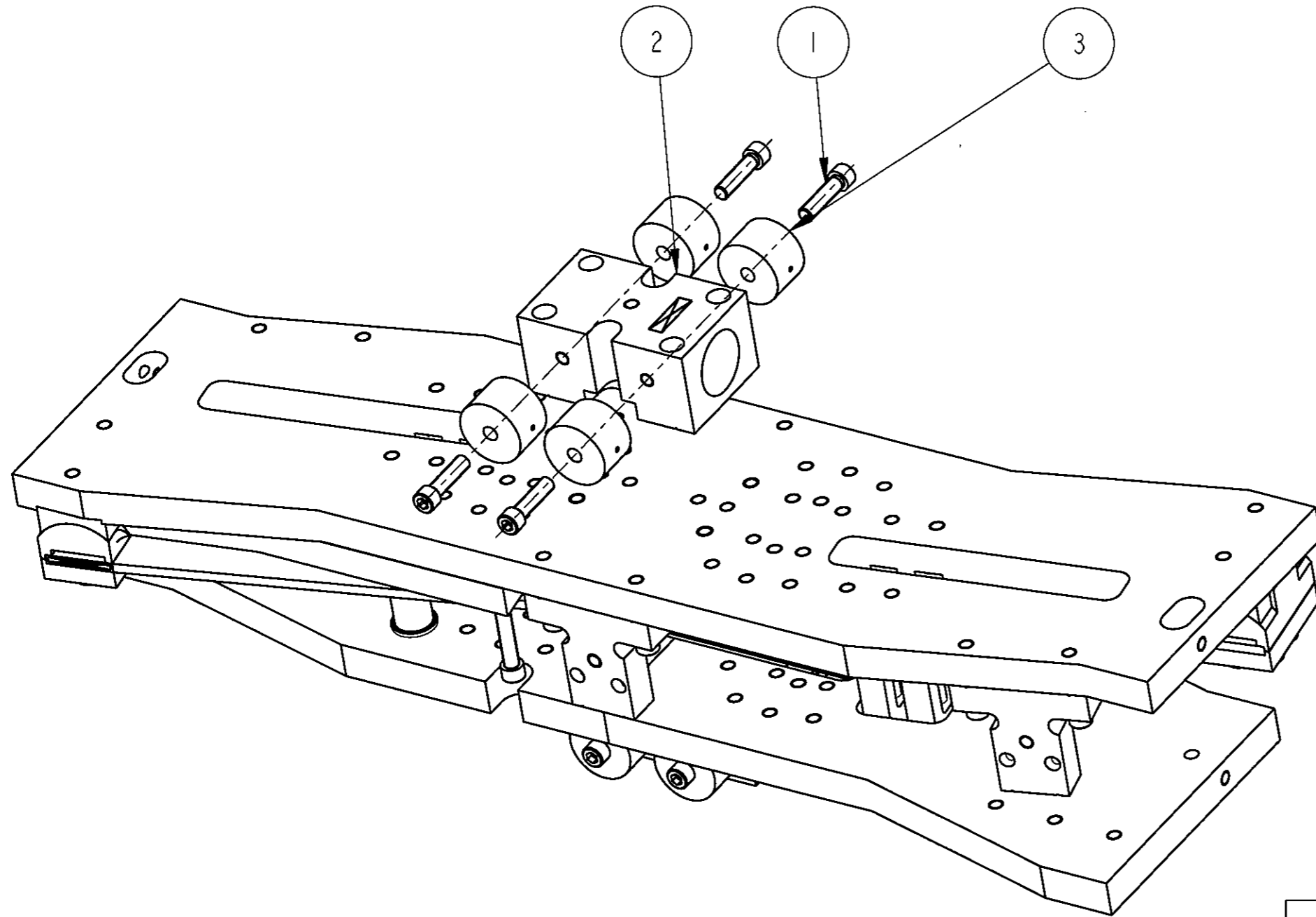
1	D060381	VI MASS BLADE ECD	2
2	TD-1084-231	IONM MAGNET	2
No.	PART NUMBER	PART DESCRIPTION	NO. RECD

NOTES: (UNLESS OTHERWISE SPECIFIED)

1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
				SYSTEM ADVANCED LIGO
				SUB-SYSTEM SUS
				NEXT ASSY QUAD N-PTYPE
		PART NAME		
	NAME	DATE		
	DRAWN	04/Ju1/07		
	CHECKED	--/---/---		
	APPROVED	--/---/---		
	SIZE B	DRG. NO. D060375.PROCESS	REV	
SCALE 1:2			PROJECTION:  SHEET 12 OF 6	



INTRALINK NAME: D060375.PROCESS

REV.	DATE	DCN #	DRAWING TREE #

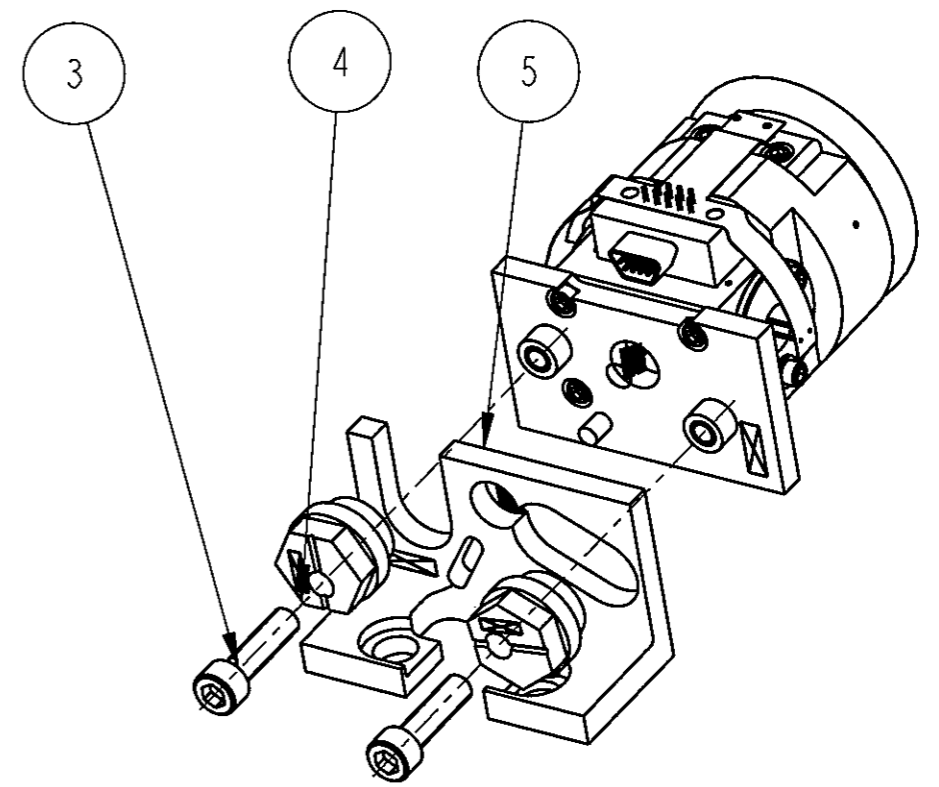
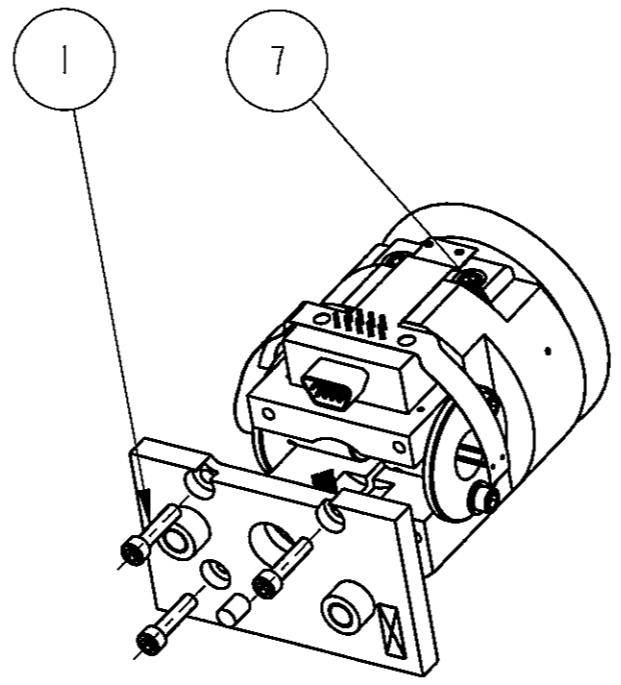
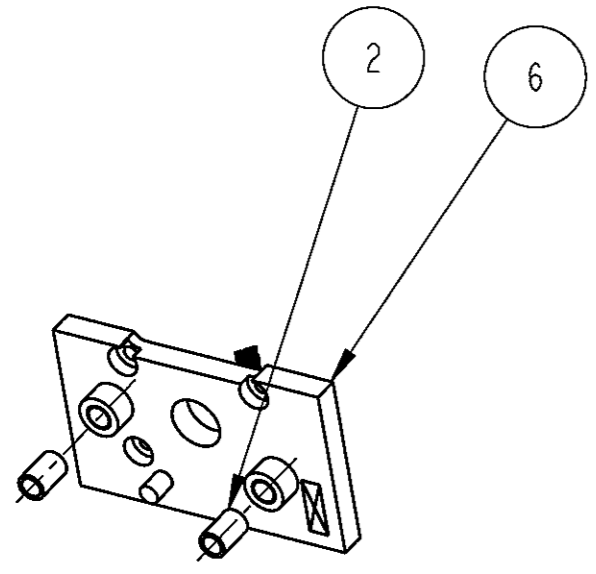


1	I-4_20 UNC 1-001NCH	1/4" 20 URC X 1" CAP HEAD	4
2	D060398	PITCH ADJUSTER & MASS	1
3	D060359-100_0	ADDITIONAL MASS	4
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

NOTES: (UNLESS OTHERWISE SPECIFIED)

1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
	SYSTEM ADVANCED LIGO SUB-SYSTEM SUS NEXT ASSY QUAD N-PTYPE PART NAME		
	NAME	DATE	
	DRAWN	05/JUL/07	
	CHECKED	---	
	APPROVED	---	
	SIZE	B	DRG. NO. D060375.PROCESS
SCALE 1:2		PROJECTION: 	SHEET 14 OF 6

REV.	DATE	DCN #	DRAWING TREE #



FOR REACTION CHAIN ONLY!

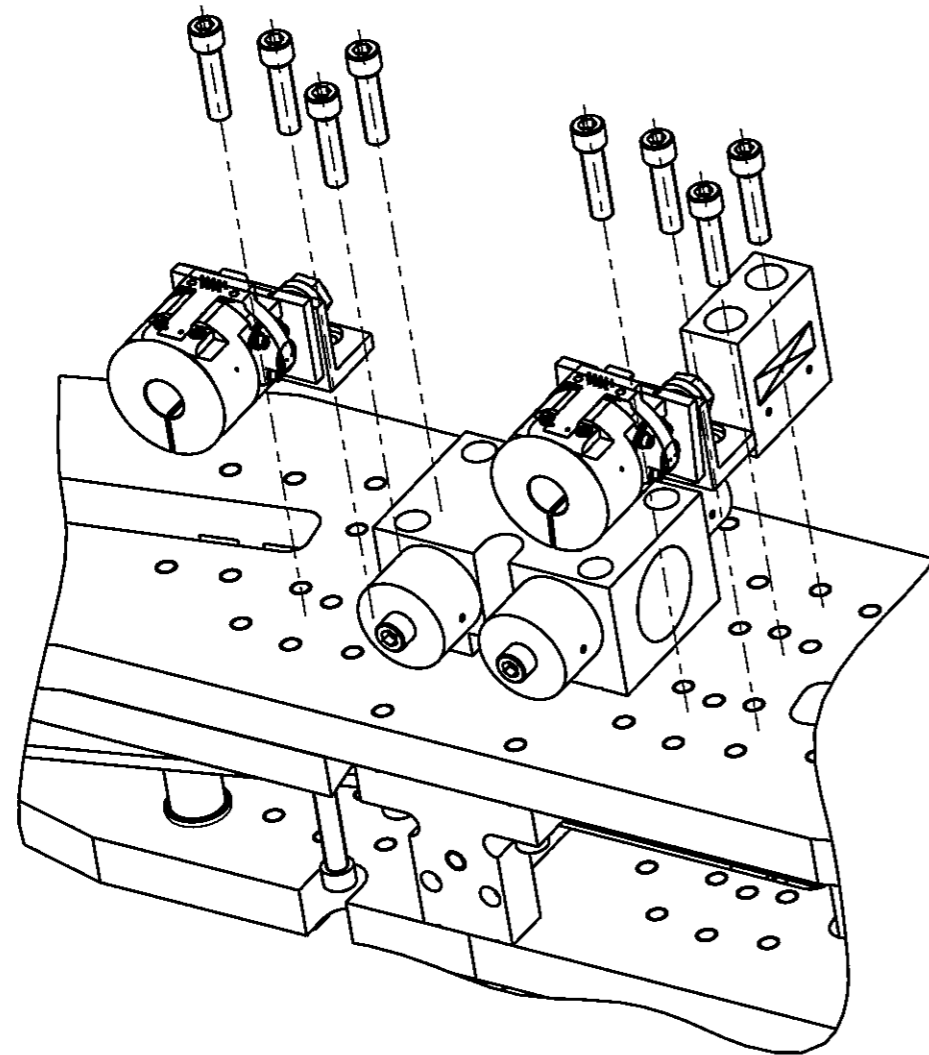
ASSEMBLE 4 OFF OSEMS ONTO ADJUSTERS

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	2-56.UNC.0-375INCH	2-56 UNC X .375" CAP HEAD	3
2	8-32X1-5D.UNC.THREAD.INSERT	1/4-20 x 1.5D UNC THREAD INSERT	2
3	8-32.UNC.0-625INCH	8-32 UNC X 0.625" CAP HEAD	2
4	D060336	2MM CAM	2
5	D060388	BRACKET	1
6	D060389	ADJUSTER	1
7	OSEM_CORE	OSEM CORE	1

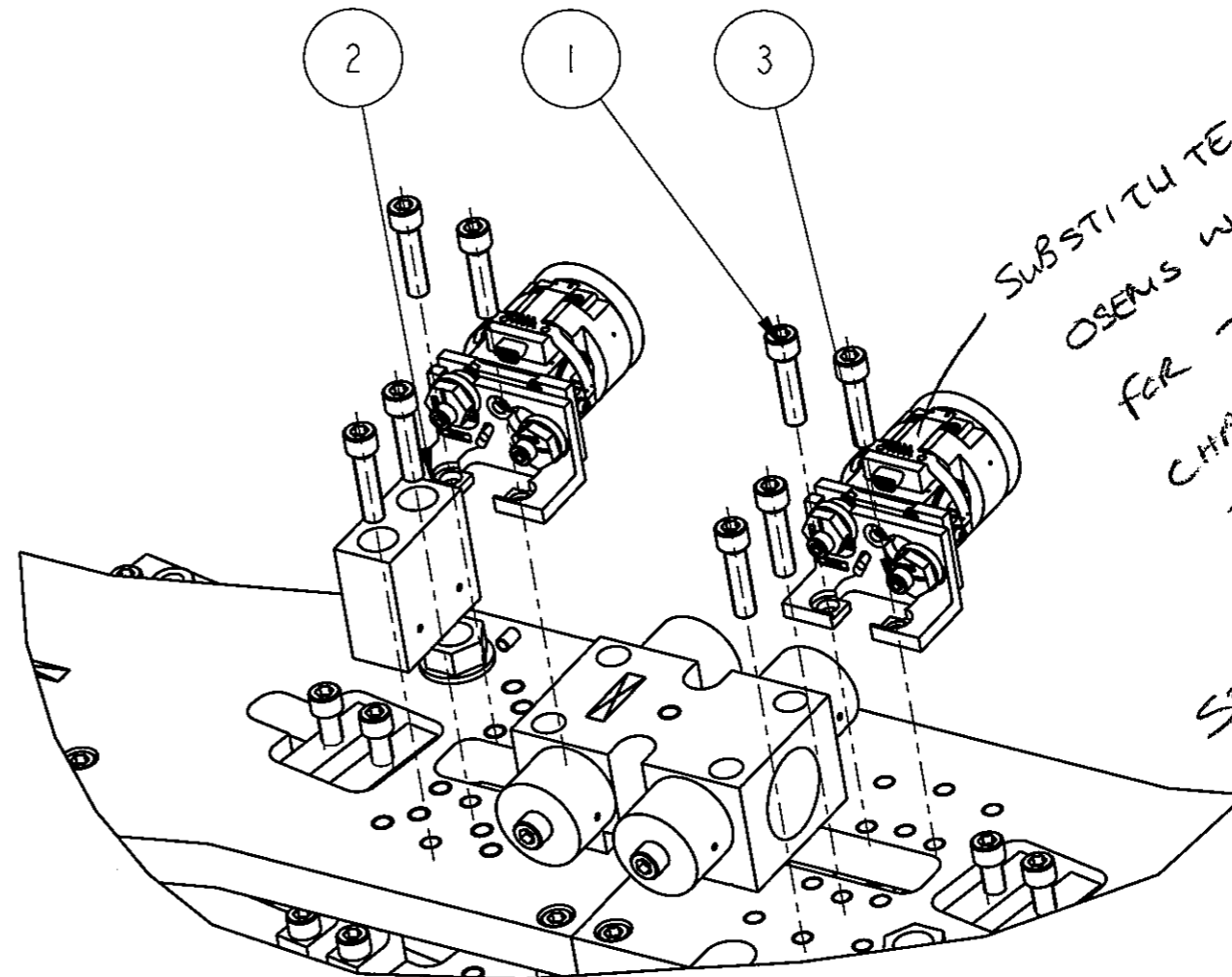
NOTES: (UNLESS OTHERWISE SPECIFIED)

1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
	SYSTEM ADVANCED LIGO		
	SUB-SYSTEM SUS		
	NEXT ASSY QUAD N-PTYPE		
PART NAME		PART NAME	
DRAWN		NAME	DATE
CHECKED		---	05/Jul/07
APPROVED		---	---
SIZE B		DRG. NO. D060375_PROCESS	
SCALE 1:1		PROJECTION:	

REV.	DATE	DCN #	DRAWING TREE #



PARTIAL VIEW SHOWING OSEM AND COUNTER WEIGHT ATTACHMENT TO BOTTOM OF MASS



PARTIAL VIEW SHOWING ATTACHMENT OF OSEM AND COUNTER WEIGHT ATTACHMENT TO TOP OF MASS

SUBSTITUTE THE OSEMS WITH FLAGS (D060385) FOR THE TEST CHAIN, AS PER DRAWING D060375. SEE ALSO PHOTOS TAKEN AT LLO

REACTION CHAIN ONLY

ASSEMBLE ALL OSEMS AND COUNTER WEIGHTS TO MASS

No.	PART NUMBER	PART DESCRIPTION	NO. RECD
1	1-4.20 UNC 1-00INCH	1/4" 20 UNC X 1" CAP HEAD	10
2	D060379	OSEM AND FLAG COUNTERWEIGHT	2
3	D060387	UI MASS OSEM MOUNT	3

NOTES: (UNLESS OTHERWISE SPECIFIED)		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY 1GR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	
		SYSTEM ADVANCED LIGO
		SUB-SYSTEM SUS
		NEXT ASSY QUAD N-PTYPE
		PART NAME
	NAME DATE	
	DRAWN 05/Ju1/07	SIZE
	CHECKED ---	DRG. NO. D060375_PROCESS
	APPROVED ---	REV. ---
		SCALE 1:2 PROJECTION: SHEET 16 OF 16