Quality Assurance Checklist

THIS FORM CAN BE USED AS A CHECKLIST TO CONTROL THE SEQUENCE OF QUALITY ASSURANCE ACTIVITIES TO BE PEFORMED ON LCLS HARDWARE, SYSTEMS OR PROCESSES, OR ATTACHED TO LCLS HARDWARE AS A QUALITY ASSURANCE TRAVELER.

System or Component Name: *LCLS Undulator Main Assembly*		
Part/Drawing Number: *L143-112000*	Revision: 07	Serial Number: 34
Manufacturer: HI-TECH		Purchase Order Number:

Special Instructions:

This form is to be completed prior to the acceptance of LCLS Undulator Main Assemblies

Quality Assurance Tasks (attach continuation sheets if additional steps are required)

Seq No.	Task Description *Inform the LCLS Technical Lead if a task cannot be competed or a requirement met	Completed by/Date*	Requirement Met	Requirement Not Met*
1	*Confirm that the drawing revisions on the attached Bill of Materials is correct.*	CL [illegible]	☑	☐
2	*Confirm that the supplier is working to the same drawing revisions as on the attached Bill of Materials.*	[illegible]	☑	☐
3	*Perform visual inspection of the completed assembly for workmanship and correctness.*	CL [illegible]	☑	☐
4	*Perform visual inspection of the completed assembly for correct the following markings on the Strongback:* L143-11200-05 SA-381-001-35 Assy Rev No — 34 *(Not: the serial numbers of the assembly and Strongback should be identical)* ✓	[illegible] 3/29/07	☑	☐
5	*Perform visual inspection of the completed assembly for correct the following markings on the Magnet Structure Assemblies:* • *Upper Left Magnet Structure Assemblies: L-143-110800-assembly no.* 34 • *Upper Right Magnet Structure Assemblies: L143-111200-assembly no.* 34 • *Upper Middle Magnet Structure Assemblies: L143-111000-1,2,3-assembly no.* ✓ • *Lower Left Magnet Structure Assemblies: 143-110900-assembly serial no.* 34 • *Lower Right Magnet Structure Assemblies: L143-111300-assembly serial no.* 34 • *Lower Middle Magnet Structure Assemblies: L143-111100-1,2-3-assembly no.* ✓	JF8 4/12/07	☑	☐
6	*Verify correct gap size along the entire undulator length using contactor's go/no-go gages.*	ET or CL [illegible] 3/29/07	☑	☐
7	*Verify correct gap size along the entire undulator length using calibrated gage blocks.*	ET [illegible] 3/29/07	☑	☐
8	*Check the peak field at each magnet location using a portable Hall probe.*	SS or IV [illegible]	☑	☐
9	*Perform or witness the inspection of the 60.08 mm width of the mounting pads.* 60.08 mm - OK matrix complete	5/10/07 [illegible]	☑	☐
10	*Verify that the following quality assurance documentation has been completed by the contractor:* • *ANL Acceptance Criteria Listings E5-026046, E5-020020, E5-069069* • *LCLS Inspection/Acceptance Report for LCLS Magnets* ✓ w. ssig approvals • *LCLS Inspection/Acceptance Report for Supplier Inspection form for LCLS Magnet Assemblies* ✓ • *Magnet Sort List* ✓ • *Photographs showing correct magnet serial numbers and orientation* ✓ • *ANL Supplier Disposition Reports documenting any noncomformance to specifications drawings or other contract requirements* ✓	[illegible] 3/29/07	☑	☐

11	*Verify that the magnet photographs of the magnet sub assemblies are in agreement with the magnet sort list.*	TPry	☑	☐
12	*Review the shipping container for changes since the last undulator shipment and that that mounting feet will be used to prevent rotation of the assembly while in transit.*	[illegible]	☑	☐
13	*Confirm that contractor has shock and temperature monitoring devices available for shipment of the undulator assembly. Check that the shock and temperature monitoring devices were calibrated within 1 year of initial receipt and then once every 12 months thereafter.* (7) Devices @ Hi-Tech	~~TPry~~	☐	☐
14	*Obtain a copy of the supplier quality assurance records*	QF 4/12/07	☒	☐
15	*Obtain the required ANL signatures on Acceptance Criteria Listings E5-164018, E5-026046, E5-069069.*		☐	☐
16	*Forward supplier quality assurance records and the completed traveler form to LCLS QA Coordinator Tom Barsz. B401, C4219*		☐	☐

LCLS Task Leader Pre-Approval: _____ **Date:** _____

LCLS QA Coordinator Pre-Approval: _____ **Date:** _____

Optional Approver Comments:

Distribute completed traveler to: **Responsible Engineer, Task Leader, LCLS Quality Assurance Coordinator, Chief Engineer**

Other: _____

Enter notes, quality improvement, or lessons-learned issues resulting from this activity below.

Metalex Strongback : Magnet Lot ~~34~~ 39 : ISO Recert

(7) Shock Watch 17, 11, 17

Title5	Title4	Name	Keyword	Revision	Version
MAGNET CLAMP	UPPER LEFT MAGNET STRUCTURE	l143-110104.drw	PF-381-000-31	00	12
POLE		l143-110105.drw	PF-381-000-32	03	1
MAGNET		l143-110106.drw	PF-381-000-33	04	0
LAST POLE		l143-110107.drw	PF-381-000-94	02	4
DIVING BOARD	UPPER LEFT MAGNET STRUCTURE	l143-110108.drw	PF-381-000-95	00	2
BRACKET 1		l143-110109.drw	PF-381-001-27	02	2
BRACKET 2		l143-110110.drw	PF-381-001-28	02	1
SCREW		l143-110111.drw	PF-381-001-32	00	1
HORIZONTAL FIELD SHIM		l143-110112.drw	PF-381-001-33	00	0
HORIZONTAL FIELD SHIM HANDLE		l143-110113.drw		00	0
SCREEN		l143-110114.drw	PF-381-001-29	01	0
STOPPER		l143-110115.drw	PF-381-001-30	01	0
SPACER		l143-110119.drw	PF-381-000-99	00	1

		1143-110143.drw		01	0
		1143-110144.drw		00	1
		1143-110145.drw		00	1
STRONGBACK MACHINING	UNDULATOR MAGNET ASSEMBLY	1143-110700.drw	PF-381-000-86	08	0
STRONGBACK FORGING	UNDULATOR MAGNET ASSEMBLY	1143-110701.drw	PF-381-000-87	00	10
WEDGED SPACER		1143-110702.drw	PF-381-001-31	04	0
PEAK FIELD SHIM		1143-110703.drw	PF-381-001-05	02	2
SPACER		1143-110704.drw	PF-381-001-06	00	2
UPPER LEFT MAG. STRUCTURE ASSEMBLY	UPPER LEFT MAGNET STRUCTURE	1143-110800.drw	SA-381-000-54	03	0
BASE	UPPER LEFT MAGNET STRUCTURE	1143-110801.drw	PF-381-000-55	00	12
LOWER LEFT MAG. STRUCTURE ASSEMBLY	LOWER LEFT MAGNET STRUCTURE	1143-110900.drw	SA-381-000-56	02	0
BASE	LOWER LEFT MAGNET STRUCTURE	1143-110901.drw	PF-381-000-57	00	9
UPPER MIDDLE MAG. STRUCTURE ASSEMBLY	UPPER MIDDLE MAGNET STRUCTURE	1143-111000.drw	SA-381-00058	03	0
BASE	UPPER MIDDLE MAGNET STRUCTURE	1143-111001.drw	PF-381-000-59	02	0
LOWER MIDDLE MAG. STRUCTURE ASSEMBLY	LOWER MIDDLE MAGNET STRUCTURE	1143-111100.drw	SA-381-000-88	02	0

BASE	LOWER MIDDLE MAGNET STRUCTURE	1143-111101.drw	PF-381-000-89	02	0
BASE	LOWER MIDDLE MAGNET STRUCTURE	1143-111101.prt	PF-381-000-89	02	1
UPPER RIGHT MAG. STRUCTURE ASSEMBLY	UPPER RIGHT MAGNET STRUCTURE	1143-111200.drw	SA-381-000-90	03	0
BASE	UPPER RIGHT MAGNET STRUCTURE	1143-111201.drw	PF-381-000-55	00	4
LOWER RIGHT MAG. STRUCTURE ASSEMBLY	LOWER RIGHT MAGNET STRUCTURE	1143-111300.drw	SA-381-000-92	02	0
BASE	LOWER RIGHT MAGNET STRUCTURE	1143-111301.drw	PF-381-000-93	00	6
MAIN ASSEMBLY		1143-112000.drw	SA-381-001-35	05	1

Drawing revisions verified by: GL

Date: 12/20/06

ARGONNE NATIONAL LABORATORY

ACCEPTANCE CRITERIA LISTING

1. DISTRIBUTION:

INSPECTION REQUIRED: ☑

4. ORIGINATOR'S NAME & DIVISION: Glen Lawrence/XFD 5. PHONE: 2-9298 6. DATE: 06/13/2005

9. FOR INSPECTION, DELIVER TO BLDG. NO.: DIVISION: XFD ATTN.: G. Lawrence

10. AFTER INSPECTION, DELIVER TO BLDG. NO.: SLAC DIVISION: LCLS ATTN.:

11. REFERENCES AND/OR REMARKS:

Item may be inspected by LCLS QA at Contractor site prior to shipment with follow-up inspection at receiving site. First Articles from each of the two contractors are to be shipped to ANL/APS to be magnetically shimmed and characterized in the APS Magnet Measurement room. The 38 remaining units shall be shipped directly to SLAC to be magnetically shimmed and characterized in the LCLS Magnet Measurement room.

15. ORIGINATOR OF PLAN: Glen Lawrence DATE: 06/13/2005

16. PLAN REVIEWED/APPROVED BY: DATE: 00/00/0000

17. QAR CONCURRENCE WITH PLAN: DATE: 00/00/0000

3. ACL NO.: E5-164018 LINE NBR: 1

7. PART NO. & NAME: L143-112000 LCLS Undulator Main Assy. 8. QUANTITY: 2

12. STEP NO.	13. INSPECTION/TEST REQUIREMENT	14. INSPECTION TEST LOCATION	18. ACCEPTED BY OR NONCONFORMANCE REPORT NO.	19. DATE
1	Inspect shipping container for evidence of damage or rough handling	:eceiving / Inspectic	SLAC	
2	Inspect shipping sensors for record of temperature variations and shock/ loads in x,y and z during shipping	:eceiving / Inspectic	SLAC	
3	Review all required certifications for compliance and completeness	ractor Fac. or Rec.	TPM	3/29/07
4	Visual inspection of Undulator Assy for shipping damage	:eceiving / Inspectic	SLAC	
5	Visual inspection of Undulator Assy for completeness to print, including a loose parts	ractor Fac. or Rec.	[illegible]	3/29/07

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12. STEP NO.	13. INSPECTION/TEST REQUIREMENT	14. INSPECTION TEST LOCATION	18. ACCEPTED BY OR NONCONFORMANCE REPORT NO.	19. DATE
6	Verify Undulator gap using Go-NoGo gauge	Contractor Facility	[illegible]	03/29/07 ET

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ACCEPTANCE CRITERIA LISTING

1. DISTRIBUTION:

INSPECTION REQUIRED: ☑

4. ORIGINATOR'S NAME & DIVISION: Glen Lawrence/XFD 5. PHONE: 2-9298 6. DATE: 01/25/2005

9. FOR INSPECTION, DELIVER TO BLDG. NO.: N/A DIVISION: ATTN.:

10. AFTER INSPECTION, DELIVER TO BLDG. NO.: NA DIVISION: ATTN.:

11. REFERENCES AND/OR REMARKS:

The Magnet Poles are to be delivered to the Undulator Assembly Contractors by the Machining Contractor. Undulator Assembly Contractor shall inspect the Magnet Poles prior to acceptance. ANL shall review all Certifications and Machining Contractor's reported measurements & optionally perform on-site inspections.

15. ORIGINATOR OF PLAN: Glen Lawrence DATE: 01/27/2005

16. PLAN REVIEWED/APPROVED BY: DATE: 00/00/0000

17. QAR CONCURRENCE WITH PLAN: DATE: 00/00/0000

3. ACL NO.: E5-026046 LINE NBR: 1

7. PART NO. & NAME: L143-110105 Upper Magnet Structure Pole 8. QUANTITY: 192

12. STEP NO.	13. INSPECTION/TEST REQUIREMENT	14. INSPECTION TEST LOCATION	18. ACCEPTED BY OR NONCONFORMANCE REPORT NO.	19. DATE
1	Visual inspection of parts for shipping damage	ulator Assy Contra	See Eli-Tech QA Records	10/17/06
2	Check that parts were "bagged and tagged" with serial no.'s and part no.' (ANL & SLAC) per SOW L143-00031, Section 4.1.3	ulator Assy Contra		
3	Check that parts were marked with serial numbers per SOW section 4.1.3.	ulator Assy Contra		
4	Check that accompanying certifications have correct part serial numbers	ulator Assy Contra		
5	Check the material certification for compliance with ASTM A801, Type 1	ator Assy Contractc		

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ACCEPTANCE CRITERIA LISTING

12. STEP NO.	13. INSPECTION/TEST REQUIREMENT	14. INSPECTION TEST LOCATION	18. ACCEPTED BY OR NONCONFORMANCE REPORT NO.	19. DATE
6	Check the anneal certification for compliance with AMS-A801, or a specified material supplier's annealing schedule.	ɜtor Assy Contractc	Hi Tech	
7	Check that the machining Contractor's certified dimensional measurements are in compliance with the drawing	ANL	Tpm	3/24/07 TB
8	Verify the critical dimensions as listed in the SOW, Section 4.5.2 are in compliance with the drawing	ɟulator Assy Contra	Hi Tech	

Not Required Fields

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ACCEPTANCE CRITERIA LISTING

1. DISTRIBUTION:

INSPECTION REQUIRED: ☑

4. ORIGINATOR'S NAME & DIVISION: Glen Lawrence/XFD 5. PHONE: 2-9298 6. DATE: 03/10/2005

9. FOR INSPECTION, DELIVER TO BLDG. NO.: 401 DIVISION: XFD ATTN.: Glen Lawrence

10. AFTER INSPECTION, DELIVER TO BLDG. NO.: 401 DIVISION: XFD ATTN.: Glen Lawrence

11. REFERENCES AND/OR REMARKS:

Most of the magnets will be drop shipped directly to the Undulator Assembly Contractor, who will only perform limited physical inspection of the parts as they are highly magnetized. A sampling from each lot will be sent to ANL for verification of the magnetic field properties.

15. ORIGINATOR OF PLAN: Glen Lawrence DATE: 02/07/2005

16. PLAN REVIEWED/APPROVED BY: DATE: 00/00/0000

17. QAR CONCURRENCE WITH PLAN: DATE: 00/00/0000

3. ACL NO.: E5-069069 **LINE NBR: 1**

7. PART NO. & NAME: L143-110106 ~~Upper Left~~ Magnet ~~Structure~~ 8. QUANTITY: 192

12. STEP NO.	13. INSPECTION/TEST REQUIREMENT	14. INSPECTION TEST LOCATION	18. ACCEPTED BY OR NONCONFORMANCE REPORT NO.	19. DATE
1	Visual inspection of parts for shipping damage	lulator Ass'y Contra	See H. Tech On Records	
2	Visual inspection of parts for surface chips and pits	lulator Ass'y Contra		
3	Dimensional check of part for conformance to the drawing	lulator Ass'y Contra		
4	Review vendor certified test data agrees with SOW requirements	APS Bldg 401	TBy	4/12/07 TB
5	Review Vendor sort list for agreement with sort procedure.	APS Bldg 401	Shigeki Sochi	SS

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12. STEP NO.	13. INSPECTION/TEST REQUIREMENT	14. INSPECTION TEST LOCATION	18. ACCEPTED BY OR NONCONFORMANCE REPORT NO.	19. DATE
6	On random sampling, inspect magnetic field with magnetic visualization film for magnetic defects.	APS Magnet Grou	[illegible]	SS
7	On random sampling, confirm Magnetic Moment magnitude and vector components agree with vendor reports	APS Magnet Grou	↓	SS
8	On radom sampling, verify the magnet s demagnetization and thermal stability.	APS Magnet Grou	↓	SS

Not Required Fields

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ACCEPTANCE CRITERIA LISTING

1. DISTRIBUTION:

INSPECTION REQUIRED: ☑

4. ORIGINATOR'S NAME & DIVISION: Glen Lawrence/XFD 5. PHONE: 2-9298 6. DATE: 01/20/2005

9. FOR INSPECTION, DELIVER TO BLDG. NO.: N/A DIVISION: ATTN.:

10. AFTER INSPECTION, DELIVER TO BLDG. NO.: NA DIVISION: ATTN.:

11. REFERENCES AND/OR REMARKS:

Strongbacks are to be delivered to undulator assembly contractor by machining contractor. Undulator assembly contractor shall inspect strongback prior to acceptance. Argonne National Laboratory shall review all certification and machining vendor's reported measurements and optionally on-site inspections

15. ORIGINATOR OF PLAN: Glen Lawrence DATE: 01/20/2005

16. PLAN REVIEWED/APPROVED BY: DATE: 00/00/0000

17. QAR CONCURRENCE WITH PLAN: DATE: 00/00/0000

3. ACL NO.: E5-020020 LINE NBR: 1

7. PART NO. & NAME: L143-110700 LCLS Undulator Strongback 8. QUANTITY: 40

12. STEP NO.	13. INSPECTION/TEST REQUIREMENT	14. INSPECTION TEST LOCATION	18. ACCEPTED BY OR NONCONFORMANCE REPORT NO.	19. DATE
1	Visual inspection of part for shipping damage. A) Were critical surfaces protected per SOW L143-00030 Section 4.1.4? B) Is there any visible damage?	lulator Ass'y Contra	See Hi-tech QA Records	3/29/07
2	Check Strongback is marked with serial number & part no.'s (ANL and SLAC) per SOW Section 4.1.3	lulator Ass'y Contra		
3	Check all accompanying Certifications have correct part serial number.	lulator Ass'y Contra		
4	Check Material Certiication for compliance with ASTM B381-03, Grade F	ıtor Ass'y Contractc		
5	Check Forging Annealing Certification for annealing conformance to AMS-H-81200A, Table V, commercial Pure, Bars & Forgings, including Note 8	ıtor Ass'y Contractc		

ARGONNE NATIONAL LABORATORY

ACCEPTANCE CRITERIA LISTING

12. STEP NO.	13. INSPECTION/TEST REQUIREMENT	14. INSPECTION TEST LOCATION	18. ACCEPTED BY OR NONCONFORMANCE REPORT NO.	19. DATE
6	Check Rough Machining Anneal Certification for annealing conformance to AMS 2801B section 3.2.9	ıtor Ass'y Contractc	Hi Tech	
7	Check the strongback contractor's reported dimensional measurements against the part drawing.	ırgonne National La	TPM	3/29/07 TB
8	Verify the strongback critical dimensions as listed in the SOW section 4.5.2 are in compliance with the print.	lulator Ass'y Contra	Hi tech	

Wedge Type 1

Magnet Lot # 39

air 70°F

Date 29 March 07 Device# 34 Start Time 10:26 Start Temperature 20.9°C

Slot	Value	Slot	Value	Slot	Value	Slot	Value	Slot	Value
1		51	−1.29	101	−1.28	151	−1.29	201	−1.28
2	+0.75	52	+1.28	102	+1.29	152	+1.28	202	+1.28
3	−1.22	53	−1.29	103	−1.28	153	−1.29	203	−1.29
4	+1.30	54	+1.28	104	+1.28	154	+1.28	204	+1.28
5	−1.27	55	−1.28	105	−1.28	155	−1.27	205	−1.28
6	+1.29	56	+1.28	106	+1.28	156	+1.28	206	+1.28
7	−1.27	57	−1.29	107	−1.28	157	−1.28	207	−1.28
8	+1.29	58	+1.28	108	+1.28	158	+1.28	208	+1.28
9	−1.28	59	−1.29	109	−1.28	159	−1.29	209	−1.28
10	+1.29	60	+1.28	110	+1.28	160	+1.29	210	+1.28
11	−1.29	61	−1.29	111	−1.29	161	−1.29	211	−1.28
12	+1.28	62	+1.28	112	+1.28	162	+1.29	212	+1.28
13	−1.28	63	−1.28	113	−1.28	163	−1.29	213	−1.27
14	+1.28	64	+1.28	114	+1.28	164	+1.28	214	+1.27
15	−1.28	65	−1.29	115	−1.28	165	−1.29	215	−1.28
16	+1.28	66	+1.28	116	+1.27	166	+1.28	216	+1.28
17	−1.29	67	−1.29	117	−1.28	167	−1.29	217	−1.28
18	+1.28	68	+1.28	118	+1.29	168	+1.28	218	+1.28
19	−1.29	69	−1.28	119	−1.28	169	−1.29	219	−1.28
20	+1.28	70	+1.28	120	+1.29	170	+1.28	220	+1.27
21	−1.29	71	−1.28	121	−1.28	171	−1.28	221	−1.29
22	+1.28	72	+1.28	122	+1.28	172	+1.28	222	+1.27
23	−1.28	73	−1.28	123	−1.28	173	−1.28	223	−1.31
24	+1.28	74	+1.28	124	+1.28	174	+1.28	224	+1.22
25	−1.29	75	−1.29	125	−1.28	175	−1.28	225	−0.75
26	+1.28	76	+1.28	126	+1.28	176	+1.28		
27	−1.29	77	−1.29	127	−1.28	177	−1.29		
28	+1.29	78	+1.28	128	+1.28	178	+1.28		
29	−1.28	79	−1.28	129	−1.28	179	−1.28		
30	+1.28	80	+1.28	130	+1.28	180	+1.28		
31	−1.28	81	−1.28	131	−1.29	181	−1.28		
32	+1.29	82	+1.29	132	+1.29	182	+1.28		
33	−1.28	83	−1.28	133	−1.29	183	−1.29		
34	+1.28	84	+1.29	134	+1.29	184	+1.28		
35	−1.29	85	−1.29	135	−1.29	185	−1.28		
36	+1.28	86	+1.29	136	+1.28	186	+1.28		
37	−1.28	87	−1.28	137	−1.28	187	−1.29		
38	+1.28	88	+1.28	138	+1.28	188	+1.28		
39	−1.29	89	−1.28	139	−1.28	189	−1.28		
40	+1.28	90	+1.28	140	+1.28	190	+1.28		
41	−1.29	91	−1.28	141	−1.29	191	−1.28		
42	+1.29	92	+1.28	142	+1.28	192	+1.28		
43	−1.29	93	−1.28	143	−1.28	193	−1.28		
44	+1.28	94	+1.29	144	+1.29	194	+1.28		
45	−1.28	95	−1.28	145	−1.28	195	−1.28		
46	+1.28	96	+1.29	146	+1.28	196	+1.28		
47	−1.28	97	−1.28	147	−1.28	197	−1.28		
48	+1.28	98	+1.28	148	+1.28	198	+1.29		
49	−1.29	99	−1.28	149	−1.28	199	−1.28		
50	+1.28	100	+1.28	150	+1.28	200	+1.29		

End Temperature 19.7°C

End Time 10:44

Hall Probe S/N 01231053 01340076

Signatures:

LOT39 magnets Serial # 18241-18720

Bottom Jaw

Slot Number	Serial No.	Main filed Orientation	x-axis orientation
1	18610	Upstream	Left
2	18303	Downstream	Right
3	18646	Upstream	Right
4	18468	Downstream	Left
5	18593	Upstream	Left
6	18563	Downstream	Right
7	18665	Upstream	Left
8	18301	Downstream	Right
9	18718	Upstream	Right
10	18354	Downstream	Left
11	18644	Upstream	Left
12	18269	Downstream	Right
13	18600	Upstream	Left
14	18362	Downstream	Right
15	18705	Upstream	Right
16	18549	Downstream	Left
17	18694	Upstream	Right
18	18518	Downstream	Left
19	18625	Upstream	Left
20	18313	Downstream	Right
21	18466	Upstream	Right
22	18333	Downstream	Right
23	18352	Upstream	Left
24	18397	Downstream	Left
25	18249	Upstream	Left
26	18486	Downstream	Right
27	18544	Upstream	Left
28	18494	Downstream	Right
29	18630	Upstream	Left
30	18552	Downstream	Right
31	18650	Upstream	Left
32	18575	Downstream	Right
33	18421	Upstream	Right
34	18244	Downstream	Right
35	18690	Upstream	Left
36	18295	Downstream	Left
37	18250	Upstream	Right
38	18702	Downstream	Right
39	18586	Upstream	Right
40	18319	Downstream	Right
41	18711	Upstream	Right
42	18391	Downstream	Left
43	18570	Upstream	Right
44	18479	Downstream	Right
45	18641	Upstream	Left
46	18590	Downstream	Left
47	18440	Upstream	Right

Top Jaw

Slot Number	Serial No.	Main filed Orientation	x-axis orientation
1	18443	Downstream	Right
2	18615	Upstream	Left
3	18429	Downstream	Left
4	18609	Upstream	Right
5	18493	Downstream	Left
6	18658	Upstream	Right
7	18330	Downstream	Left
8	18664	Upstream	Left
9	18297	Downstream	Right
10	18556	Upstream	Right
11	18433	Downstream	Right
12	18660	Upstream	Left
13	18446	Downstream	Right
14	18603	Upstream	Left
15	18579	Downstream	Left
16	18700	Upstream	Left
17	18329	Downstream	Left
18	18550	Upstream	Left
19	18380	Downstream	Right
20	18598	Upstream	Right
21	18312	Downstream	Left
22	18671	Upstream	Left
23	18320	Downstream	Right
24	18693	Upstream	Left
25	18462	Downstream	Right
26	18618	Upstream	Right
27	18589	Downstream	Right
28	18286	Upstream	Right
29	18288	Downstream	Right
30	18597	Upstream	Left
31	18253	Downstream	Right
32	18647	Upstream	Left
33	18324	Downstream	Left
34	18373	Upstream	Left
35	18299	Downstream	Right
36	18667	Upstream	Right
37	18521	Downstream	Left
38	18304	Upstream	Right
39	18359	Downstream	Right
40	18328	Upstream	Left
41	18683	Downstream	Left
42	18559	Upstream	Left
43	18461	Downstream	Right
44	18621	Upstream	Left
45	18588	Downstream	Right
46	18268	Upstream	Left
47	18497	Downstream	Left

48	18498	Downstream	Left
49	18351	Upstream	Right
50	18565	Downstream	Right
51	18657	Upstream	Right
52	18577	Downstream	Left
53	18699	Upstream	Left
54	18572	Downstream	Right
55	18669	Upstream	Right
56	18384	Downstream	Right
57	18539	Upstream	Right
58	18307	Downstream	Left
59	18382	Upstream	Left
60	18703	Downstream	Left
61	18713	Upstream	Right
62	18372	Downstream	Left
63	18256	Upstream	Left
64	18375	Downstream	Left
65	18629	Upstream	Left
66	18311	Downstream	Left
67	18361	Upstream	Left
68	18392	Downstream	Right
69	18592	Upstream	Right
70	18432	Downstream	Left
71	18400	Upstream	Left
72	18266	Downstream	Left
73	18339	Upstream	Right
74	18447	Downstream	Left
75	18638	Upstream	Right
76	18560	Downstream	Right
77	18674	Upstream	Left
78	18553	Downstream	Right
79	18710	Upstream	Left
80	18547	Downstream	Right
81	18243	Upstream	Right
82	18276	Downstream	Right
83	18294	Upstream	Right
84	18716	Downstream	Left
85	18326	Upstream	Left
86	18409	Downstream	Right
87	18255	Upstream	Right
88	18405	Downstream	Left
89	18413	Upstream	Left
90	18296	Downstream	Left
91	18287	Upstream	Right
92	18695	Downstream	Right
93	18476	Upstream	Left
94	18691	Downstream	Right
95	18484	Upstream	Left
96	18601	Downstream	Right
97	18437	Upstream	Right
98	18654	Downstream	Right
99	18652	Upstream	Right

48	18337	Upstream	Right
49	18418	Downstream	Right
50	18332	Upstream	Left
51	18363	Downstream	Left
52	18688	Upstream	Right
53	18259	Downstream	Right
54	18247	Upstream	Left
55	18715	Downstream	Left
56	18532	Upstream	Right
57	18322	Downstream	Left
58	18536	Upstream	Right
59	18509	Downstream	Right
60	18402	Upstream	Left
61	18458	Downstream	Left
62	18578	Upstream	Right
63	18349	Downstream	Left
64	18414	Upstream	Right
65	18347	Downstream	Right
66	18290	Upstream	Right
67	18686	Downstream	Right
68	18444	Upstream	Left
69	18428	Downstream	Right
70	18264	Upstream	Right
71	18473	Downstream	Right
72	18316	Upstream	Right
73	18643	Downstream	Right
74	18374	Upstream	Left
75	18495	Downstream	Right
76	18338	Upstream	Left
77	18561	Downstream	Right
78	18672	Upstream	Right
79	18564	Downstream	Left
80	18248	Upstream	Left
81	18278	Downstream	Right
82	18527	Upstream	Right
83	18546	Downstream	Left
84	18410	Upstream	Left
85	18323	Downstream	Right
86	18381	Upstream	Left
87	18404	Downstream	Right
88	18274	Upstream	Left
89	18529	Downstream	Right
90	18554	Upstream	Right
91	18540	Downstream	Right
92	18449	Upstream	Right
93	18696	Downstream	Right
94	18482	Upstream	Right
95	18520	Downstream	Left
96	18431	Upstream	Left
97	18355	Downstream	Right
98	18422	Upstream	Right
99	18353	Downstream	Left

100	18345	Downstream	Left
101	18633	Upstream	Right
102	18336	Downstream	Left
103	18656	Upstream	Right
104	18430	Downstream	Left
105	18517	Upstream	Right
106	18471	Downstream	Left
107	18507	Upstream	Right
108	18569	Downstream	Left
109	18524	Upstream	Left
110	18284	Downstream	Right
111	18530	Upstream	Right
112	18719	Downstream	Left
113	18383	Upstream	Right
114	18617	Downstream	Left
115	18531	Upstream	Left
116	18258	Downstream	Left
117	18510	Upstream	Right
118	18370	Downstream	Right
119	18697	Upstream	Left
120	18488	Downstream	Left
121	18514	Upstream	Left
122	18395	Downstream	Right
123	18335	Upstream	Right
124	18673	Downstream	Left
125	18379	Upstream	Right
126	18358	Downstream	Right
127	18655	Upstream	Left
128	18314	Downstream	Right
129	18435	Upstream	Right
130	18689	Downstream	Right
131	18263	Upstream	Left
132	18511	Downstream	Right
133	18490	Upstream	Left
134	18707	Downstream	Right
135	18594	Upstream	Right
136	18582	Downstream	Left
137	18420	Upstream	Right
138	18583	Downstream	Left
139	18573	Upstream	Right
140	18406	Downstream	Right
141	18325	Upstream	Right
142	18277	Downstream	Right
143	18389	Upstream	Right
144	18545	Downstream	Right
145	18308	Upstream	Right
146	18542	Downstream	Right
147	18666	Upstream	Left
148	18623	Downstream	Right
149	18677	Upstream	Left
150	18411	Downstream	Left
151	18632	Upstream	Right

100	18678	Upstream	Right
101	18343	Downstream	Left
102	18607	Upstream	Left
103	18394	Downstream	Left
104	18454	Upstream	Left
105	18475	Downstream	Left
106	18701	Upstream	Left
107	18270	Downstream	Right
108	18506	Upstream	Left
109	18557	Downstream	Right
110	18523	Upstream	Right
111	18271	Downstream	Left
112	18505	Upstream	Right
113	18408	Downstream	Left
114	18310	Upstream	Left
115	18720	Downstream	Right
116	18585	Upstream	Right
117	18285	Downstream	Left
118	18504	Upstream	Right
119	18624	Downstream	Left
120	18292	Upstream	Left
121	18262	Downstream	Left
122	18371	Upstream	Left
123	18399	Downstream	Right
124	18318	Upstream	Left
125	18451	Downstream	Right
126	18679	Upstream	Left
127	18631	Downstream	Left
128	18685	Upstream	Left
129	18377	Downstream	Right
130	18439	Upstream	Right
131	18516	Downstream	Left
132	18477	Upstream	Left
133	18708	Downstream	Left
134	18648	Upstream	Right
135	18709	Downstream	Left
136	18562	Upstream	Right
137	18584	Downstream	Right
138	18417	Upstream	Left
139	18407	Downstream	Left
140	18580	Upstream	Left
141	18321	Downstream	Left
142	18387	Upstream	Left
143	18272	Downstream	Left
144	18534	Upstream	Left
145	18273	Downstream	Right
146	18533	Upstream	Right
147	18280	Downstream	Right
148	18376	Upstream	Right
149	18366	Downstream	Left
150	18334	Upstream	Left
151	18558	Downstream	Left

152	18441	Downstream	Left
153	18637	Upstream	Right
154	18267	Downstream	Right
155	18393	Upstream	Right
156	18467	Downstream	Right
157	18470	Upstream	Left
158	18423	Downstream	Right
159	18448	Upstream	Left
160	18635	Downstream	Right
161	18283	Upstream	Right
162	18515	Downstream	Right
163	18412	Upstream	Right
164	18341	Downstream	Right
165	18714	Upstream	Left
166	18512	Downstream	Left
167	18614	Upstream	Left
168	18245	Downstream	Left
169	18538	Upstream	Right
170	18327	Downstream	Right
171	18298	Upstream	Right
172	18571	Downstream	Left
173	18692	Upstream	Right
174	18251	Downstream	Left
175	18675	Upstream	Left
176	18282	Downstream	Left
177	18687	Upstream	Right
178	18369	Downstream	Left
179	18605	Upstream	Right
180	18450	Downstream	Left
181	18599	Upstream	Left
182	18474	Downstream	Left
183	18568	Upstream	Right
184	18426	Downstream	Left
185	18365	Upstream	Left
186	18684	Downstream	Right
187	18611	Upstream	Right
188	18302	Downstream	Right
189	18242	Upstream	Right
190	18503	Downstream	Left
191	18378	Upstream	Left
192	18309	Downstream	Right
193	18608	Upstream	Right
194	18260	Downstream	Right
195	18642	Upstream	Right
196	18289	Downstream	Right
197	18496	Upstream	Right
198	18491	Downstream	Right
199	18717	Upstream	Left
200	18265	Downstream	Left
201	18385	Upstream	Right
202	18465	Downstream	Right
203	18676	Upstream	Right

152	18357	Upstream	Right
153	18649	Downstream	Right
154	18460	Upstream	Left
155	18472	Downstream	Left
156	18434	Upstream	Left
157	18427	Downstream	Right
158	18489	Upstream	Right
159	18331	Downstream	Left
160	18364	Upstream	Left
161	18513	Downstream	Right
162	18566	Upstream	Right
163	18350	Downstream	Left
164	18543	Upstream	Left
165	18602	Downstream	Right
166	18613	Upstream	Right
167	18501	Downstream	Right
168	18535	Upstream	Right
169	18581	Downstream	Left
170	18525	Upstream	Right
171	18390	Downstream	Left
172	18528	Upstream	Right
173	18541	Downstream	Right
174	18639	Upstream	Left
175	18555	Downstream	Left
176	18636	Upstream	Left
177	18368	Downstream	Right
178	18346	Upstream	Left
179	18500	Downstream	Left
180	18464	Upstream	Left
181	18445	Downstream	Right
182	18645	Upstream	Left
183	18261	Downstream	Right
184	18415	Upstream	Right
185	18424	Downstream	Right
186	18388	Upstream	Left
187	18453	Downstream	Right
188	18508	Upstream	Left
189	18300	Downstream	Left
190	18704	Upstream	Right
191	18241	Downstream	Right
192	18344	Upstream	Right
193	18291	Downstream	Right
194	18485	Upstream	Right
195	18275	Downstream	Right
196	18442	Upstream	Left
197	18626	Downstream	Left
198	18628	Upstream	Left
199	18492	Downstream	Left
200	18548	Upstream	Left
201	18469	Downstream	Right
202	18661	Upstream	Right
203	18398	Downstream	Left

204	18356	Downstream	Left
205	18438	Upstream	Left
206	18456	Downstream	Left
207	18587	Upstream	Right
208	18360	Downstream	Right
209	18620	Upstream	Left
210	18254	Downstream	Right
211	18662	Upstream	Right
212	18416	Downstream	Left
213	18595	Upstream	Right
214	18481	Downstream	Left
215	18651	Upstream	Right
216	18455	Downstream	Right
217	18712	Upstream	Left
218	18306	Downstream	Left
219	18663	Upstream	Right
220	18386	Downstream	Right
221	18659	Upstream	Left
222	18480	Downstream	Right
223	18634	Upstream	Left
224	18452	Downstream	Right
225	18706	Upstream	Right

204	18681	Upstream	Right
205	18315	Downstream	Left
206	18478	Upstream	Right
207	18653	Downstream	Left
208	18574	Upstream	Left
209	18537	Downstream	Left
210	18698	Upstream	Left
211	18252	Downstream	Right
212	18606	Upstream	Right
213	18419	Downstream	Right
214	18616	Upstream	Left
215	18463	Downstream	Right
216	18627	Upstream	Left
217	18519	Downstream	Right
218	18502	Upstream	Right
219	18403	Downstream	Left
220	18604	Upstream	Left
221	18499	Downstream	Right
222	18591	Upstream	Left
223	18396	Downstream	Left
224	18682	Upstream	Left
225	18293	Downstream	Left

For "X-Axis Orientation" column
"Right" stands for right-numbered surface should face to the undulator axis.
"Left" stands for left-numbered surface should face to the undulator axis.
This "Right", "Left" procedure applies for both Top and Bottom Jaw

For "Main-Field Orientation" column **(see Assembly Procedure Document)**
"Downstream" side corresponts to the direction of lower-numbered slot.
Arrow should point toward the lower numbered slots.
"Upstream" side corresponds to the direction of higher-numbered slot.
Arrow should point toward the higher numbered slots.

Spare magnets

serial No.	Reduced Magnetization
18317	33%
18622	80%
18483	
18670	
18342	
18340	
18257	
18596	
18457	
18612	
18567	
18348	

Sample magnets

serial No.
18246
18367
18459
18576
18640

18522
18619
18425
18487
18551
18668
18305
18279
18680
18436
18281
18526
18401

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR AS-BUILT DRAWINGS

VENDOR: METALEX MANUFACTURING INC. PART NAME: **LCLS Strongback**

DRAWING #: **L143-110700** SERIAL #: 34

P.O.#: **5A-13624** DATE: 03-16-07

#	Inspection/Test Requirement	Inspection Test Location	Accepted by or Nonconformance Report No.	Date
1	Visual inspection of part for shipping damage. A) Were critical surfaces protected per SOW L143-00030 Section 4.1.4? B) Is there any visible damage?	H.T.	OK.	03-15-07
2	Check Strongback is marked with serial number & part no.'s (ANL & SLAC) per SOW Section 4.1.3?	H.T.	OK	03-15-07
3	Check all accompanying Certifications have correct part serial number	H.T.	OK	03-15-07
4	Check Material Certification for compliance with ASTM B381-03 or ASTM B348, Grade F2	H.T.	OK	03-15-07
5	Check Forging Annealing Certification for annealing conformance to AMS-H-81200A, Table V, commercial Pure, Bars & Forgings, including Note 8	H.T.	OK	03/15/07
6	Check Rough Machining Anneal Certification for annealing conformance to AMS-2801B section 3.2.9	H.T.	OK	03-15-07
7	Check the Strongback contractor's reported dimensional measurements against the part drawing	H.T.	OK	03-16-07
8	Verify the Strongback critical dimensions as listed in the SOW section 4.5.2 are in compliance with the print	H.T.	OK	03-16-07

INSPECTOR: Simon QA Supervisor: Mulaze

TEST EQUIPMENT USED:

COMMENTS:

LCLS Linac Coherent Light Source

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR AS-BUILT DRAWINGS

VENDOR: METALEX MANUFACTURING INC. PART NAME: LCLS Strongback

DRAWING #: L143-110700 SERIAL #: 34

P.O. #: 5A-13624 DATE: 03-16-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Overall length	3400.00	+0 / -.2	3400.00	Accept/Reject
Gap height	167.00	+0.05 / -.0	167.04	Accept/Reject
Gap flatness (top and bottom)	<= .05	N/A	<= .03	Accept/Reject
Gap depth	130.00	+/- .08	130.02	Accept/Reject
Flatness of front face	<= .05	N/A	<= .03	Accept/Reject
Perpendicularity of front face to A	<= .1	N/A	<= .03	Accept/Reject
End face perpendicularity to A and B	<= .05	N/A	<= .03	Accept/Reject
Mounting Pads Area	60.00	+0.1/-.0	60.08	Accept/Reject
Holes Location	2 x 30.00	+0.1/-0.1	30.04	Accept/Reject

INSPECTOR: SIMON QA Supervisor: Muelaz

TEST EQUIPMENT USED: DROP INDICATOR
SQUAR PRECISION
ADJUSTABLE PARALELS
DIAL INDICATOR
DIAL CALIPER
MICROMETER

COMMENTS:

LCLS Linac Coherent Light Source

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR AS-BUILT DRAWINGS

VENDOR: METALEX MANUFACTURING INC.

PART NAME: **LCLS Strongback**

DRAWING #: **L143-110700**

SERIAL #: 34

P.O.#: **5A-13624**

DATE: 03-16-07

FEATURE: Gap Flatness

#	Distance (mm)	Measured A	Measured B	Comments
1	50	.0008	.0008	OK
2	350	.0006	.0008	OK
3	650	.0007	.0007	OK
4	950	.0005	.0006	OK
5	1250	.0003	.0004	OK
6	1550	.0005	.0004	OK
7	1850	.0002	.0000	OK
8	2150	.0002	-.0002	OK
9	2450	-.0004	-.0003	OK
10	2750	-.0006	-.0005	OK
11	3050	-.0007	-.0005	OK
12	3350	-.0007	-.0006	OK

INSPECTOR: Simon

QA Supervisor: Mwlaz

TEST EQUIPMENT USED:

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 1861Q

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.02	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muelage

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18644

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.01	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mullaz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18466

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	16.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mulaz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18650

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mulaz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18711

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.02	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muelaza

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18657

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.01	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muelaz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18713

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mulaza

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18400

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mulaza

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

LCLS
Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18243

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	16.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Huelage

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18287

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muelaz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18633

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.01	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: SIMON

QA Supervisor: Mulaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18530

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mullaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18325

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mulaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18632

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muelaz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18,514

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.01	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muralz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18263

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mulaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18283

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mustaza

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18298

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mustafa

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18599

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.02	Accept/Reject
Magnet Width	66.00	+/- .25	66.02	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Nuloz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18378

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.01	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Murlaga

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18385

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Smoos

QA Supervisor: Murlaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18662

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simow

QA Supervisor: [illegible]

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18659

P.O. #: **5A13624**

DATE: 03-08-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Murlage

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: Hi-Tech Manufacturing, Inc.

PART NAME: Upper Middle Magnet Structure Base

DRAWING #: L143-111001-01

SERIAL #: L143-111000-1~~39~~-34

P.O. #: 5A13624

DATE: 10-17-06

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE(S)	
Bottom surface to pole base surface (all surfaces)	30	+0 / -.03	Max / Min 29.990/29.975	Accept/Reject
Bottom surface flatness	</= .04	N/A	.04	Accept/Reject
Overall length	1005.0	+0 / -.1	1004.93	Accept/Reject
Overall width	128	+0 / -.1	127.92	Accept/Reject

INSPECTOR: Murtaza

QA Supervisor: Murtaza

TEST EQUIPMENT USED: CMM & Micrometer.

COMMENTS:

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: Hi-Tech Manufacturing, Inc. PART NAME: Upper Middle Magnet Structure Base

DRAWING #: L143-111001-01 SERIAL #: L143-111000-2-~~39~~-34

P.O. #: 5A13624 DATE: 10-17-06

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE(S)	
Bottom surface to pole base surface (all surfaces)	30	+0 / -.03	Max / Min 29.995/29.973	Accept/Reject
Bottom surface flatness	</= .04	N/A	.04	Accept/Reject
Overall length	1005.0	+0 / -.1	1004.92	Accept/Reject
Overall width	128	+0 / -.1	127.91	Accept/Reject

INSPECTOR: Murlaze QA Supervisor: Murlaze

TEST EQUIPMENT USED: CMM & Micrometer.

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: Hi-Tech Manufacturing, Inc. PART NAME: Upper Middle Magnet Structure Base

DRAWING #: L143-111001-01 SERIAL #: L143-111000-3-~~39~~-34

P.O. #: 5A13624 DATE: 10-17-06

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE(S)	
Bottom surface to pole base surface (all surfaces)	30	+0 / -.03	Max / Min 29.995/29.970	Accept/Reject
Bottom surface flatness	<= .04	N/A	.04	Accept/Reject
Overall length	1005.0	+0 / -.1	1004.91	Accept/Reject
Overall width	128	+0 / -.1	127.91	Accept/Reject

INSPECTOR: [illegible] QA Supervisor: [illegible]

TEST EQUIPMENT USED: CMM & Micrometer.

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: Hi-Tech Manufacturing, Inc. PART NAME: Lower Middle Magnet Structure Base

DRAWING #: L143-111101-01 SERIAL #: L143-111100-1-~~39~~-34

P.O. #:5A13624 DATE: 10-17-06

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE(S)	
Bottom surface to pole base surface (all surfaces)	30	+0 / -.03	Max / Min 29.995/29.980	Accept/Reject
Bottom surface flatness	<= .04	N/A	.04	Accept/Reject
Overall length	1005	+0 / -.1	1004.96	Accept/Reject
Overall width	128	+0 / -.1	127.93	Accept/Reject

INSPECTOR: Muelaze QA Supervisor: Muelaze

TEST EQUIPMENT USED: CMM & Micrometer.

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: Hi-Tech Manufacturing, Inc. PART NAME: Lower Middle Magnet Structure Base

DRAWING #: L143-111101-01 SERIAL #: L143-111100-2-~~39~~-34

P.O. #:5A13624 DATE: 10-17-06

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE(S)	
Bottom surface to pole base surface (all surfaces)	30	+0 / -.03	Max / Min 30.00/29.980	Accept/Reject
Bottom surface flatness	<= .04	N/A	.04	Accept/Reject
Overall length	1005	+0 / -.1	1004.93	Accept/Reject
Overall width	128	+0 / -.1	127.93	Accept/Reject

INSPECTOR: Murlaze QA Supervisor: Murlaze

TEST EQUIPMENT USED: CMM & Micrometer.

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: Hi-Tech Manufacturing, Inc. PART NAME: Lower Middle Magnet Structure Base

DRAWING #: L143-111101-01 SERIAL #: L143-111100-3-~~39~~-34

P.O. #:5A13624 DATE: 10-17-06

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE(S)	
Bottom surface to pole base surface (all surfaces)	30	+0 / -.03	Max / Min 29.995/29.975	Accept/Reject
Bottom surface flatness	</= .04	N/A	.04	Accept/Reject
Overall length	1005	+0 / -.1	1004.94	Accept/Reject
Overall width	128	+0 / -.1	127.92	Accept/Reject

INSPECTOR: Muelaza QA Supervisor: Muelaza

TEST EQUIPMENT USED: CMM & Micrometer.

COMMENTS:

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: Hi-Tech Manufacturing, Inc. PART NAME: Lower Left Magnet Structure Base

DRAWING #: L143-110901 SERIAL #: L143-110900-~~39~~-34

P.O. #: 5A13624 DATE: 08-02-06

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE(S)	
Bottom surface to pole base surface (all surfaces)	30	+0 / -.03	Max / Min 29.999/29.983	Accept/Reject
Bottom surface flatness	<= .04	N/A	.015	Accept/Reject
Overall length	195	+0 / -.1	194.982	Accept/Reject
Overall width	128	+0 / -.1	127.978	Accept/Reject

INSPECTOR: [illegible] QA Supervisor: [illegible]

TEST EQUIPMENT USED: CMM & Micrometer .

COMMENTS: .

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: Hi-Tech Manufacturing, Inc.

PART NAME: Upper Right Magnet Structure Base

DRAWING #: L143-111201

SERIAL #: LI43-111200-~~39~~-34

P.O. #: 5A13624

DATE: 08-02-06

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE(S)	
Bottom surface to pole base surface (all surfaces)	30	+0 / -.03	Max / Min 29.998/29.995	Accept/Reject
Bottom surface flatness	<= .04	N/A	0.02	Accept/Reject
Overall length	189	+0 / -.1	188.968	Accept/Reject
Overall width	128	+0 / -.1	127.98	Accept/Reject

INSPECTOR: Murlaze

QA Supervisor: Murlaze

TEST EQUIPMENT USED: CMM & Micrometer.

COMMENTS:

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: Hi-Tech Manufacturing, Inc. PART NAME: Lower Right Magnet Structure Base

DRAWING #: L143-111301 SERIAL #: L143-111300-~~39~~-34

P.O. #: 5A13624 DATE: 08-02-06

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE(S)	
Bottom surface to pole base surface (all surfaces)	30	+0 / -.03	Max / Min 29.996/29.975	Accept/Reject
Bottom surface flatness	<= .04	N/A	0.035	Accept/Reject
Overall length	189	+0 / -.1	188.985	Accept/Reject
Overall width	128	+0 / -.1	127.978	Accept/Reject

INSPECTOR: Muelaze QA Supervisor: Muelaze

TEST EQUIPMENT USED: CMM & Micrometer.

COMMENTS:

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: Hi-Tech Manufacturing, Inc. PART NAME: Upper Left Magnet Structure Base

DRAWING #: L143-110801 SERIAL #: L143-110800-~~39~~-34

P.O. #: 5A13624 DATE: 08-02-06

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE(S)	
Bottom surface to pole base surface (all surfaces)	30	+0 / -.03	Max / Min 29.996/29.978	Accept/Reject
Bottom surface flatness	<= .04	N/A	0.012	Accept/Reject
Overall length	195	+0 / -.1	194.974	Accept/Reject
Overall width	128	+0 / -.1	127.978	Accept/Reject

INSPECTOR: Murlaza QA Supervisor: Murlaza

TEST EQUIPMENT USED: CMM & Micrometer.

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18443

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muelaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18433

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	65.98	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: [illegible]

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18312

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Murlatt

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18253

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	65.99	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mullaz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

LCLS Linac Coherent Light Source — Stanford Synchrotron Radiation Laboratory, Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18683

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Murlaz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18365

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.01	Accept/Reject
Magnet Width	66.00	+/- .25	65.99	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Murtaza

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18458

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	65.99	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Hurlaz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18473

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Smoa

QA Supervisor: Mustafa

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18278

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: [illegible]

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18540

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muelaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18343

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mueller

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18271

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Smow

QA Supervisor: Murlaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18516

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: SIMON

QA Supervisor: Muatage

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18262

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Murtaza

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

LCLS Linac Coherent Light Source Stanford Synchrotron Radiation Laboratory Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18321

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	65.99	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mulatze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18558

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.02	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: SIMON

QA Supervisor: [illegible]

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18513

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	65.99	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Murlaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

LCLS Linac Coherent Light Source — Stanford Synchrotron Radiation Laboratory, Stanford Linear Accelerator Center

Procedure Number: L143-00076
Revision: 0
Issue Date: April 14, 2005

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18390

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.01	Accept/Reject
Magnet Width	66.00	+/- .25	66.01	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: SIMON

QA Supervisor: Murtaza

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18445

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.97	Accept/Reject

INSPECTOR: Smoot

QA Supervisor: Muller

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18241

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.95	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muelaz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18469

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Murlaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18252

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	57.00	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.95	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muñoz

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR LCLS MAGNET ASSEMBLIES

VENDOR: **Shin-Etsu**

PART NAME: **LCLS Magnet**

DRAWING #: **L143-110106-04**

SERIAL #: 18499

P.O. #: **5A13624**

DATE: 03-09-07

ACCEPTANCE CRITERIA

1. Visually inspect for shipping damage.	Accept/Reject

CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Magnet height	57.00	+/- .05	56.99	Accept/Reject
Magnet Width	66.00	+/- .25	66.00	Accept/Reject
Magnet thickness	9.00	+0 / -.10	8.96	Accept/Reject

INSPECTOR: SIMON

QA Supervisor: Murlaze

TEST EQUIPMENT USED: **Drop Indicators**

COMMENTS:

Metalex
Manufacturing
Inc.

Metalex
Certified ISO 9001 Quality Management
Veteran Owned Business 30 Plus Years

#1-- INSIDE Pkg - Cust Copy

Ship To: ARGONNE NATIONAL
LABORATORY
BLDG 201, OCF-PRO
9700 S CASS AVE.
ARGONNE IL 60439

Packing List# 38460 Rel# 1 PAGE 1
Metalex Job# 2005-3817

Date: 7/03/06
Ship Via: REMAIN @ METALEX
PTA#
(prepaid shipments only)
BOL/Air Bill#
Prepaid: Collect:
Weight: Ctns: Zone:
Dimensions:

Attn: MICHAEL OPRONDEK
Customer PO: 5A06990

P.O. Item No.	Qty Ordered	Qty Shipped	Qty Back Ordered	Description
001	19	1	3	L143-110700 REV. 07 STRONGBACK S/N: 5A06990-34 -CERTIFICATE OF CONFORMANCE, INSPECTION DATA, AND CERTIFICATIONS ENCLOSED. REF: SDR'S #3801-001, #3801-004, #3801-006 TESTING SURVEILLANCE BY ANL HAS BEEN WAIVED PER MEETING BETWEEN TOM BARAL (ANL QUALITY) & BOB SCHUERMANN (MX PROJECT ENGINEER)

Received By:

Printed Name _____ Signature _____ Date _____

www.metalexmfg.com
sales@metalexmfg.com

5750 Cornell Road Cincinnati, Oh 45242-2083
Phone (513) 489-0507 Fax (513) 489-1020

Metalex Manufacturing Inc.
5750 Cornell Road • Cincinnati, OH 45242
Phone (513) 489-0507 • Fax (513) 489-1020
EMAIL: metalex@metalexmfg.com

Metalex
Customized Machinery and Parts
ISO 9001:2000 and AS9100 Certified
Veteran Owned Business 30 Plus Years

CERTIFICATE OF CONFORMANCE

Date: 07/02/2006

Customer: Argonne National Laboratory
Bldg. 201, OCF-PRO
9700 S Cass Ave.
Argonne, Illinois 60439

Attention: Michael Oprondek

Metalex Job# 2005-3817
Purchase Order # 5A06990
MX Packing List # 38460

Metalex certifies that all material, processes, procedures, and dimensions are as called for on the purchase order, drawings, and/or amendments supplied by you.
All information concerning this part or parts, units and/or assemblies are on file at Metalex Manufacturing, Inc.

ITEM	QTY	PART NUMBER	REV	PART NAME	ID # *
0002	1	L143-110700	07	Strongback	5A06990-34

*IDENTIFICATION NUMBER INCLUDES SERIAL #, HEAT #, AND/OR LOT #.

COMMENTS: "First Article" submitted on Metalex Shipper #36794 dated 10/17/05 (Job#05-3801).

Metalex is in compliance with Statement of Workscope Document No. L143-110700, Revision 5, dated 09/05/05 and Strongback was successfully Vibration Stress Relieved per the Procedure in Appendix A.

Material from Heat Lot #G290

Reference SDR# 3801-001 (Material Substitution), SDR# 3801-004 (Modification), & SDR# 3801-006 (Modification).

Testing Surveillance by ANL has been wavied per meeting between Tom Barsz (ANL Quality) & Rob Schuermann (MX Project Engineer).

Metalex Representative Signature	Print Name	Date
	TODD CANDIA	7/2/2006

MX1011 (05/05)

To: METALEX MANUFACTURING INC
Address: 5750 CORNELL ROAD
CINCINNATI, OH 45242
Attention Of: PURCHASING AGENT

ATI Wah Chang
Allegheny Technologies
P.O. Box 460
Albany, Oregon 97321-0135
(541) 926-4211 FAX (541) 967-6948

PRODUCT CERTIFICATION

IN REGARD TO YOUR

Vendor Identification:	Wah Chang
Purchase Order No.:	58095-BL
Sales Order No.:	127418
Item No.:	1
Description:	Titanium Grade 2 Billet
Dimensions:	12.020-12.060" Dia. x 134.50-134.75" L
Specifications:	ASTM B381-05, AMS H 81200A and P.O.
Date:	February 13, 2006
Heat No.:	G29J
Alloy:	Ti-2
SFC No.:	1313054
Quantity Shipped (pcs.):	4
Weight Shipped (lbs.):	10013
Length Shipped (ft.):	N/A
Part No.:	5A06990-34,36,38,40

JMW

METALEX QA DEPT. ACCEPTED DATE 3/13/06 BY TC

THE TEST REPORT FOLLOWS:
Material Condition: Forged, conditioned, annealed and machined.

INGOT CHEMISTRY IN PERCENT

Element	Alpha Spec.	Spec. Max.	TOP	MIDDLE	BOTTOM
C		0.08	0.005	0.006	0.006
Fe		0.30	0.07	0.07	0.07
H		0.015	0.0009	0.0007	0.0007
N		0.03	0.006	0.005	0.004
O		0.25	0.14	0.15	0.15
OTHERS_EACH		0.10	<0.10	<0.10	<0.10
OTHERS_TOTAL		0.30	<0.30	<0.30	<0.30
Ti	BALANCE				

CERTIFICATE OF CONFORMITY

This is to hereby certify that the listed material has been processed, annealed and tested in accordance with the specifications noted in the Purchase Order.

Certified By: R Louie, QA Supervisor \es 02/13/06

Jobs - 3817-18-19-20
PART# L143-110700
P.O# 58095-BL
Heat G29J
4 TOTAL

"Wah Chang Is A Registered/Certified ISO 9001:2000 and AS9100 Company."

Purchase Order No.: 58095-BL
Sales Order No.: 127418
Item No.: 1
Heat No.: G29J
SFC No.: 1318054

ATI Wah Chang
Allegheny Technologies
P.O. Box 460
Albany, Oregon 97321-0136
(541) 926-4211 FAX (541) 967-6948

ROOM TEMPERATURE TENSILES (FOR INFO ONLY)

Test	Method	Offset	Gage	Units	Spec. Min	Trans
Tensile Strength:	ASTM E8			Ksi	50	89.2
Yield Strength:	ASTM E8	0.2%		Ksi	40	83.2
Elongation:	ASTM E8		1"	Pct	20	33
Reduction in Area:	ASTM E8			Pct	30	60

METALLURGY
QA DEPT.
ACCEPTED
DATE 3/13/06
BY TL

PACKING LIST

ATI Wah Chang
Allegheny Technologies

Wah Chang
PO Box 460
1600 NE Old Salem Road
Albany, OR 97321-0460
ph. 541-967-6977 f. 541-967-6994

PURCHASE ORDER 58095-01	SALES ORDER NUMBER 127418	DATE SHIPPED 14-FEB-06
BILL OF LADING NO. CN218208	GOVT CONTRACT NO.	DELIVERY No 78920
FREIGHT CARRIER IDI	GOVT PRIORITY	INSPECTION WC
DELIVERY / FREIGHT TERMS FOB-COLLECT	EXPORT LICENSE NO.	PAYMENT TERMS NET 30 DAYS
DELIVERY POINT ALBANY, OR	CAS CODE NO	SALES PERSON ANTHONY S.B

BILL TO
METALEX MANUFACTURING INC
5750 CORNELL ROAD
CINCINNATI, OH 45242
United States

SHIP TO:
METALEX MANUFACTURING INC
5750 CORNELL ROAD
CINCINNATI, OH 45242
United States

SO LINE	SHIP LINE	CUST ITEM	ORD QTY	UOM	ITEM DESCRIPTION	PIECES	SPC NUMBER	HEAT/LOT NUMBER	QTY SHIPPED	NET WT LBS	QTY REMAIN
1	5	1	4.00	EACH	TI GR 2 BILLET Diameter: 12.020 - 12.060 IN Length: 134.50 - 134.75 IN ECCN: EAR99 Packaged In: PALLETS Number: 4 Sizes: 182X27X24 Net Weight: 10013.00 LBS Gross Weight: 11512.00 LBS DCC DOMESTIC THESE COMMODITIES ARE SUBJECT TO EXPORT CONTROLS. PRIOR UNITED STATES GOVERNMENT APPROVAL MAY BE REQUIRED FOR EXPORT AND/OR RE-EXPORT	4	131.064	G291	4.00	10013.00	0

collect
11784
DCL
Z.P. transport Inc

RECEIVED
FEB 17 2006
METALEX MFG.
BY S.W

ATI Wah Chang

ATTACHMENT No. 2
Wah Chang / Kach Machine Works P.O. 180122 ATI
CERTIFICATE OF CONFORMANCE SFC 1313054

Kach Machine Works hereby certifies that all conversion processing for the above Purchase Order conforms to material and/or manufacturing requirements indicated in the drawing or specifications, as applicable. Inspection and/or test reports substantiating conformity are attached.

METALLURGY
QA DEPT.
ACCEPTED
DATE 3/27/06
BY TL

Any exceptions, deviations, or non-conformances are listed below.
(Attach additional sheets if necessary.)

NONE

ALL BARS ARE STRAIGTH WITH NO TAPER

MAN VAN NGUYEN
Name

Foreman
Title

KACH MACHINE WORKS, Inc.

JOB# 3817

3838 N BALLAST ST SWAN ISLAND PORTLAND, OREGON 97217

QUALITY CONTROL DIMENSION INSPECTION REPORT

CUSTOMER: WAH CHANG

DATE: 02-07-06

PART NAME: 12" DIA x 134 3/4" long BAR

PART NO.: 5AC6990-34 SEC 1313054

P.O.NO.: 15C122 ATI

NO. PCS.: 1

I.D. NO.: A1

MATERIAL: TITANIUM

HEAT NO.: G29J

DRAWING NO.:

REVISION:

DIM NO.	Given	Actual		
1	OD 12.000/12.020"	12.049"		
2	LENGTH 134.75"/134.50"	134.75"		
3	FINISH 125 Ra	68 Ra		
4				
5	BAR IS STRAIGTH WITH NO TAPER			
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				

METALLURGICAL QA DEPT. ACCEPTED DATE 3/13/06 BY TC

Warren Curren
INSPECTOR

HEAT TREAT PROCESS CERTIFICATION FORM

S. O. #: N/A

MOT # 43728 B

Start Time: 04:47

Heat #: G29J

Date: 12/20/05

Finish Time: 12:48

Material ID's:

A

B

C

D

Was the Lot Split? (yes) (no) **(Circle one)**

Furnace #: 9 Size: 1300° (Rnd.) (RCS) (Plate) (Rect.)

Heat Treated to Specification: AMS-H-81200, Latest Revision

HEAT TREATING PROCEDURE:

Stress Relieve 1100 °F 8 1

Anneal	Temp. ____ °F	Time at Temp. ____ Hrs. ____ mins.	To	____ Hrs.	____ mins.
Beat Soln. Treat	Temp. ____ °F	Time at Temp. ____ Hrs. ____ mins.	To	____ Hrs.	____ mins.
Solution Treat	Temp. ____ °F	Time at Temp. ____ Hrs. ____ mins.	To	____ Hrs.	____ mins.
Duplex Anneal	Temp. ____ °F	Time at Temp. ____ Hrs. ____ mins.	To	____ Hrs.	____ mins.

Quench Media: (Furnace Cool) (Air Cool) (Fan Cool) (Water Quench)
(Circle One)

Heat Treatment Performed By: [signature] 12/20/05

Date Operator Trained:

Supervisor Review:

Quality Assurance Review:

METALLEX
QA DEPT.
ACCEPTED
DATE 3/15/06
BY R

QF 166-004 Rev. 2 (4/28/03) Labd on Nts1/OMCFILE/FORMS/QF 166-004 Rev. 2

HEAT TREAT PROCESS CERTIFICATION FORM

S. O. #: N/A

MOT # 43728B

Start Time: 08:25

Heat #: 5429J

Date: 12-16-05

Finish Time: 17:45

Material ID's: A, B, C, D

Was the Lot Split? (yes) (no) (Circle one)

Furnace #: 9

Size: 13"

(Rnd) (RCS) (Plate) (Rect)

Heat Treated to Specification: AMS-H-81200, Latest Revision

HEAT TREATING PROCEDURE:

Anneal	Temp. 1250°F	Time at Temp. 8 Hrs. ___ mins.	To	___ Hrs. ___ mins.
Beat Soln. Treat	Temp. ___ °F	Time at Temp. ___ Hrs. ___ mins.	To	___ Hrs. ___ mins.
Solution Treat	Temp. ___ °F	Time at Temp. ___ Hrs. ___ mins.	To	___ Hrs. ___ mins.
Duplex Anneal	Temp. ___ °F	Time at Temp. ___ Hrs. ___ mins.	To	___ Hrs. ___ mins.

Quench Media: (Furnace Cool) (Air Cool) (Fan Cool) (Water Quench)
(Circle One)

Heat Treatment Performed By: Jake Jeppsen

Date Operator Trained:

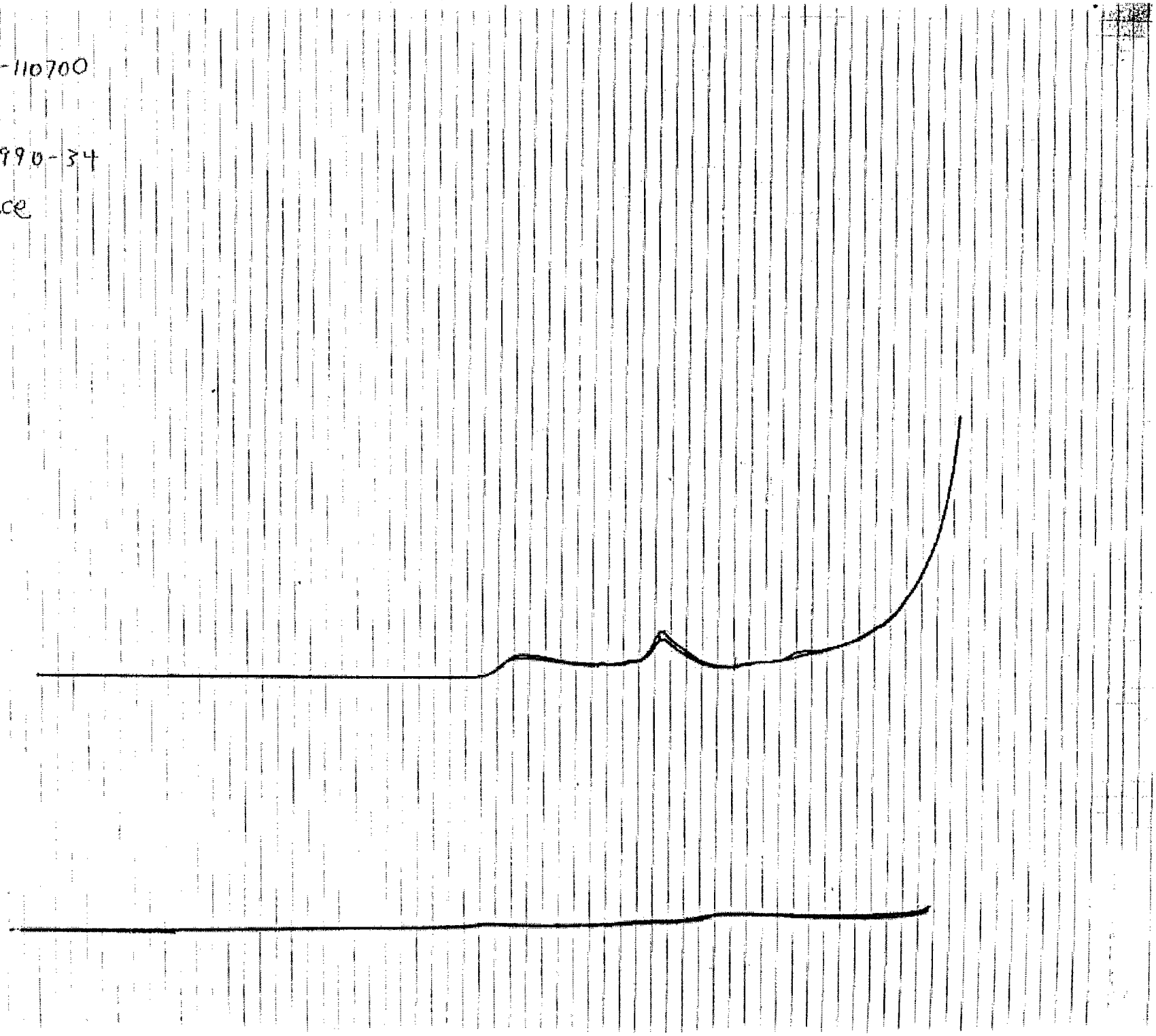
Supervisor Review:

Quality Assurance Review:

METALEX
QA DEPT.
ACCEPTED
DATE 3/13/06
BY

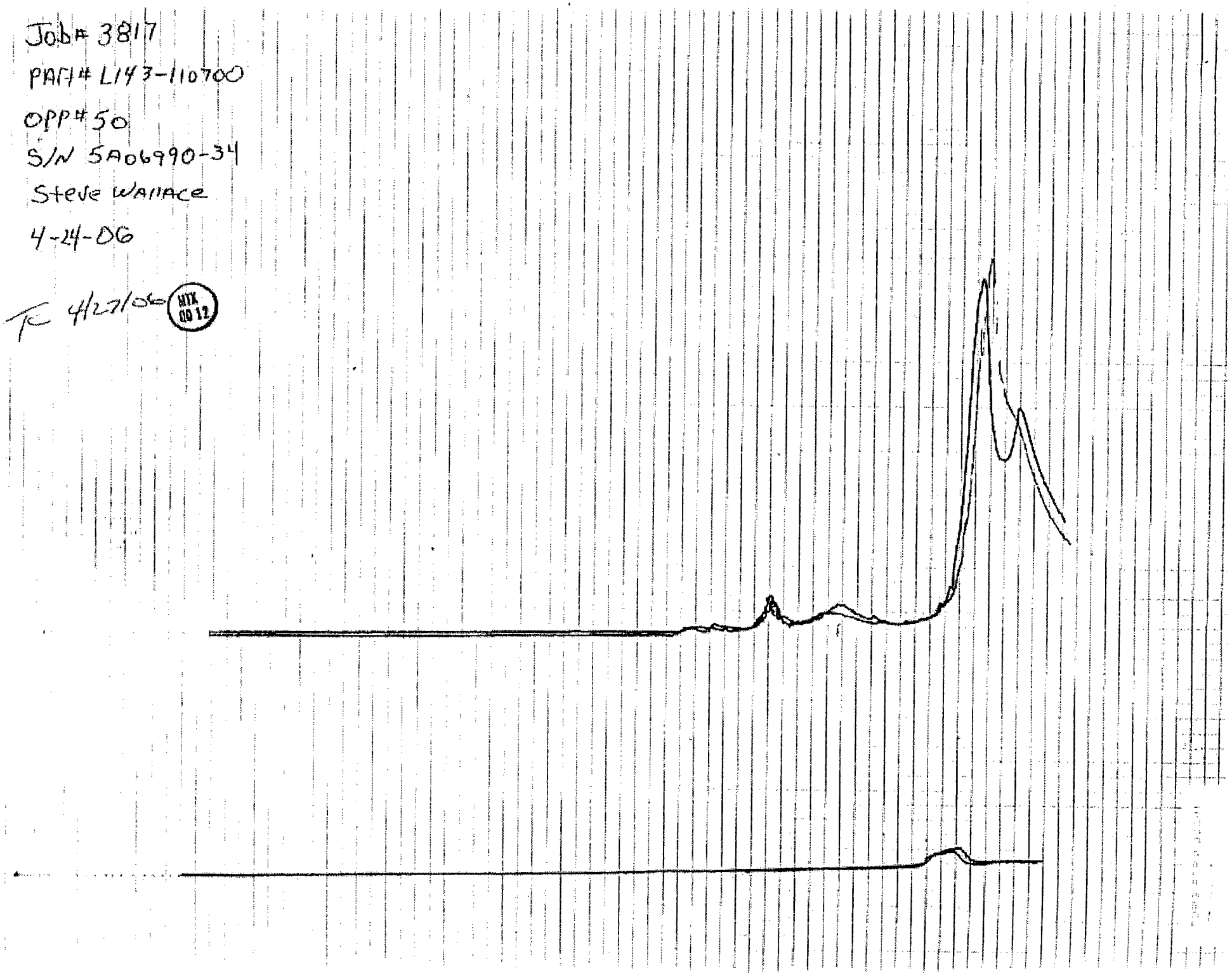
QF 166-004 Rev. 2 (4/28/03) Label on Nts1/OMCFILE/FORMS/QF 166-004 Rev. 2

Job# 3817
PART# L143-110700
PPP# 20
S/N SA06990-34
Steve WALLACE
324-06



Job# 3817
PART# L143-110700
OPP# 50
S/N 5A06990-34
Steve WALLACE
4-24-06

TC 4/27/06 MTK 00 12



JOB#3817

SUPPLIER DISPOSITION REQUEST (SDR)

(Form ANL-311 includes instructions and continuation sheet)

(CHECK ONE)

☑ 1A. Deviation Request

☐ 1B. Nonconformance Action Request

Page 1 of 1

2. SDR No. 3801-001

3. SDR Date 06/23/2005

4. Supplier Name, Address, Telephone, Fax

Metalex Manufacturing Inc.
5750 Cornell Road
Cincinnati, Ohio 45242
513-489-0507
513-489-1020

5. Purchase Order No. 5A06990

6. Related Documents

5.1 Document No. L143-00030 Date

7. Qty.	8. Describe Nonconforming Condition	9. Identify Requirement	10. Cause & Corrective Action
	1.) Document No. L143-00030 Section 4.1.1 has the forging being made per ASTM B 381-03. The current revision level of this specification is ASTM B 381-05. Metalex supplier, ATI Wah Chang would like to work to the latest revision.	Metalex request direction from ANL on what revision applies to this contract. Metalex supplier, ATI Wah Chang needs this clear direction as soon as possible to continue with acceptance of the order.	

SUPPLIER'S COMMENTS (IF YES, EXPLAIN)

11. Affects Form, Fit or Function

☐ Yes ☑ No

12. Affects Price

☐ Yes ☑ No

Rod Schuermann - Director Tech. Business Unit - 06/23/05

06/23/05

13. SUPPLIER REPRESENTATIVE – TITLE – DATE

13. Affects Delivery

☑ Yes ☐ No This will hold up material supplier.

14. Recommended Disposition and Comments:

10. ANL REPRESENTATIVE – DATE

17. ANL Disposition and Remarks: Accept ASTM B381-05 as equivalent to ASTM B381-03 for our purposes in this procurement

18. Approved

7/1/05

TECHNICAL REPRESENTATIVE – DATE

7/1/05

QUALITY ASSURANCE REPRESENTATIVE – DATE

PROCUREMENT REPRESENTATIVE – DATE

JQR #307

SUPPLIER DISPOSITION REQUEST (SDR)

Form ANL-31 includes instructions and continuation sheet.

Page 1 of 1

(CHECK ONE)

☑ 1A. Deviation Request

☐ 1B. Nonconformance Action Request

2. SDR No. 3801-004

3. SDR Date 08/17/2005

4. Supplier Name, Address, Telephone, Fax

Metalex Manufacturing Inc.
5750 Cornell Road
Cincinnati, Ohio 45242
(513) 489-0507 phone
(513) 489-1020 fax

5. Purchase Order No. 5A06990

6. Related Documents

6.1 ANL drawing L143-110700 Rev 4 Date

7. Qty.	8. Describe Nonconforming Condition	9. Identify Requirement	10. Cause & Corrective Action
	1) Along with this form, Metalex has attached a sketch named SDR 3801-004 pages 1 and 2. This sketch outlines some additional "for manufacturing process only" holes that Metalex is requesting permission to add to the Strongback details. On each end of each part, (4) 5/8-11 tapped holes and (2) .6250" diameter dowel pin holes are requested to be added for internal use at Metalex.	Metalex requests direction from ANL on this item.	

SUPPLIER'S COMMENTS (IF YES, EXPLAIN)

11. Affects Form, Fit or Function

☐ Yes ☑ No

12. Affects Price

☐ Yes ☑ No

13. Affects Delivery

☐ Yes ☑ No Only if this is unresolved when raw material arrives

14. Recommended Disposition and Comments:

Rob Schuermann - Director, Tech. Business Unit - 08/17/05

Rob Schuermann 8/17/05

15. SUPPLIER REPRESENTATIVE - TITLE - DATE

16. ANL REPRESENTATIVE - DATE

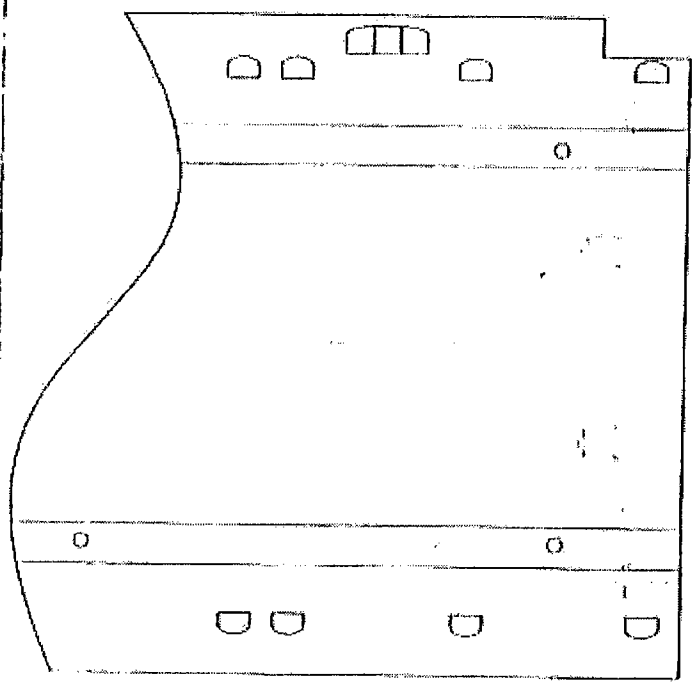
17. ANL Disposition and Remarks: The requested modifications for internal Metalex use are allowed.

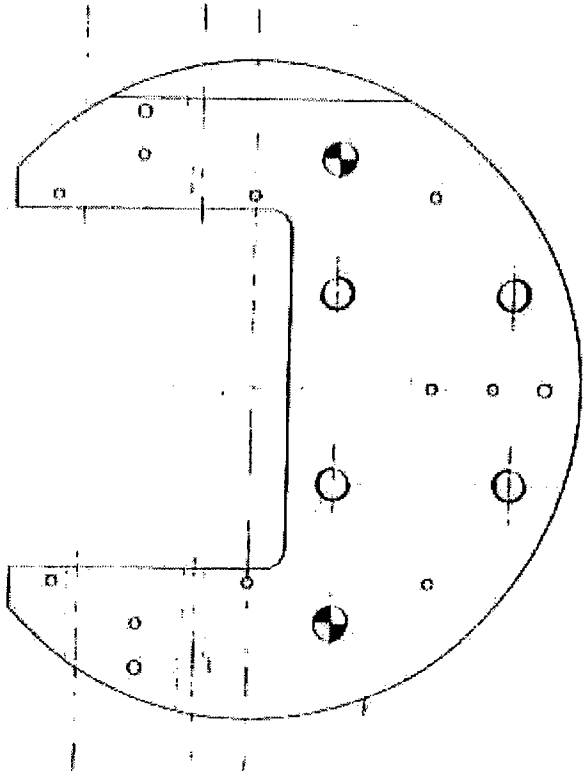
18. Approved

08-23-05 — TECHNICAL REPRESENTATIVE - DATE

8/25/05 — QUALITY ASSURANCE REPRESENTATIVE - DATE

8/26/05 — PROCUREMENT REPRESENTATIVE - DATE





REV.	DATE	BY	DESCRIPTION

MOLLOX

CERTIFIED ISO 9001 QUALITY MANAGEMENT

PART NAME: STRONGBACK DEVIATION

PROJECT: ARGONNE

DRAWN BY: T.J.RAUCH

DATE: 17AUG05

CHECKED BY: T.J.RAUCH

DATE: 17AUG05

SCALE: FULL

INCH X METRIC

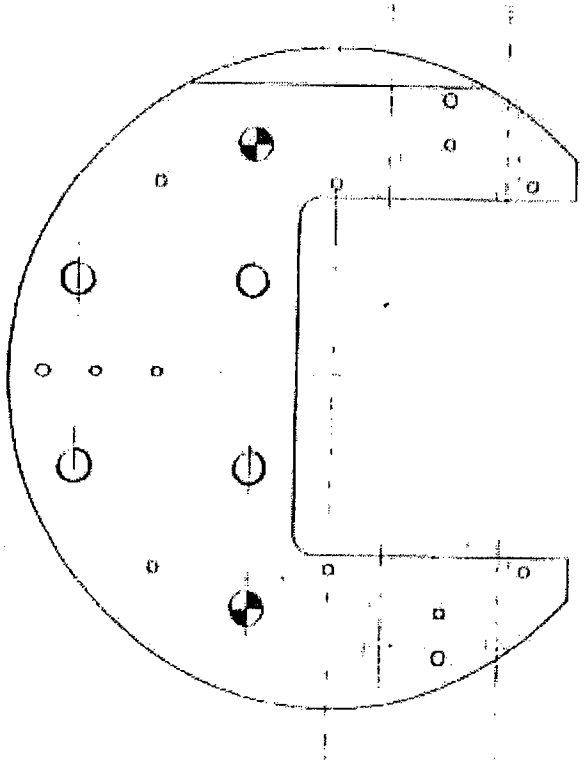
SHEET 2 OF 2 3001

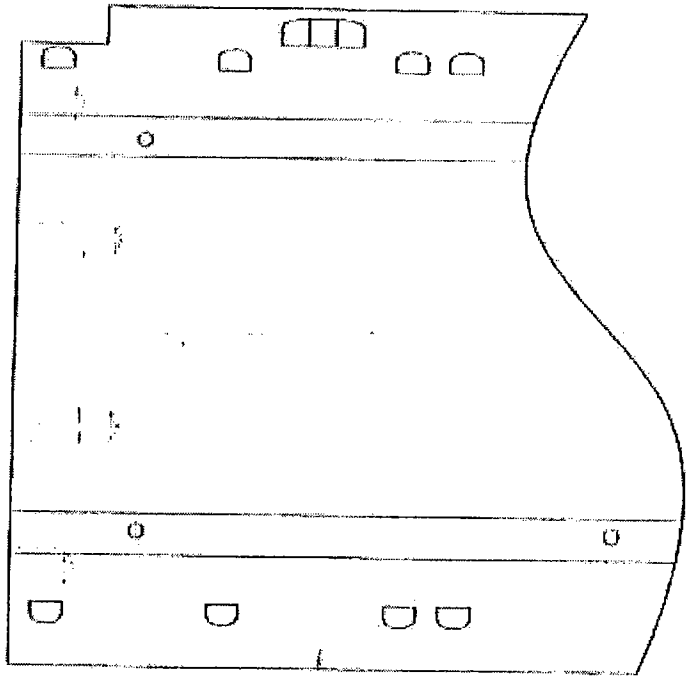
DRAWING No. SDR 3001-004

REV D

AutoCAD Release 14

REV.	DATE	BY	DESCRIPTION





MidMax

CERTIFIED ISO 9001
QUALITY MANAGEMENT

STRONGBACK DEVIATION

ARGONNE

T.J.RAUCH 17AUG05

T.J.RAUCH 17AUG05

SCALE: FULL INCH X METRIC

SHEET 1 OF 2 SIZE 3801

AutoCAD Release 14

DRAWING No
SDR 3801-004

REV D

SUPPLIER DISPOSITION REQUEST (SDR)

(Form ANL-311 includes instructions and continuation sheet.)

Page 1 of 1

(CHECK ONE)

☑ 1A. **Deviation Request**

☐ 1B. **Nonconformance Action Request**

2. SDR No. 3801-006

3. SDR Date 11/03/2005

4. **Supplier Name, Address, Telephone, Fax**

Metalex Manufacturing Inc.
5750 Cornell Road
(513) 489-0507 phone
(513) 489-1020 fax

5. Purchase Order No. 5A06990

6. Related Documents

6.1 ANL drawing L143-110700 Rev.? Date

7. Qty.	8. Describe Nonconforming Condition	9. Identify Requirement	10. Cause & Corrective Action
	1) Along with this form, Metalex has attached a sketch named MXPL143-110700-03. This sketch outlines some additional "for manufacturing process only" holes that Metalex is requesting permission to add to the production Stongback details. These three (3) .2500" diameter tooling holes located as shown will allow ease of manufacturing and inspection of the critical overall length of this detail.	Metalex requests direction and approval from ANL on this item.	

SUPPLIER'S COMMENTS
(IF YES, EXPLAIN)

11. **Affects Form, Fit or Function**
☐ Yes ☑ No

12. **Affects Price**
☐ Yes ☑ No

Rob Schuermann - Director Tech. Business Unit - 11/03/05

Rob Schuermann 11/05/05

15. SUPPLIER REPRESENTATIVE – TITLE – DATE

13. **Affects Delivery**
☐ Yes ☑ No

14. **Recommended Disposition and Comments:**

Recommend acceptance.

16. ANL REPRESENTATIVE – DATE

17. **ANL Disposition and Remarks:** Acceptable

18. **Approved**

11/03/05

TECHNICAL REPRESENTATIVE – DATE

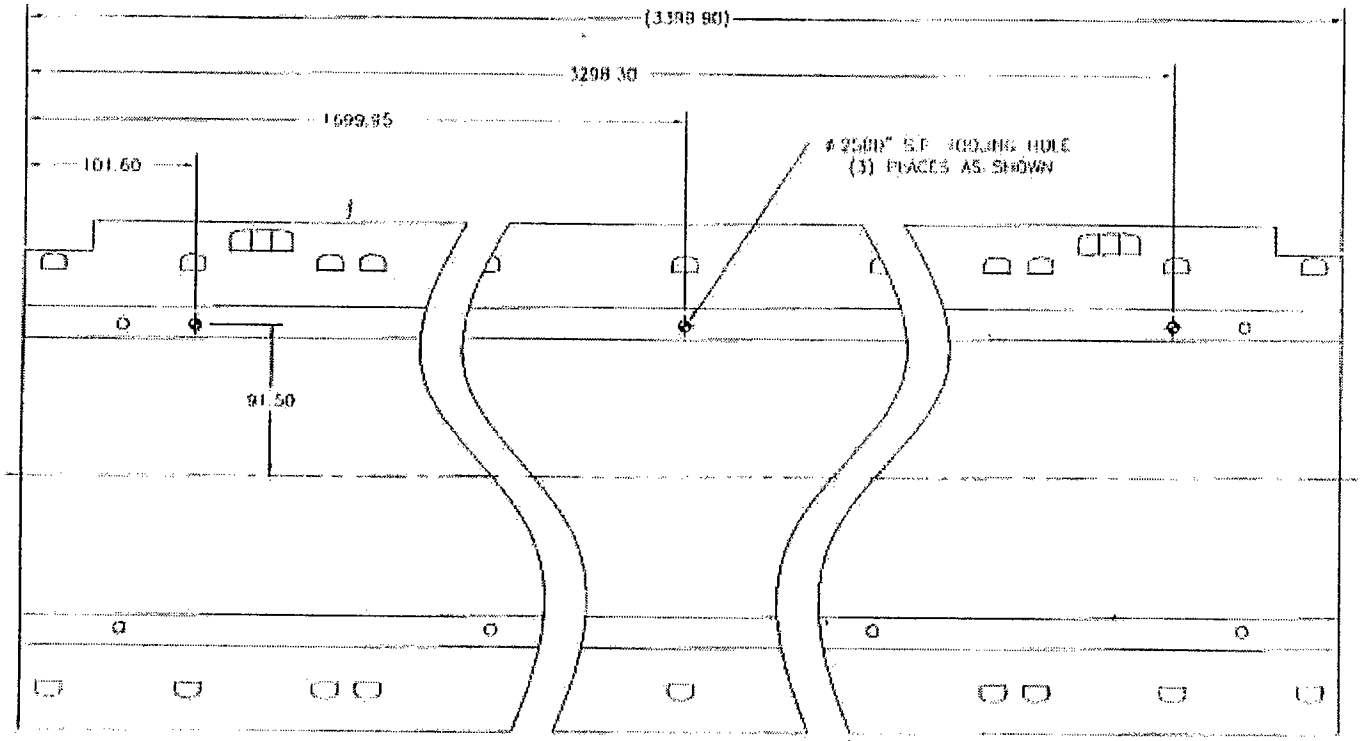
11/03/05

QUALITY ASSURANCE REPRESENTATIVE – DATE

11/3/5

PROCUREMENT REPRESENTATIVE – DATE

REV.	DATE	BY	DESCRIPTION



These three (3) .2500" diameter tooling holes located as shown will allow ease of manufacturing and inspection of the critical overall length of this detail.

MOTIDX

EXCEPTIONAL CUSTOMER QUALITY MANAGEMENT

PART NAME: STRONGBACK PROCESS	PROJECT: ARGONNE
DRAWN BY: R SCHUERMANN DATE: 03NOV05	
CHECKED BY: R SCHUERMANN DATE: 03NOV05	SCALE: FULL INCH X METRIC
SHEET 1 OF 2 REV: 3831	DRAWING No. 0001143 *10700-03
AutoCAD Release 14	REV D

Schuermann, Rob

From: Oprondek, Michael T. [moprondek@anl.gov]
Sent: Thursday, November 03, 2005 5:36 PM
To: Schuermann, Rob
Cc: Lawrence, Glen; Barsz, Thomas R.
Subject: metalex SDR 006
Attachments: metalex.pdf

<<metalex.pdf>>

Michael Oprondek, Procurement Department.
Argonne National Laboratory; operated for the
U. S. Department of Energy by the University of Chicago
phone 630 252 7069 fax 630 252 4517

Metalex Customized Machinery and Parts	INSPECTION PLANNING & REPORT FORM Metalex Mfg. 5750 Cornell Rd ! Cincinnati, OH 45242 ! (513) 489-0507	Job No. 2005-3817	Qty 1

Inspection Origin	Vendor (Sub-Tier Source) Identification		Customer Identification		
☐ Receiving ☐ In-Process ■ Final ☐ Rework/Repair ☐ First Article	Vendor Name N/A		Part No. L143-110700	REV 07	P.O. Number 5A06990
	Date Rec'd N/A	P.O. No. N/A	Part Name STRONGBACK		
At Oper. 150	Serial Numbers S/N: 5A06990-34 PRODUCTION		Customer Name ARGONNE NATIONAL LABORATORY		

SPECIFICATION	B/P ZONE	INSPECTION METHOD / GAGE NO.	ACTUAL DIMENSION / GAGE VERIFICATION (Range of Readings or Accept Status)	QTY ACC	QTY REJ

**** ALL DIMENSIONS TO BE RECORDED IN MILLIMETERS ****

ALL DIMENSIONS APPLY AT A TEMPERATURE OF 20 DEGREES CELSIUS. PART MUST BE IN THERMAL EQUILIBRIUM DURING MEASUREMENTS AND AT THE SAME TEMPERATURE AT THE BEGINNING AND CONCLUSION OF THE MEASUREMENTS WITHIN +/-0.3 DEG. CELSIUS.

**** THE PART TEMPERATURE BEFORE, DURING, AND AFTER DIMENSIONAL MEASUREMENT SHALL BE RECORDED BELOW****

PART TEMPERATURE *BEFORE* INSPECTION	SOW 4.5.1	CONTACT THERMOMETER MX1794	20.6	MTX QC 16
PART TEMPERATURE *DURING* INSPECTION	SOW 4.5.1	CONTACT THERMOMETER MX1794	20.65	MTX QC 16
PART TEMPERATURE *AFTER* INSPECTION	SOW 4.5.1	CONTACT THERMOMETER MX1794	20.64	MTX QC 16
DRAWING L143-110700				
MATERIAL DESCRIPTION: ASTM B381 F2 TITANIUM GRADE 2	A2	CERT#	CONFORMS	MTX QC 16
ALL DIMENSIONS ARE IN MILLIMETERS, SURFACE FINISH IN MICRONS.	NOTE #1		INFORMATION ONLY	MTX QC 16
REMOVE ALL BURRS AND BREAK SHARP EDGES 0.3mm MAX.	NOTE #2	VISUAL & RADIUS GAGE MX837 & MX838	CONFORMS .3 MAX	MTX QC 16
UNLESS OTHERWISE SPECIFIED, SURFACE FINISH TO BE 6.4 MICRONS.	NOTE #3	PROFILOMETER MX1304	CONFORMS 6.4 OR BETTER	MTX QC 16
.05 A B	D7	CMM MX1269	within .038	MTX QC 16
.05 A B	D2	CMM MX1269	within .007	MTX QC 16
1.6	D2	PROFILOMETER MX1304	1.6 OR BETTER	MTX QC 16
167.00 - .05 / -.00	C2	CMM MX1269	167.00 - 167.028	MTX QC 16

STAMP	INSPECTED BY	DATE	PAGE 1 OF 2	QTY ACC	QTY REJ
MTX QC 16	[signature]	7/1/06		1	Ø

MX1010 (7/98)

Metalex Customized Machinery and Parts
CERTIFIED ISO 9001 QUALITY MANAGEMENT

INSPECTION PLANNING & REPORT FORM

Metalex Mfg.
5750 Cornell Rd | Cincinnati, OH 45242 | (513) 489-0507

Job No. 2005-3817 | Qty 1

Inspection Origin	Vendor (Sub-Tier Source) Identification		Customer Identification		
☐ Receiving ☐ In-Process ■ Final ☐ Rework/Repair ☐ First Article	Vendor Name: N/A		Part No.: L143-110700	REV: 07	P.O. Number: 5A06990
	Date Rec'd: N/A	P.O. No.: N/A	Part Name: STRONGBACK		
At Oper.: 150	Serial Numbers: S/N: 5A06990-34 PRODUCTION		Customer Name: ARGONNE NATIONAL LABORATORY		

SPECIFICATION	B/P ZONE	INSPECTION METHOD / GAGE NO.	ACTUAL DIMENSION / GAGE VERIFICATION (Range of Readings or Accept Status)	QTY ACC	QTY REJ
83.50 ±.08	C2	CMM MX1269	83.48 - 83.52	MTX QC 16	
1.6	C2	PROFILOMETER MX1304	1.6 OR BETTER	MTX QC 16	
⏥ .05	C2	CMM MX1269	within .012	MTX QC 16	
⏥ .05	C2	CMM MX1269	within .018	MTX QC 16	
⏥ .05	D1	CMM MX1269	within .048	MTX QC 16	
⌖ .1 A	D1	CMM MX1269	within .020	MTX QC 16	
⌖ .05 A	E8	CMM MX1269	within .018	MTX QC 16	
ALL OTHER FEATURES ARE ACCEPTED PER METALEX OPERATOR ACCEPTANCE PROGRAM (OAP) MXWI17001 & OPERATOR SIGNOFF OF ROUTER OPERATIONS FOR COMPLIANCE TO ALL DRAWING FEATURES GENERATED WITHIN THAT DEFINED OPERATION.		ROUTER SIGNOFF MX5009	CONFORMS	MTX QC 16	

STAMP	INSPECTED BY	DATE	PAGE 2 OF 2	QTY ACC	QTY REJ
MTX QC 16	[signature]	7/1/06		1	0

MX1010 (7/98)

Wedge Type 1

Magnet Lot # 39

air 70°F

Date 29 March 07 Device# 34 Start Time 10:26 Start Temperature 20.9°C

Slot	Value	Slot	Value	Slot	Value	Slot	Value	Slot	Value
1		51	-1.29	101	-1.28	151	-1.29	201	-1.28
2	+0.75	52	+1.28	102	+1.29	152	+1.28	202	+1.28
3	-1.22	53	-1.29	103	-1.28	153	-1.29	203	-1.29
4	+1.30	54	+1.28	104	+1.28	154	+1.28	204	+1.28
5	-1.27	55	-1.28	105	-1.28	155	-1.27	205	-1.28
6	+1.29	56	+1.28	106	+1.28	156	+1.28	206	+1.28
7	-1.27	57	-1.29	107	-1.28	157	-1.28	207	-1.28
8	+1.29	58	+1.28	108	+1.28	158	+1.28	208	+1.28
9	-1.28	59	-1.29	109	-1.28	159	-1.29	209	-1.28
10	+1.29	60	+1.28	110	+1.28	160	+1.29	210	+1.28
11	-1.29	61	-1.29	111	-1.29	161	-1.29	211	-1.28
12	+1.28	62	+1.28	112	+1.28	162	+1.29	212	+1.28
13	-1.28	63	-1.28	113	-1.28	163	-1.29	213	-1.27
14	+1.28	64	+1.28	114	+1.28	164	+1.28	214	+1.27
15	-1.28	65	-1.29	115	-1.28	165	-1.29	215	-1.28
16	+1.28	66	+1.28	116	+1.27	166	+1.28	216	+1.28
17	-1.29	67	-1.29	117	-1.28	167	-1.29	217	-1.28
18	+1.28	68	+1.28	118	+1.29	168	+1.28	218	+1.28
19	-1.29	69	-1.28	119	-1.28	169	-1.29	219	-1.28
20	+1.28	70	+1.28	120	+1.29	170	+1.28	220	+1.27
21	-1.29	71	-1.28	121	-1.28	171	-1.28	221	-1.29
22	+1.28	72	+1.28	122	+1.28	172	+1.28	222	+1.27
23	-1.28	73	-1.28	123	-1.28	173	-1.28	223	-1.31
24	+1.28	74	+1.28	124	+1.28	174	+1.28	224	+1.22
25	-1.29	75	-1.29	125	-1.28	175	-1.28	225	-0.75
26	+1.28	76	+1.28	126	+1.28	176	+1.28		
27	-1.29	77	-1.29	127	-1.28	177	-1.29		
28	+1.29	78	+1.28	128	+1.28	178	+1.28		
29	-1.28	79	-1.28	129	-1.28	179	-1.28		
30	+1.28	80	+1.28	130	+1.28	180	+1.28		
31	-1.28	81	-1.28	131	-1.29	181	-1.28		
32	+1.29	82	+1.29	132	+1.29	182	+1.28		
33	-1.28	83	-1.28	133	-1.29	183	-1.29		
34	+1.28	84	+1.29	134	+1.29	184	+1.28		
35	-1.29	85	-1.29	135	-1.29	185	-1.28		
36	+1.28	86	+1.29	136	+1.28	186	+1.28		
37	-1.28	87	-1.28	137	-1.28	187	-1.29		
38	+1.28	88	+1.28	138	+1.28	188	+1.28		
39	-1.29	89	-1.28	139	-1.28	189	-1.28		
40	+1.28	90	+1.28	140	+1.28	190	+1.28		
41	-1.29	91	-1.28	141	-1.29	191	-1.28		
42	+1.29	92	+1.28	142	+1.28	192	+1.28		
43	-1.29	93	-1.28	143	-1.28	193	-1.28		
44	+1.28	94	+1.29	144	+1.29	194	+1.28		
45	-1.28	95	-1.28	145	-1.28	195	-1.28		
46	+1.28	96	+1.29	146	+1.28	196	+1.28		
47	-1.28	97	-1.28	147	-1.28	197	-1.28		
48	+1.28	98	+1.28	148	+1.28	198	+1.29		
49	-1.29	99	-1.28	149	-1.28	199	-1.28		
50	+1.28	100	+1.28	150	+1.28	200	+1.29		

End Temperature 19.7°C

End Time 10:44

Hall Probe S/N

01231053

01340076

Signatures: