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

Quality Assurance Traveler

ATTACH THIS FORM TO LCLS SYSTEMS AND COMPONENTS TO CONTROL THE SEQUENCE OF QUALITY ASSURANCE TASKS. RETURN THE COMPLETED TRAVELER TO THE LCLS QUALITY ASSURANCE COORDINATOR UPON COMPLETION.

System or Component Name: *LCLS Undulator Main Assembly*		
Part/Drawing Number: *L143-112000*	Revision: ____	Serial Number: 14
Manufacturer: Metalex MFG INC		Purchase Order Number: SA-10359

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	*Perform visual inspection of the completed assembly for workmanship and correctness.*	TMy 10/12/06	☑	☐
2	*Perform visual inspection of the completed assembly for correct the following markings on the Strongback:* L143-11200-05 SA-381-001-35 32 ? *Serial number same as the Strongback*	TMy 10/12/06	☑	☐
3	*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.* 15 • *Upper Right Magnet Structure Assemblies: L143-111200-assembly no.* • *Upper Middle Magnet Structure Assemblies: L143-111000-1,2,3-assembly no.* • *Lower Left Magnet Structure Assemblies: 143-110900-assembly serial no.* • *Lower Right Magnet Structure Assemblies: L143-111300-assembly serial no.* • *Lower Middle Magnet Structure Assemblies: L143-111100-1,2-3-assembly no.*	TMy 10/12/06	☑	☐
4	*Verify correct gap size along the entire undulator length using contactor's go/no-go gages.*	[illegible] 11/01/06	☑	☐
5	*Verify correct gap size along the entire undulator length using calibrated gage blocks.*	[illegible] 11/01/06	☑	☐
6	*Check the peak field at each magnet location using a portable Hall probe.*	Shigeki Sasaki	☑	☐
7	*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* • *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* NO NONCONFORMANCES	TMy 10/12/06	☑	☐
8	*Verify that the magnet photographs of the magnet sub assemblies are in agreement with the magnet sort list.*	[illegible] 11/01/06	☑	☐
9	*Review shipping container and that the contractor has Shockwatch monitoring devices available*	TMy 10/12/06	☑	☐
10	*Forward completed traveler form to LCLS QA Coordinator Tom Barsz. B401, C4243.*	S. Baker 10/12/06	☑	☐

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

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

Optional Approver Comments:

no entries on router. No FATA Label 4.1.5.1. ~~Magnet~~ 2pole travelers accept not circled. photos not in package.

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

Other: _____

Enter Quality Improvements Lessons-Learned resulting from this activity below.

No GO Gage should be shorter in 2 directions to measure 1 period.

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ACCEPTANCE CRITERIA LISTING

1. DISTRIBUTION:

#14

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/g loads in x,y and z during shipping	eceiving / Inspectic	SLAC	
3	Review all required certifications for compliance and completeness	actor Fac. or Rec.	T.Pm	10/12/04
4	Visual inspection of Undulator Assy for shipping damage	eceiving / Inspectic	SLAC	
5	Visual inspection of Undulator Assy for completeness to print, including all loose parts	actor Fac. or Rec.	[illegible]	10/12/04

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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	See Acceptance traveler TPM	10/12/06

Not Required Fields

Magnets

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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	ulator Ass'y Contra	MY	10-10-06
2	Visual inspection of parts for surface chips and pits	ulator Ass'y Contra	MY	10-10-06
3	Dimensional check of part for conformance to the drawing	ulator Ass'y Contra	MY	10-10-06
4	Review vendor certified test data agrees with SOW requirements	APS Bldg 401	TMZ	11-16-06
5	Review Vendor sort list for agreement with sort procedure.	APS Bldg 401	TMZ	11-16-06

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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	On random sampling, inspect magnetic field with magnetic visualization film for magnetic defects.	APS Magnet Group	Shigemi Sasaki	11/3/06
7	On random sampling, confirm Magnetic Moment magnitude and vector components agree with vendor reports	APS Magnet Group	S.S.	
8	On radom sampling, verify the magnet s demagnetization and thermal stability.	APS Magnet Group	S.S.	

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: 01/25/2005

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	MX	10-10-06
2	Check that parts were "bagged and tagged" with serial no.'s and part no.'s (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	tor Assy Contracto	↓	↓

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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.	.tor Assy Contracto	MX	10-10-06
7	Check that the machining Contractor's certified dimensional measurements are in compliance with the drawing	ANL	TB S.S.	
8	Verify the critical dimensions as listed in the SOW, Section 4.5.2 are in compliance with the drawing	ulator Assy Contra	MX S.S.	11-10-06

Endtemp 223

14

12+14 measured on the table @ one setting ⇒ opposite polarity

	LOT# Device# Date				
Slot No		Slot No		Slot Number	
1		51	29	100	-29
2	-0.75	52	-29	101	29
3	24	53	29	102	-29
4	-31	54	-29	103	29
5	28	55	28	104	-29
6	-30	56	-29	105	29
7	29	57	+29	106	-29
8	-29	58	-29	107	29
9	30	59	30	108	-30
10	-29	60	-29	109	29
11	29	61	29	110	-29
12	-29	62	-29	111	29
13	29	63	29	112	-29
14	-29	64	-29	113	29
15	29	65	29	114	-29
16	-29	66	-29	115	29
17	29	67	30	116	-30
18	-29	68	-30	117	29
19	29	69	29	118	-30
20	-29	70	-29	119	29
21	29	71	29	120	-29
22	-29	72	-29	121	30
23	29	73	30	122	-29
24	-29	74	-29	123	29
25	29	75	29	124	-29
26	-29	76	-30	125	29
27	29	77	29	126	-29
28	-29	78	-29	127	29
29	29	79	29	128	-29
30	-29	80	-29	129	29
31	29	81	30	130	-29
32	-29	82	-29	131	29
33	29	83	29	132	-30
34	-29	84	-29	133	29
35	29	85	29	134	-30
36	-29	86	-30	135	29
37	29	87	29	136	-30
38	-28	88	-29	137	29
39	29	89	29	138	-30
40	-29	90	-29	139	30
41	29	91	29	140	-29
42	-29	92	-29	141	30
43	29	93	29	142	-30
44	-30	94	-29	143	30
45	29	95	29	144	-30
46	-29	96	-29	145	29
47	29	97	29	146	-30
48	-29	98	-29	147	29
49	29	99	29	148	-29
50	-29			149	29

14

Slot Number		Slot Number	
150	-29	200	-30
151	29	201	30
152	-30	202	-30
153	29	203	31
154	-29	204	-30
155	29	205	29
156	-29	206	-30
157	30	207	30
158	-29	208	-29
159	30	209	30
160	-30	210	-29
161	29	211	30
162	-30	212	-29
163	29	213	29
164	-29	214	-29
165	29	215	29
166	-29	216	-29
167	30	217	29
168	-29	218	-29
169	29	219	30
170	-29	220	-29
171	29	221	29
172	-29	222	-29
173	29	223	+31
174	-29	224	-1.238
175	30	225	+0.75
176	-29		
177	29		
178	-29		
179	29		
180	-29		
181	29		
182	-29		
183	29		
184	-30		
185	29		
186	-29		
187	29		
188	-29		
189	29		
190	-30		
191	30		
192	-30		
193	30		
194	-30		
195	30		
196	-29		
197	30		
198	-30		
199	30		

Temp @ Start
22.1 °C
Start @ 225 End

Shigeri Sasaki

[illegible]

09:40 AM

12 Oct 2006