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: 05	Serial Number: 04
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.*	TPM 8/8/04	☑	☐
2	*Perform visual inspection of the completed assembly for correct the following markings on the Strongback:* L143-11200-05 SA-381-001-35 Serial number same as the Strongback	TPM 8/8/04	☑	☐
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. • 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.	TPM 8/8/04	☑	☐
4	*Verify correct gap size along the entire undulator length using contactor's go/no-go gages.*	[illegible] 08/08/04	☑	☐
5	*Verify correct gap size along the entire undulator length using calibrated gage blocks.*	[illegible] 08/08/04	☑	☐
6	*Check the peak field at each magnet location using a portable Hall probe.*	[illegible] 08/08/04	☑	☐
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	TPM 8/8/04	☑	☐
8	*Verify that the magnet photographs of the magnet sub assemblies are in agreement with the magnet sort list.*	TPM 8/8/04	☑	☐
9	*Review shipping container and that the contractor has Shockwatch monitoring devices available*	TPM 8/8/04	☑	☐
10	*Forward completed traveler form to LCLS QA Coordinator Tom Barsz. B401, C4243.*		☐	☐

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 Quality Improvements Lessons-Learned resulting from this activity below.

Not Required Fields

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/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.	TM	8/8/04
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.	TM	8/8/04

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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	08/08/04	8/8/04

Not Required Fields

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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 QA	01/26/05
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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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	Metalex	8/8/06
7	Check that the machining Contractor's certified dimensional measurements are in compliance with the drawing	ANL	[illegible]	11/4/06
8	Verify the critical dimensions as listed in the SOW, Section 4.5.2 are in compliance with the drawing	ulator Assy Contra	Metalex	8/8/06

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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	Metalex	8/8/04
2	Visual inspection of parts for surface chips and pits	ulator Ass'y Contra	↓	↓
3	Dimensional check of part for conformance to the drawing	ulator Ass'y Contra	↓	↓
4	Review vendor certified test data agrees with SOW requirements	APS Bldg 401	TMZ	11/4/04
5	Review Vendor sort list for agreement with sort procedure.	APS Bldg 401	↓	↓

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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]	11/6/06
7	On random sampling, confirm Magnetic Moment magnitude and vector components agree with vendor reports	APS Magnet Grou	SSSS	
8	On radom sampling, verify the magnet s demagnetization and thermal stability.	APS Magnet Grou	SSSS	