



# System Acceptance Review - LoKI

Shielding Site Acceptance SAT

PRESENTED BY CLARA LOPEZ

2025-09-11

1

# LoKI Shielding documentation overview



# Documentation overview

## LoKI Instrument

LoKI Shielding Verification report [ESS-5806458](#)



Document Type  
Document Number  
Date  
Revision  
State  
Confidentiality Level  
Page

Report  
ESS-5806458  
Sep 7, 2025  
1  
Released  
Internal  
1 (4)

### 4. VERIFICATION OF DESIGN

Shielding system	FBS Tag	Calculation Report	Installation Inspection report
Shielding Bunker to cave	ESS.NSS.H01.LOKI.A01.F01	<a href="#">(ESS-4789085)</a> <a href="#">(ESS-5248311)</a>	<a href="#">ESS-5723871</a> <a href="#">ESS-5765648</a>
Shielding for Instrument cave	ESS.NSS.H01.LOKI.U01	<a href="#">(ESS-4789085)</a> <a href="#">(ESS-5248311)</a>	<a href="#">ESS-5768841</a> <a href="#">ESS-5768861</a>

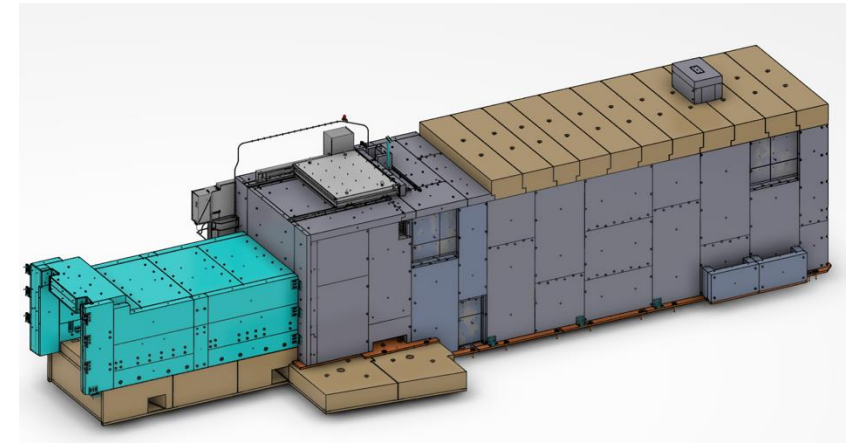
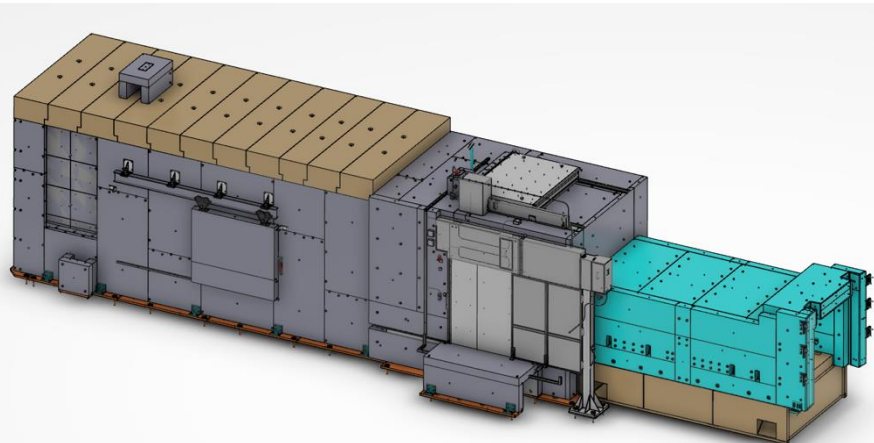
### LOKI SHIELDING VERIFICATION REPORT

	Name	Role/Title
Owner	Clara Lopez	Installation package leader/Integration Engineer
Reviewer	Ana Cintas	RP Protection Expert
Approver	Per Roos	Group Leader, Radiation Protection

SAT based on Installation  
documentation  
System design description

Design documentation  
approved in TG3

- ESS-4789085 LoKI Radiation safety report
- ESS-5248311 LoKI Activation Analysis Report



5-09-07, Internal, 1 file, page (1/4)  
1308.51166.7379.26493



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Bunker to cave  
=ESS.NSS.H01.LOKI.A01.F01





# LoKI Bunker to cave shielding

## LoKI Instrument

- ESS-5723871 LoKI Shielding Bunker to Cave SAT
- ESS-5765648 LoKI Shielding Bunker to cave location checklist
- ESS-1108661 Sub System design Description for Shielding bunker to cave



Document Type Site Acceptance Test  
Document Number ESS-5723871  
Date Aug 20, 2025  
Revision 1  
State Released  
Confidentiality Level Internal  
Page 1 (10)

### LOKI SHIELDING BUNKER TO CAVE

	Name	Role/Title
Owner	Clara Ines Lopez	Senior Engineer/Integration Engineer for Instruments
Reviewer	Ana Cintas	Radiation Protection Expert
	Jim Nightingale	Lead Engineer/Project manager for ESS Instruments-STFC
	Stefan Pacoste	QC Engineer
Approver	Gabor Laszlo	Section Leader for Instrument Engineering



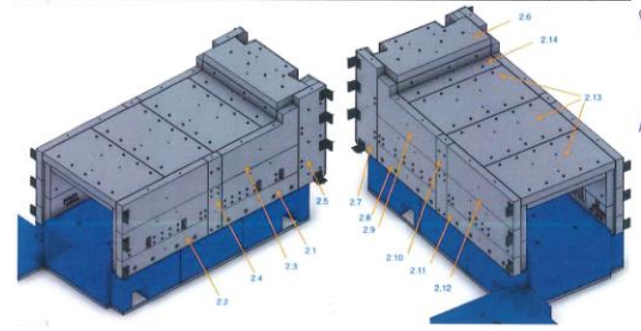
Released, 2025-08-20, Internal, 1 file., page 1(10)  
IS-5723871.1/21308.51166.56973.28302

LOKI Shielding bunker to cave

RP representative: Ana Cintas

Item	FBS	Assembly	Drawing	CAD model	Binder	Subassembly parts	Installed	Signed																			
1	ESS-NIS.LOKI.LAB.FEL.U01	Precast base assembly	ESS-3520984	ESS-5373242	B4880	<table><tr><td>1</td><td>SI-7613-501/ESS-3526713</td><td>Yes</td><td>AC</td></tr><tr><td>2</td><td>SI-7613-502/ESS-3526714</td><td>Yes</td><td>AC</td></tr><tr><td>3</td><td>SI-7613-503/ESS-3526715</td><td>Yes</td><td>AC</td></tr><tr><td>4</td><td>SI-7616-487/ESS-3526716</td><td>Yes</td><td>AC</td></tr><tr><td>5</td><td>SI-7616-488/ESS-3526717</td><td>Yes</td><td>AC</td></tr></table>	1	SI-7613-501/ESS-3526713	Yes	AC	2	SI-7613-502/ESS-3526714	Yes	AC	3	SI-7613-503/ESS-3526715	Yes	AC	4	SI-7616-487/ESS-3526716	Yes	AC	5	SI-7616-488/ESS-3526717	Yes	AC	
1	SI-7613-501/ESS-3526713	Yes	AC																								
2	SI-7613-502/ESS-3526714	Yes	AC																								
3	SI-7613-503/ESS-3526715	Yes	AC																								
4	SI-7616-487/ESS-3526716	Yes	AC																								
5	SI-7616-488/ESS-3526717	Yes	AC																								

Item	FBS	Assembly	Drawing	CAD model	Binder	Subassembly parts	Installed	Signed																																																						
2	ESS-NIS.LOKI.A01.F01.F01	LOKI BUNKER TO CAVE SHIELDING ASSEMBLY	ESS-4416386	ESS-5373243	B4880	<table><tr><td>2.1</td><td>SI-7616-402/ESS-4416389</td><td>Yes</td><td>AC</td></tr><tr><td>2.2</td><td>SI-7616-411/ESS-4416390</td><td>Yes</td><td>AC</td></tr><tr><td>2.3</td><td>SI-7616-368/ESS-4416388</td><td>Yes</td><td>AC</td></tr><tr><td>2.4</td><td>SI-7616-366/ESS-4416386</td><td>Yes</td><td>AC</td></tr><tr><td>2.5</td><td>SI-7616-376/ESS-4416392</td><td>Yes</td><td>AC</td></tr><tr><td>2.6</td><td>SI-7616-405/ESS-4416397</td><td>Yes</td><td>AC</td></tr><tr><td>2.7</td><td>SI-7616-372/ESS-4416389</td><td>Yes</td><td>AC</td></tr><tr><td>2.8</td><td>SI-7616-369/ESS-4416400</td><td>Yes</td><td>AC</td></tr><tr><td>2.9</td><td>SI-7616-364/ESS-4416387</td><td>Yes</td><td>AC</td></tr><tr><td>2.10</td><td>SI-7616-382/ESS-4416391</td><td>Yes</td><td>AC</td></tr><tr><td>2.11</td><td>SI-7616-408/ESS-4416396</td><td>Yes</td><td>AC</td></tr><tr><td>2.12</td><td>SI-7616-380/ESS-4416392</td><td>Yes</td><td>AC</td></tr><tr><td>2.13</td><td>SI-7616-389/ESS-4416393</td><td>Yes</td><td>AC</td></tr><tr><td>2.14</td><td>SI-7616-384/ESS-4416394</td><td>Yes</td><td>AC</td></tr></table>	2.1	SI-7616-402/ESS-4416389	Yes	AC	2.2	SI-7616-411/ESS-4416390	Yes	AC	2.3	SI-7616-368/ESS-4416388	Yes	AC	2.4	SI-7616-366/ESS-4416386	Yes	AC	2.5	SI-7616-376/ESS-4416392	Yes	AC	2.6	SI-7616-405/ESS-4416397	Yes	AC	2.7	SI-7616-372/ESS-4416389	Yes	AC	2.8	SI-7616-369/ESS-4416400	Yes	AC	2.9	SI-7616-364/ESS-4416387	Yes	AC	2.10	SI-7616-382/ESS-4416391	Yes	AC	2.11	SI-7616-408/ESS-4416396	Yes	AC	2.12	SI-7616-380/ESS-4416392	Yes	AC	2.13	SI-7616-389/ESS-4416393	Yes	AC	2.14	SI-7616-384/ESS-4416394	Yes	AC
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RP checked  
12-06-25



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https://chess.ess.lu.se/review/ESS-5765648.1/21308.51166.37950.15166



# LoKI Bunker to cave shielding

## LoKI Instrument

- ESS-5723871 LoKI Shielding Bunker to Cave SAT



### 3. VERIFICATION OF GAPS BETWEEN BLOCKS AND AGAINST MAIN INTERFACES.

Ensure gaps between blocks are less than 10 mm and less than 50 mm against the bunker wall

Passing condition:

Completed.

Achieved condition:

Measurements done during installation and verified by RP personnel, See [ESS-5765648](#) LoKI shielding bunker to cave installation location checklist signed. The figure 1 and 2 show the requirement values and, Photo 1a, 1b and 2 with the achieved distance

☐ N/A ☒ Pass ☐ Fail ☐ Remark:

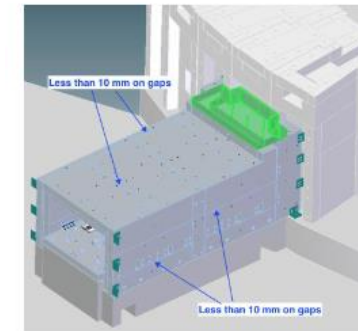


Figure 1 Gaps between blocks for shielding



Photo 1a and 1b both sides of shielding bunker to cave



Figure 2 Gaps between shielding and bunker wall

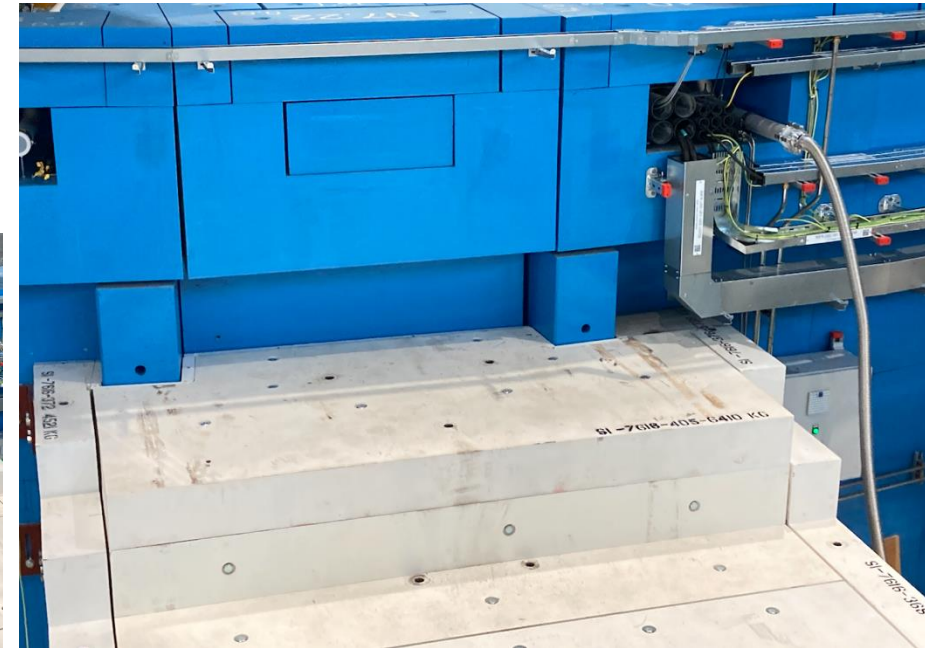
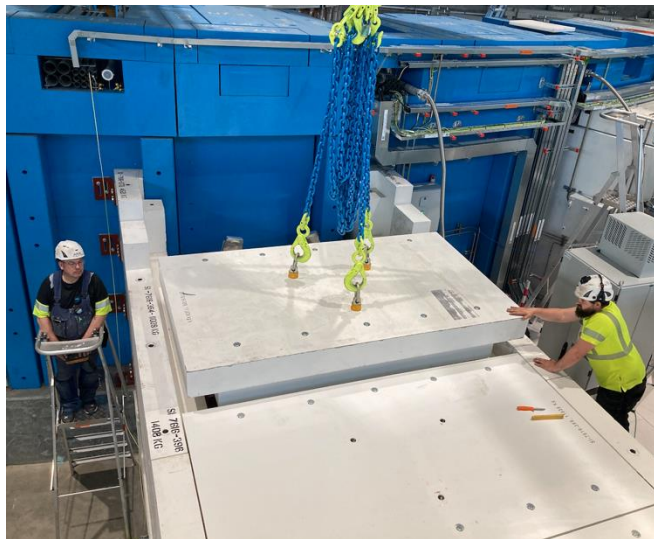
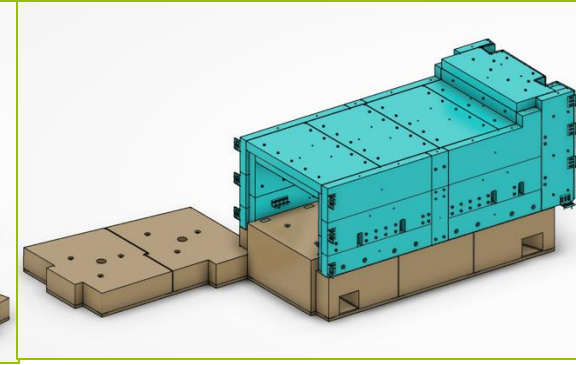
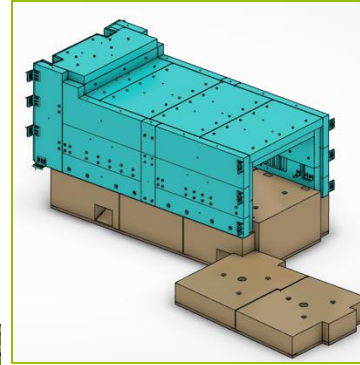


Photo 2 Interface LoKI shielding against bunker wall



# Bunker to cave Installation

## LoKI Instrument





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Shielding on cave  
=ESS.NSS.H01.LOKI.U01.F01





# LoKI Shielding on cave

## LoKI Instrument

- ESS-5768841 LoKI Cave Site Acceptance Test
- ESS-5768861 LoKI Cave Installation location Checklist
- ESS-1108664 Sub-System design description for End Station



Document Type Site Acceptance Test  
 Document Number ESS-5768841  
 Date Sep 8, 2025  
 Revision 1  
 State Released  
 Confidentiality Level Internal  
 Page 1 (7)

### CAVE SITE ACCEPTANCE TEST

	Name	Role/Title
Owner	Clara Ines Lopez	Senior Engineer/Integration Engineer for Instruments
Reviewer	Jim Nightingale Ana Cintas Clara Ines Lopez	Lead Engineer/Project manager for ESS Instruments-STFC Radiation Protection Expert Senior Engineer/IPL for LoKI Instrument
Approver	Andrew Jackson	Head of Large Scale Structure Division



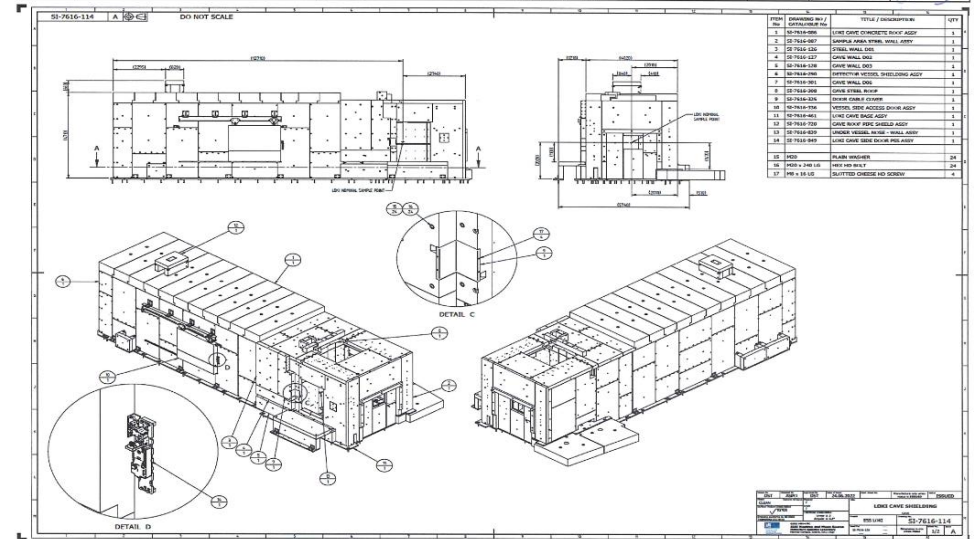
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### LOKI Cave Assembly shielding

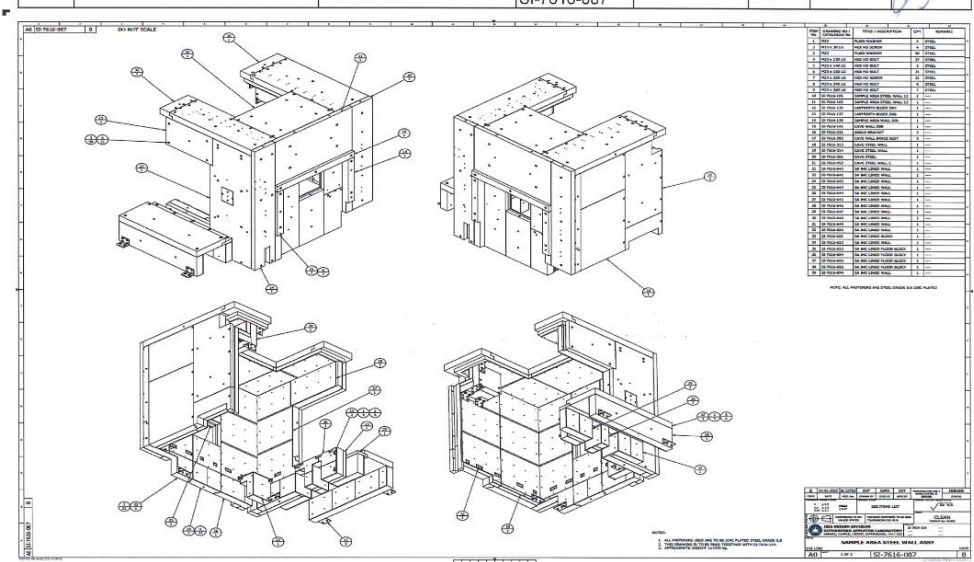
RP representative: Ana Cintas

Date: August 28/25

item	FBS	Assembly	Drawing	CAD model	Binder	Installed	Signed
	ESS.NSS.LOKI.U01.F01	Cave Shielding	ESS-4130147 / SI-7616-114	ESS-3819617	ib115	Yes	



item	FBS	Assembly	Drawing	CAD model	Binder	Installed	Signed
C		Sample Area steel wall	ESS-4130148 / SI-7616-087	ESS-4028030	ib115	Yes	



# LoKI Bunker to cave shielding



## LoKI Instrument

- ESS-5723871 LoKI Shielding Bunker to Cave SAT
- ESS-5765648 LoKI Shielding Bunker to cave location checklist

Verification of Gaps between blocks and against main interfaces

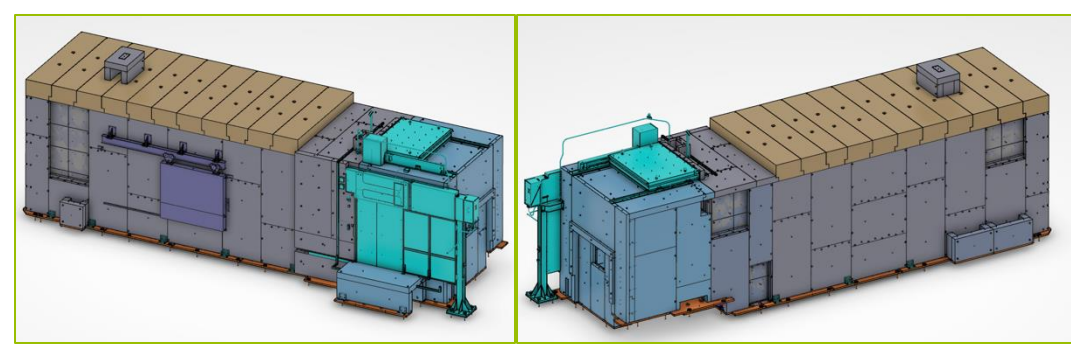
Ensure gaps between blocks are less than 10 mm.





# Cave Shielding installation

LoKI Instrument





# Finish presentation