PIERRE AUGER OBSERVATORY

Auger PRIME

Project Management

Applicable Documents for SSD production

Grenoble, March 2018

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V3

Motivation and Goal

- Six institutes within the collaboration have set up Assembly, Integration and Test (AIT) lines
- Each institute is responsible of the organization of its AIT line
- Each institute should respect the same SSD production Requirements, Specification, Procedures and Product Assurance plan (the Applicable Documents)
- This is a **guarantee** to reach the best quality and uniformity for each detector produced and deployed.

Documents overview

4 important Documents to be frozen (normally) before the production phase:

- SSD Mechanical Drawings
- SSD Assembly Procedure
- SSD Test and Validation Procedure
- SSD Quality & Product Assurance Plan

These document should take into account the agreed differences in the designs and in sites setup.

All these documents should be Validated by the Task and the Management, before being distributed to the assembly sites for application.

SSD Mechanical Drawings

- **Content:** All the information to be able to procure and/or fabricate all the SSD mechanical parts. Mechanical assembly information (should be associated with the up-to-date BoM).

- **Responsibility:** NIKHEF, Lecce, KIT, SSD Task

- **Validation:** SSD Task leaders
  Project Management

- **Status today:** Version "C" from Nov 2017

(WCD Assy (Production)_AB0335_C_06Nov2017, EDMS= 1838188 v.4)

➔ Welded frame drawing should be included

SSD Assembly Procedure

- **Content:** All the information to be able to assemble and integrate the parts to build the "standard" SSD, including the necessary tools and consumable supplies (glue, etc…) specifications

- **Responsibility:** SSD Task

- **Validation:** SSD Task leaders
  Project Management

- **Status today:** Draft 3 version, 12 Oct. 17, not complete, not validated, not distributed

SSD Test and Validation Procedure

- **Content:** **All the information to be able to setup a SSD validation and test bench, at the minimum. Test and validation procedures with minimum success criteria.**

- **Responsibility:** **SSD Task**

- **Validation:** **SSD Task leaders**
  Project Management

- **Status today:** **Draft 2 version, 05 Feb. 18, not complete, not validated, not distributed**

SSD Quality & Product Assurance Plan

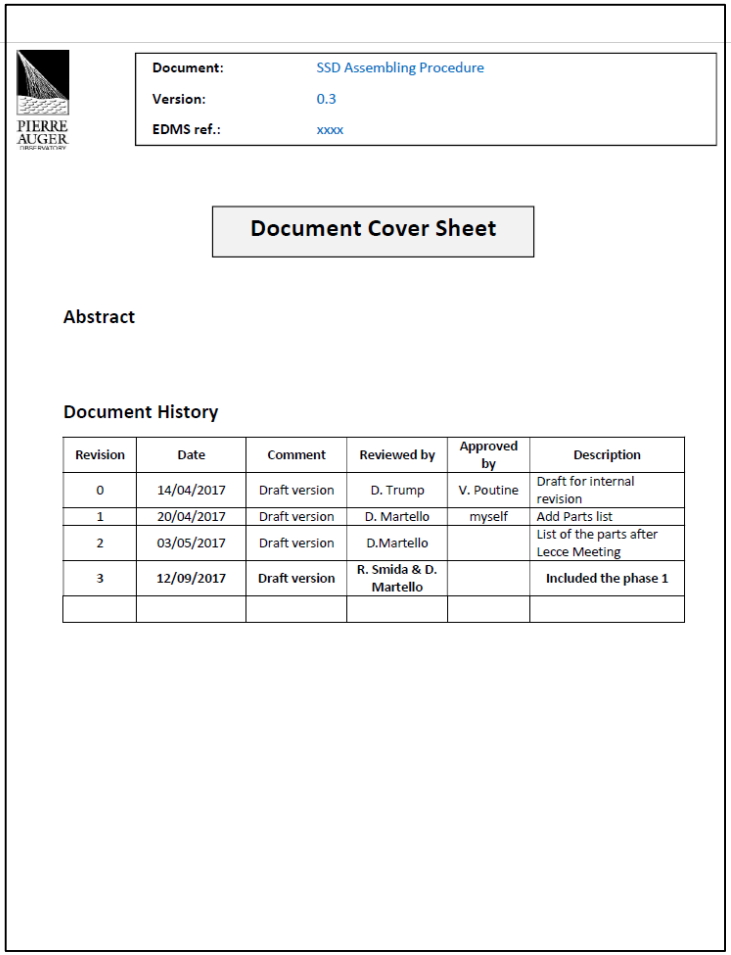
- **Content:** All the necessary information to be able to setup the SSD assembly line, including the minimum organization requirements, the list or reference applicable documents (procedure, etc…). The Product Assurance policy (tracking, NCR, etc…). The shipment and storages requirements. (should follow the Pierre Auger Obs. Quality Assurance Plan)

- **Responsibility:** Project Management

- **Validation:** SSD Task leaders
  Project Management

- **Status today:** Version 2, 16 Jan. 18, not complete, not validated, not distributed

SSD Assembly Procedure - details



Document:	SSD Assembling Procedure
Version:	0.3
EDMS ref.:	xxxx

Document Cover Sheet

Abstract

Document History

Revision	Date	Comment	Reviewed by	Approved by	Description
0	14/04/2017	Draft version	D. Trump	V. Poutine	Draft for internal revision
1	20/04/2017	Draft version	D. Martello	myself	Add Parts list
2	03/05/2017	Draft version	D.Martello		List of the parts after Lecce Meeting
3	12/09/2017	Draft version	R. Smida & D. Martello		Included the phase 1

11 pages document, almost complete:

- The operation should be verified and completed *(Task & PM)*
- Pictures should be inserted *(Task)*
- References should be updated *(Task)*
- The document (no reference) about the fiber melting and gluing should be merged *(Task)*
- The document should be validated when completed *(Task & PM)*

SSD Assembly Procedure - Summary

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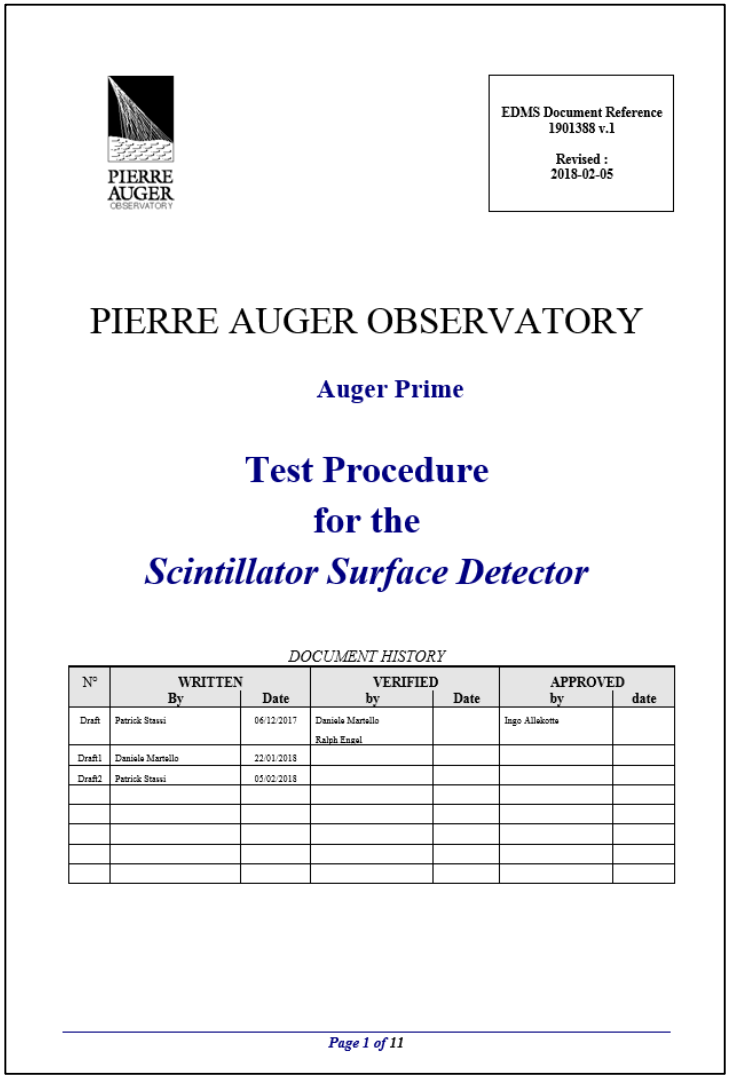
SSD Assembly process: Site dependent

- Roof bars should be glued
- Optical glue should be stored in fridge
- Outgassing pump should be bigger, 900 mbar - 1 min in KIT
- KIT use 140 degrees for melting, cut with sharp scissor
- Ethanol to clean the cookie, and dry with air
- Foam under the bar for Krakow
- Grating the holes in scintillator bars in Krakow
- cleaning the fibers with paper/cloth
- should we glue the U Bar bracket inside ?
- Krakow and KIT keep the archives of each glue samples
- Lecce use black tape inside
- Round carving at Nikhef
- Nb of cycle for outgassing ?
- Light tight test criteria 5% at KIT, 2% at Lecce
- Fibers image analysis with filters at Lecce
- Optical cement number tracking in KIT
- ……

SSD Test and Validation Procedure- Details



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EDMS Document Reference
1901388 v.1

Revised :
2018-02-05

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Auger Prime

Test Procedure
for the
Scintillator Surface Detector

DOCUMENT HISTORY

N°	WRITTEN By	Date	VERIFIED by	Date	APPROVED by	date
Draft	Patrick Stassi	06/12/2017	Daniele Martello Ralph Engel		Ingo Allekotte	
Draft1	Daniele Martello	22/01/2018				
Draft2	Patrick Stassi	05/02/2018				

Page 1 of 11

11 pages document, almost complete:

- **The document should be verified and few information should be completed *(Task)***
- **References should be updated *(Task)***
- **The document should be validated when completed *(Task & PM)***

SSD Test and Validation Procedure- Summary

1. SUMMARY

SSD Test and Validation Procedure– Test report form

AUGERPRIME SSD TEST REPORT FORM

SSD SERIAL NUMBER:			
Operator(s)		Date:	
		Location	
		Comments	

Assembly visual inspection

Item	*OK ?*	*Comments*
Top cover	☐YES ☐NO	
Handling Bracket	☐YES ☐NO	
Roof supports	☐YES ☐NO	
Frame corners	☐YES ☐NO	
PMT Flange	☐YES ☐NO	
TBD	☐YES ☐NO	
TBD	☐YES ☐NO	
TBD	☐YES ☐NO	

Optical visual inspection

Item	*OK ?*	*Number and comments*	
Bubbles presence	☐YES ☐NO		
Picture file name		Location	

Light Tightness Verification

Max and Min ev. Rate values			
TBW			
TBW			

MIP Measurement Performances

Item	*Value*	*Comments*
FWHM of MIP (%)		
MIP (#P.E.)		
TBW		

Data file name		Location	

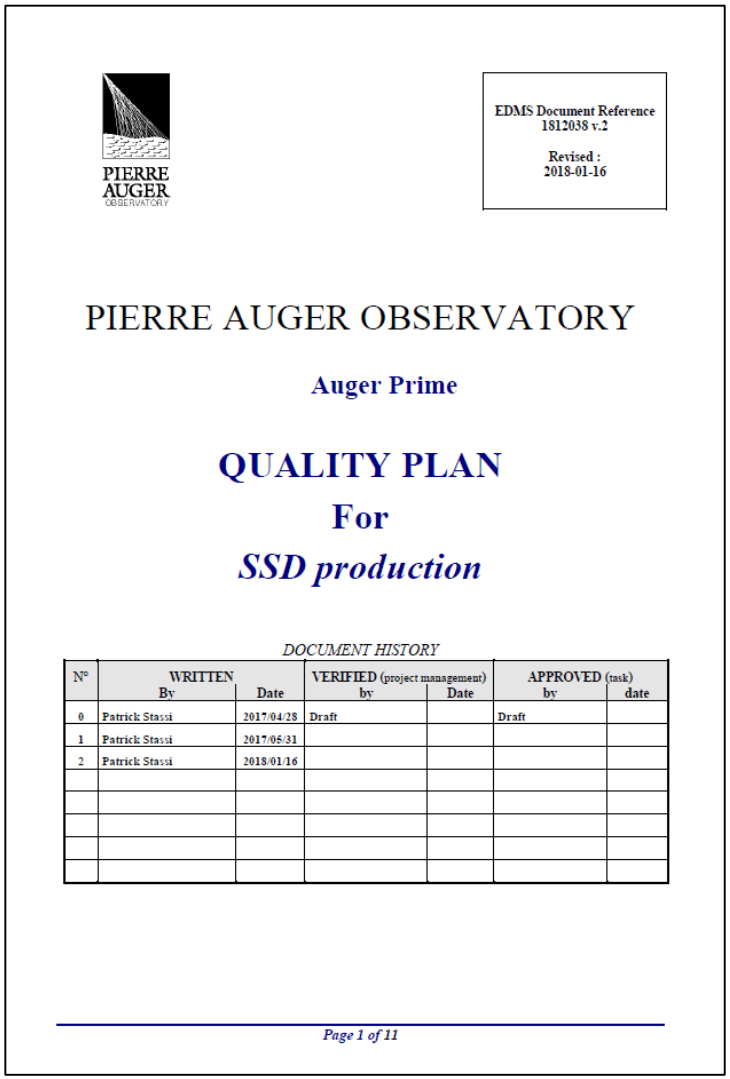
We need to have a clear agreement on this form.

Should be used during validation and tests filled and recorded.

Format and data base should be defined ASAP

Data Base is needed

SSD Quality & Product Assurance Plan - Details



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EDMS Document Reference
1812038 v.2

Revised :
2018-01-16

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Auger Prime

QUALITY PLAN
For
SSD production

DOCUMENT HISTORY

N°	WRITTEN By	WRITTEN Date	VERIFIED (project management) by	VERIFIED (project management) Date	APPROVED (task) by	APPROVED (task) date
0	Patrick Stassi	2017/04/28	Draft		Draft	
1	Patrick Stassi	2017/05/31				
2	Patrick Stassi	2018/01/16				

Page 1 of 11

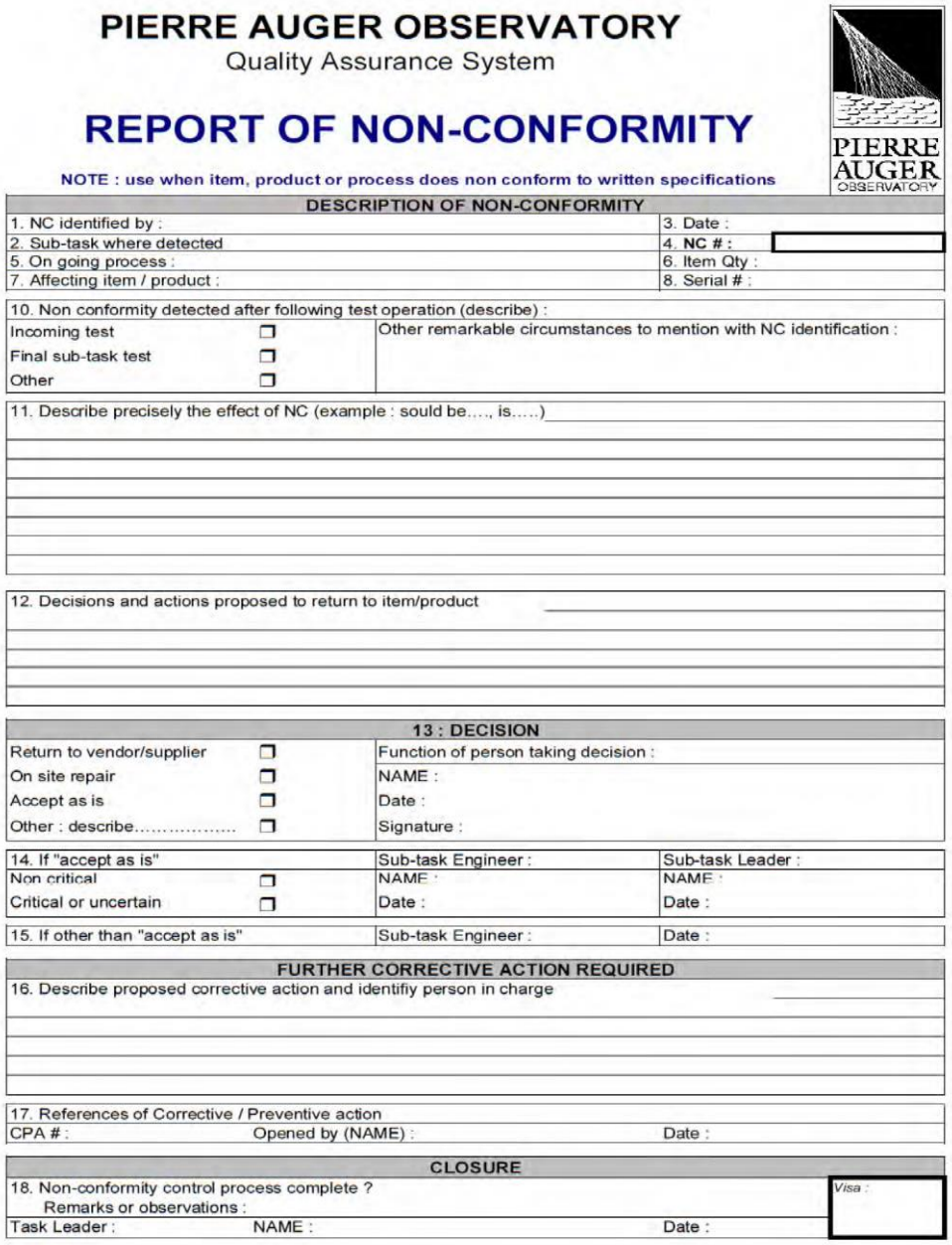
11 pages document, almost complete:

- **The document should be verified and completed (tracking, etc…)** ***(Task & PM)***
- **References should be updated** ***(PM)***
- **The document should be validated when completed** ***(Task & PM)***

SSD Quality & Product Assurance Plan – Ref. Doc.

#	Designation	EDMS Ref	Comments	Resp.
R1	PAO Quality Assurance Plan	307141 v.3	QA plan for the Pierre Auger Observatory Project	PMg
R2	SSD Production site requirement and specification	TBW	Minimum requirement information for site production (area, light, storage configuration, facilities, etc.…) (TBW)	Task
R3	SSD Assembly tools requirement and specification	TBW	Minimum requirement information for assembly tools (table, tools, etc.…) (TBW)	Task
R4	SSD Items list (BOM)	1812066 v.1	List (BoM) of all the SSD items	Lecce
R5	SSD Mechanical drawings, items specifications and list	1838188 v.4	All the SSD mechanical drawings, in STEP and pdf format	Nikhef Task
R6	SSD Assembly procedure	DRAFT	Complete SSD assembly procedure (TBW)	Task
R7	SSD Test Procedure	DRAFT	Complete SSD test procedure including minimum requirement information for test tools (electronics, control and monitoring, etc.…) (TBW)	Task PMg
R8	SSD AIT work package description	1812030 v.1	Detailed description of the SSD AIT task	Task PMg
R9	Convention for the Pierre Auger project	317390 v.2	This is the central document for defining and recording all conventions used by the project	PMg
R10	Auger Organization Chart	1812076 v.1	Pierre Auger experiment organization chart	PMg

Non-Conformity Reprt (NCR)



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Quality Assurance System

REPORT OF NON-CONFORMITY

NOTE : use when item, product or process does non conform to written specifications

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DESCRIPTION OF NON-CONFORMITY	
1. NC identified by :	3. Date :
2. Sub-task where detected	4. NC # :
5. On going process :	6. Item Qty :
7. Affecting item / product :	8. Serial # :

10. Non conformity detected after following test operation (describe) :		
Incoming test	☐	Other remarkable circumstances to mention with NC identification :
Final sub-task test	☐	
Other	☐	

11. Describe precisely the effect of NC (example : sould be...., is.....)

12. Decisions and actions proposed to return to item/product

13 : DECISION		
Return to vendor/supplier	☐	Function of person taking decision :
On site repair	☐	NAME :
Accept as is	☐	Date :
Other : describe.....	☐	Signature :

14. If "accept as is"		Sub-task Engineer :	Sub-task Leader :
Non critical	☐	NAME :	NAME :
Critical or uncertain	☐	Date :	Date :

15. If other than "accept as is"	Sub-task Engineer :	Date :

FURTHER CORRECTIVE ACTION REQUIRED
16. Describe proposed corrective action and identifiy person in charge

17. References of Corrective / Preventive action		
CPA # :	Opened by (NAME) :	Date :

CLOSURE			
18. Non-conformity control process complete ? Remarks or observations :			Visa :
Task Leader :	NAME :	Date :	

Policy and usage defined in the Pierre Auger Observatory Quality Assurance Plan.

Should be used during assembly and tests, filled and transmitted to the Task and Project

Other documents…..

Beside the applicable documents for assembly, we need to define very soon the following documents:

- Test and validation plan and assembly at reception and on site (at Malargue)
- Deployment procedure
- Other…

Conclusion (or PM message)

- **The production context is different today for AugerPrime**
- **Applicable documents are the unique references**
- **There are differences in the production sites but the procedures should be clear, well understood and unique**
- **There is a strong requirement of efficient Product Assurance & Quality control**