



EAM New Logbook for Cryogenic Operation

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On behalf of the Cryogenics Group

Objectives of this talk

Not Repeat what has already been said by Goran but **Focus** on the Cryo logbook implementation.

- Brief History of the Cryo Logbooks from 1990
- Current Organisation of the Cryo Operation and its Impact on Logbook.
- New Cryo Logbook Features

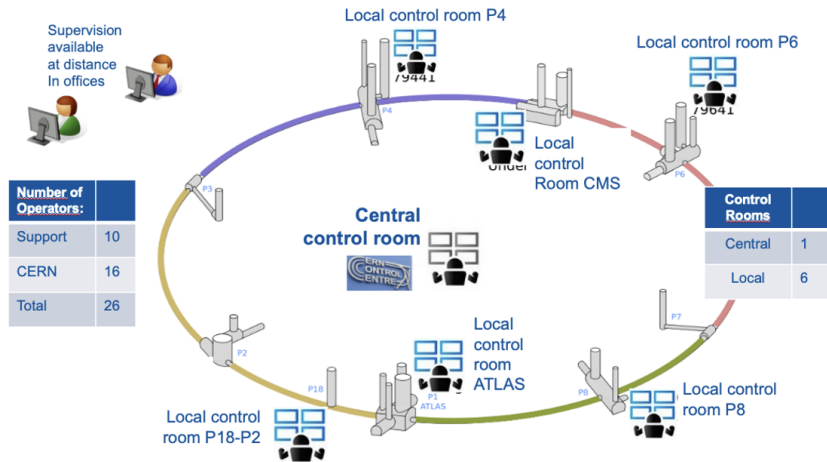
Brief History of Cryogenic Logbooks

Long Term
No loss with Time

Link to Maintenance
Activities

Cryogenics Operation Today

LHC Installations Task Oriented support



Non LHC Installations Result Oriented Support



Cryogenic Logbook 2024

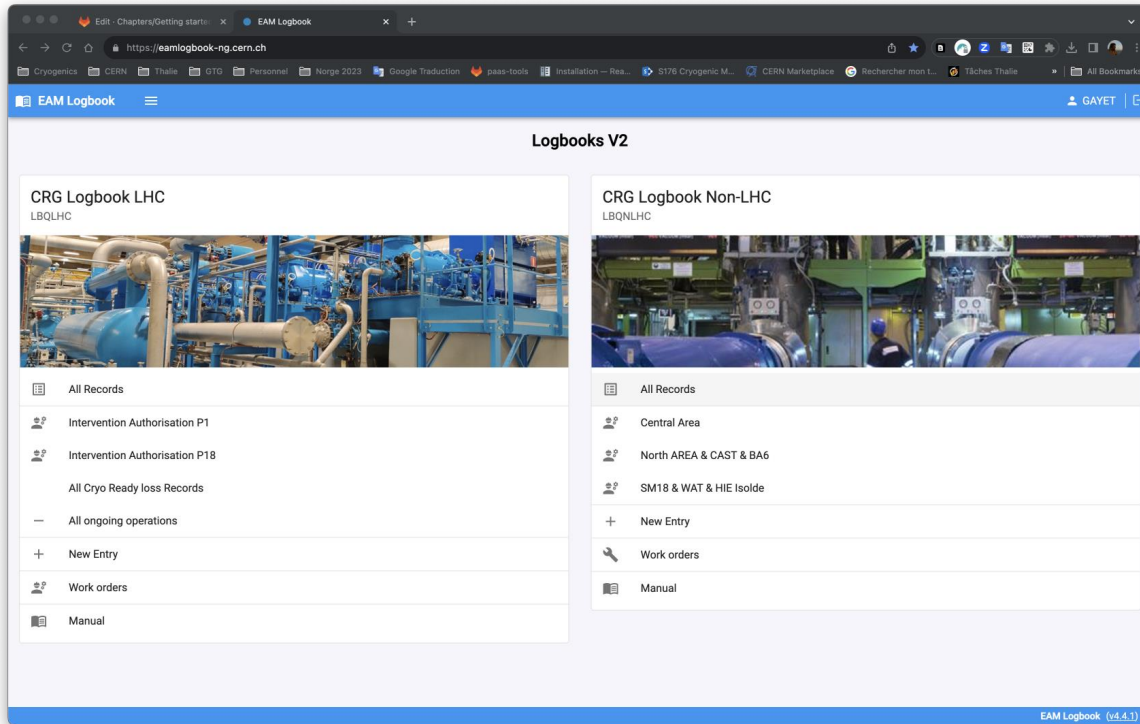
The screenshot shows a web browser window displaying the EAM Logbook V2 interface. The browser's address bar shows the URL <https://eamlogbook-ng.cern.ch>. The page title is "Logbooks V2".

The interface is divided into two main sections:

- CRG Logbook LHC (LBQLHC):** This section features a header image of blue industrial machinery. Below the image is a list of menu items: "All Records", "Intervention Authorisation P1", "Intervention Authorisation P18", "All Cryo Ready loss Records", "All ongoing operations", "New Entry", "Work orders", and "Manual".
- CRG Logbook Non-LHC (LBQNLHC):** This section features a header image of industrial machinery with a person in a blue hard hat. Below the image is a list of menu items: "All Records", "Central Area", "North AREA & CAST & BA6", "SM18 & WAT & HIE Isolde", "New Entry", "Work orders", and "Manual".

The bottom right corner of the page displays the version number "EAM Logbook (v4.4.1)".

Cryogenic Logbook 2024



From here you can :

Access all Predefined List views

Create New Log Entry.

Open EAMlight

Open the Logbooks Guidelines

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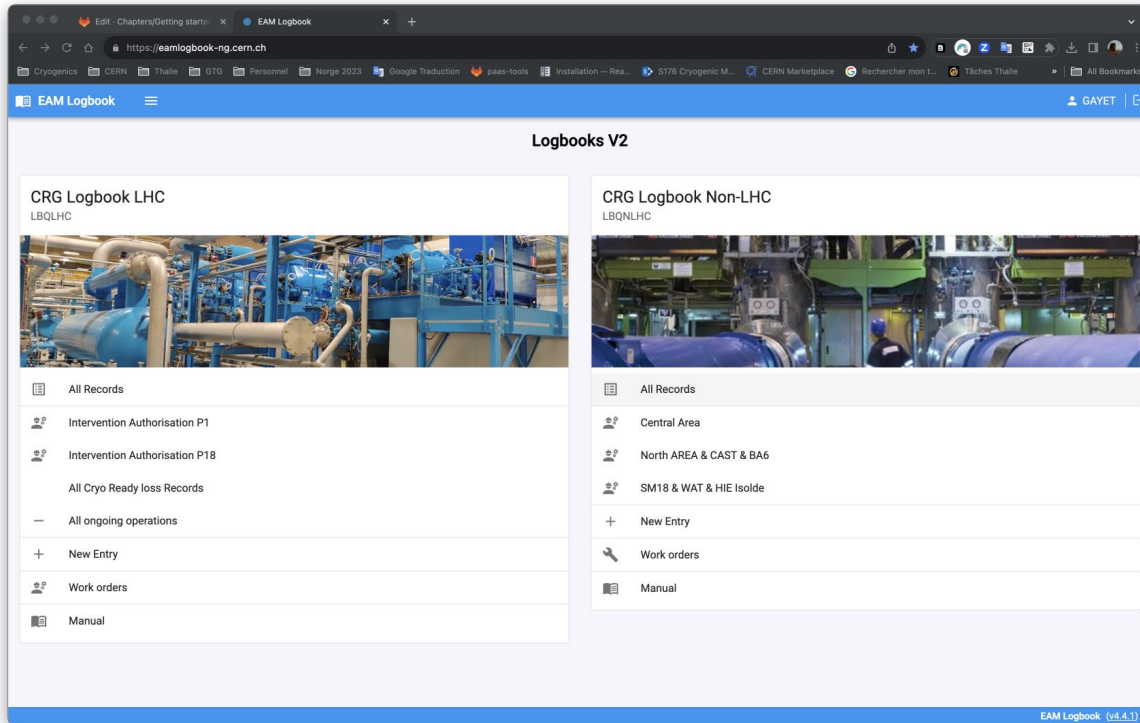
To be extended

Cryogenic Logbook 2024 : Predefined Lists

The screenshot displays the EAM Logbook web application interface. The browser address bar shows the URL <https://eamlogbook-ng.cern.ch/LBQNLHC/main>. The page title is "EAM Logbook" and the user is logged in as "GAYET". The main content area shows a table of predefined lists with the following columns: Icon, Site, Event Start Date, Date Updated, Case, Description, Event End Date, Nature, Subtype, Source, Status, Equipment, and Subj. The table contains 18 rows of data, including entries for SM18 TF CLIENTS, B243-B253 Central Liquefier, BA4 Test Facility SPS, NA Infra North Area, WAT TF, HIE Isolde, B243-B253 Central Liquefier, NP00 Infra NEUTRINO, SM18 TF CLIENTS, WAT TF, WAT TF, B163 Test Facility, SM18 TF INFRA, SM18 TF INFRA, SM18 TF INFRA, SM18 TF CLIENTS, and SM18 TF CLIENTS. The interface also includes a search bar, "SHOW FILTERS", "RESET FILTERS", and "EXPORT TO CSV" buttons. The footer indicates "Per Page 50" and "1-50 of 5000+".

Icon	Site	Event Start Date	Date Updated	Case	Description	Event End Date	Nature	Subtype	Source	Status	Equipment	Subj
🔔	SM18 TF CLIENTS	23-NOV-2023 20:17	23-NOV-2023 20:23	117238	M7 TT847 < 15 K		Fault		Beep	Active		QLKV
🔔	B243-B253 Central Liquefier	23-OCT-2023 16:31	23-NOV-2023 17:13	116623	Prepurifs toujours en service meme compresseurs a l'arret	24-OCT-2023 11:29	Fault		Ronde/Inspection	Active		QLAP
	BA4 Test Facility SPS	23-NOV-2023 16:54	23-NOV-2023 16:58	117237	test		Ongoing operation			CANC		Q451
	NA Infra North Area	20-NOV-2023 17:00	23-NOV-2023 16:42	117160	Transfert Helium cryolab -> ZN		Ongoing operation	Balance Helium ct	Other observation source	Active		
	WAT TF	23-NOV-2023 15:25	23-NOV-2023 15:25	117234	Ronde hebdomadaire WAT		Information			Active		
	HIE Isolde	23-NOV-2023 14:17	23-NOV-2023 14:18	117217	Ronde hebdomadaire Isolde		Information		Ronde/Inspection	Active		
	B243-B253 Central Liquefier	24-OCT-2023 10:54	23-NOV-2023 12:15	116641	Recherche de fuites recup et purif HP		Ongoing operation		Other observation source	Active		QLA-
	NP00 Infra NEUTRINO	22-NOV-2023 11:59	23-NOV-2023 12:09	117200	Qualification soupapes cryostats NP02-NP04		Report			Active		
	SM18 TF CLIENTS	23-NOV-2023 08:06	23-NOV-2023 08:12	117205	Start process M7 Cryo Crab Cavity Module RFD proto		Ongoing operation			Active		QLKV
	WAT TF	30-AUG-2023 14:26	22-NOV-2023 17:03	115661	Start process SM05 bench 1		Ongoing operation			Closed		QLF0
	WAT TF	09-OCT-2023 16:22	22-NOV-2023 17:01	116356	Start process magnet SM04 Bench 3		Ongoing operation			Active		QLI03
	B163 Test Facility	21-NOV-2023 14:30	22-NOV-2023 08:51	117190	complement LHe 6000L		Information			Active		QLDH
🔔	SM18 TF INFRA	22-NOV-2023 02:52	22-NOV-2023 02:58	117186	DT IT String too high		Fault		Beep	Active		QLR1
	SM18 TF INFRA	22-NOV-2023 02:48	22-NOV-2023 02:51	117185	Chute du niveau du dewar		Information			Active		QLDH
🔔	SM18 TF INFRA	21-NOV-2023 19:33	21-NOV-2023 20:04	117183	Full stop boite froide 6kw		Fault		Beep	Active		QLR1
	SM18 TF CLIENTS	21-NOV-2023 10:10	21-NOV-2023 14:34	117174	Start Process V4		Ongoing operation			Active		QLKV
	SM18 TF CLIENTS	27-OCT-2023 15:24	21-NOV-2023 14:20	116733	Start Process B2		Ongoing operation			Active		QLFB

Cryogenic Logbook 2024



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To be extended

Cryogenic Logbook 2024 : New Event

Base Log Details

Description*

Nature* Subtype* Source*

Status* A - Active

Created By Date Created

Updated By Date Updated

Event Start Date dd-mmm-yyyy hh:mm Event End Date dd-mmm-yyyy hh:mm

Intervention

Intervention Activity

Cryo Loss Capture

EVENT DETAILS

CRYO Position Capture

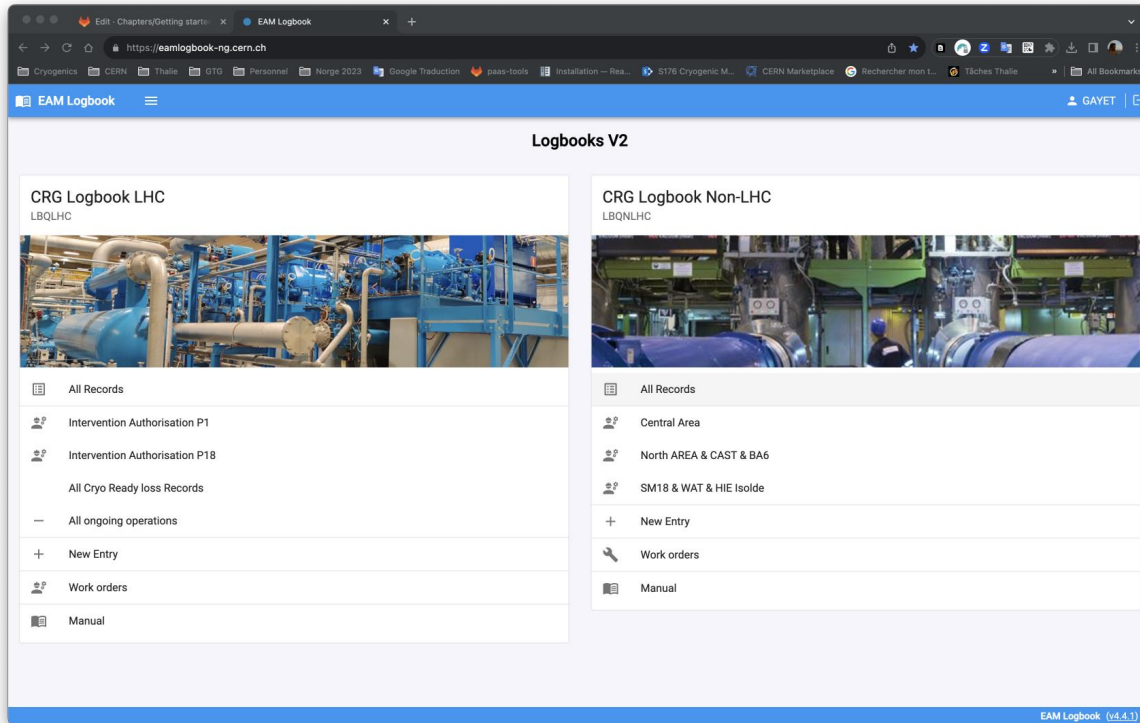
Site

Subsystem

Equipment Equipment Class

EAM Logbook (v4.5.1)

Cryogenic Logbook 2024



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..

To be extended

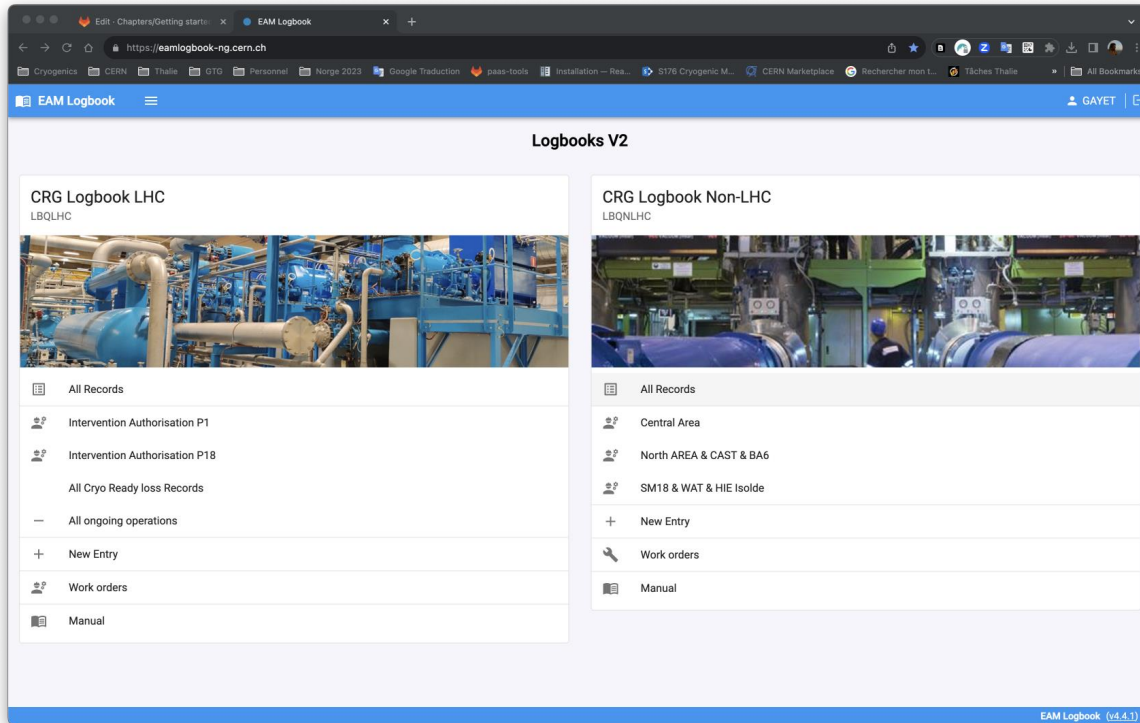
Cryogenic Logbook 2024 : EAMLight

The screenshot displays the EAMLight web application interface for a cryogenic facility logbook. The browser address bar shows the URL <https://eamlight.cern.ch/position/Q04S>. The interface is divided into several sections:

- Left Sidebar:** Contains navigation options such as "CRG - Positions", "New Position", "Search CRG - Positions", and "Back to Equipment".
- Equipment Tree:** A hierarchical tree view of equipment. The selected item is "Q04S - CRYOGENIC FACILITY FOR SPS_BA4 - INSTALLATION CRYOGENIQUE". Other items include "Q451-S4 - 4.5K CRYOPLANT - UNITE 4.5K SPS BA4", "QSC1H-S4 - COMPRESSOR SYSTEM - SYSTEME DE COMPRESS.", "QSC1H-S4-F162 - 2eme coalescer", "QSC1H-S4-F161 - 1er coalescer", "QSC1H-S4-F610 - Filtre à huile principal CP - by-pass interr.", "QSC1H-S4-S130 - Separateur d'huile", "QSC1H-S4-C1 - COMPRESSEUR A VIS", "QSC1H-S4-M1 - MOTEUR COMPRESSEUR A VIS", "QSC1H-S4-J001 - Accouplement Moteur - Compresseur à", "QSC1H-S4-XX01 - CODE GENERALE", "QSC1H-S4-PPUR - Pompe de purge compresseur", "QSC1H-S4-MVENTIL - moteur ventilateur saison Kaeser", "QSC1H-S4-FVENTIL - Filtre à poussière ventilation Kaeser", "QSC1H-S4-F164 - Filtre by-pass HP-BP saison CP", "QSC1H-S4-W610 - Heat Exchanger Oil/Water", "QSC1H-S4-W160 - Heat Exchanger Helium/Water", "QSC1H-S4-F105 - Filtre crepine retour huile separateur vers", "QSC1H-S4-A170 - Oil Adsorber", "QSC1H-S4-F170 - filtre He sortie charbon actif", "QSC1H-S4-PSL160 - Separator low - DIS.4", "QSC1H-S4-PSH130 - Compressor Running - DIS.5", "QSC1H-S4-PS167 - Separator low - DIS.4", "QSC1H-S4-DPS610 - delta p filtre à huile DPS610", "QSC1H-S4-PDSL100 - panneau de régulation CP", "QSC1H-S4-B2 - ROTATION", "QSC1H-S4-SV409 - Filtre charbon actif", "QSC1H-S4-SV302 - HP Compresseur", "QSC1H-S4-SV223 - BP Panneau de purge", "QSC1H-S4-SV260 - Collecteur de purge (Tag par défaut, A", "QSC1H-S4-SV527 - Ligne GN2 (Tag par défaut, A renom", "QSC1H-S4-SV215 - Tampon He 8m3", "QSC1H-S4-SV214 - Tampon He 8m3", "QSC1H-S4-SV261 - Ligne alimentation He", "QSC1H-EM01=871 - Armoire elec. Compresseur BA4", "QSC1H-S4-PRV160 - Regulation pression sortie séparateur", "QSC1H-S4-B030 - Tampon GHe (Tag par défaut, A renom", "QSC1H-S4-MEXTRACT - moteur extracteur saison Kaeser", "QUR1H-S4 - COLD BOX - BOITE FROIDE BA4-TCF20", "QUR1H-S4-T1 - TURBINE T1 BA4", "QUR1H-S4-T2 - TURBINE T2 BA4", "QUR1H-S4-1E211 - Echangeur frein TURBINE T1".
- Position Q04S Details:**
 - GENERAL:** Alias: BA4 Test Facility SPS; Description: CRYOGENIC FACILITY FOR SPS_BA4 - INSTALLATION CRYOGENIQUE P; Dep./Service Unit: QEXP CRYO NO LHC EXPLOITATION EQUIPMENTS; Status: I - Installed.
 - DETAILS:** Class: Q1 CRYOGENIC INSTALLATION - INSTALLATION CRYOGENIQUE; Commission Date: 21-Nov-2011; Criticality: ; Manufacturer: ; Serial Number: ; Model: ;
 - HIERARCHY:** Country: ; Parent Asset: ; Parent Position: ; Primary System: QCONTR-QS176-2 Cryogenic contract S176 - Result Orien; Location: SPS 814=TUNNEL PRINCIPAL SPS.
 - WORK ORDERS:** (Empty list)
- EDMS DOCUMENTS:** A table listing documents with columns for ID, Title, and Status.

ID	Title	Status
LHCQXFAC0001 v.AA	COLDEX EXPERIMENT IN BA4 - FLOW SCHEME (TCF20)	In Preparation
1756532 v.1	Caractéristiques débitmètre	In Work
LHCQXFAC0001 v.0	COLDEX EXPERIMENT IN BA4 - FLOW SCHEME (TCF20)	Approved
1607558 v.3	EXP-WI-205 1607558 BA4 Conditionnement Rincage et Analyse Cryoplant	In Work
1607561 v.2	Procédure SPS BA4 - COLDEX Mode operatoire Compresseur_manuel.doc	In Work
- NCRS:** No NCRs to show.
- COMMENTS:** Enter new comment here.
- USER DEFINED FIELDS:** Country: ; ELEC Powering Pos: ; ELEC Powering Type: ; Intervention Period: ;
- CUSTOM FIELDS:** (Empty list)

Cryogenic Logbook 2024



From here you can :

Access all Predefined List views

Create New Log Entry.

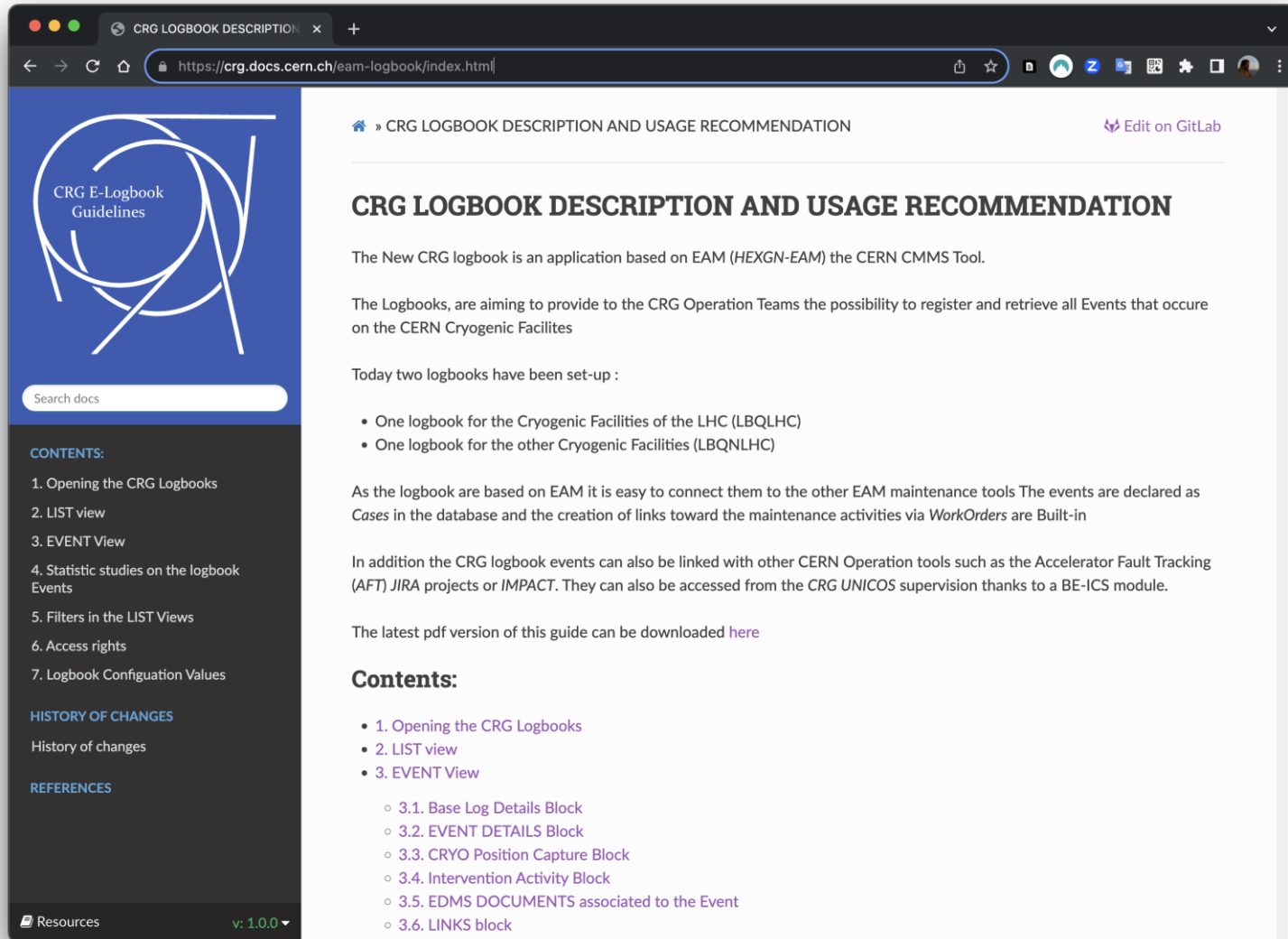
Open EAMlight

Open the Logbooks Guidelines

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To be extended

Cryogenic Logbook 2024 : Guidelines



The screenshot shows a web browser window displaying the "CRG LOGBOOK DESCRIPTION AND USAGE RECOMMENDATION" page. The browser's address bar shows the URL <https://crg.docs.cern.ch/eam-logbook/index.html>. The page features a dark blue sidebar on the left with the "CRG E-Logbook Guidelines" logo and a search bar. The main content area is white and contains the following text:

» CRG LOGBOOK DESCRIPTION AND USAGE RECOMMENDATION [Edit on GitLab](#)

CRG LOGBOOK DESCRIPTION AND USAGE RECOMMENDATION

The New CRG logbook is an application based on EAM (*HEXGN-EAM*) the CERN CMMS Tool.

The Logbooks, are aiming to provide to the CRG Operation Teams the possibility to register and retrieve all Events that occur on the CERN Cryogenic Facilities

Today two logbooks have been set-up :

- One logbook for the Cryogenic Facilities of the LHC (LBQLHC)
- One logbook for the other Cryogenic Facilities (LBQNLHC)

As the logbook are based on EAM it is easy to connect them to the other EAM maintenance tools The events are declared as *Cases* in the database and the creation of links toward the maintenance activities via *WorkOrders* are Built-in

In addition the CRG logbook events can also be linked with other CERN Operation tools such as the Accelerator Fault Tracking (*AFT*) *JIRA* projects or *IMPACT*. They can also be accessed from the CRG *UNICOS* supervision thanks to a BE-ICS module.

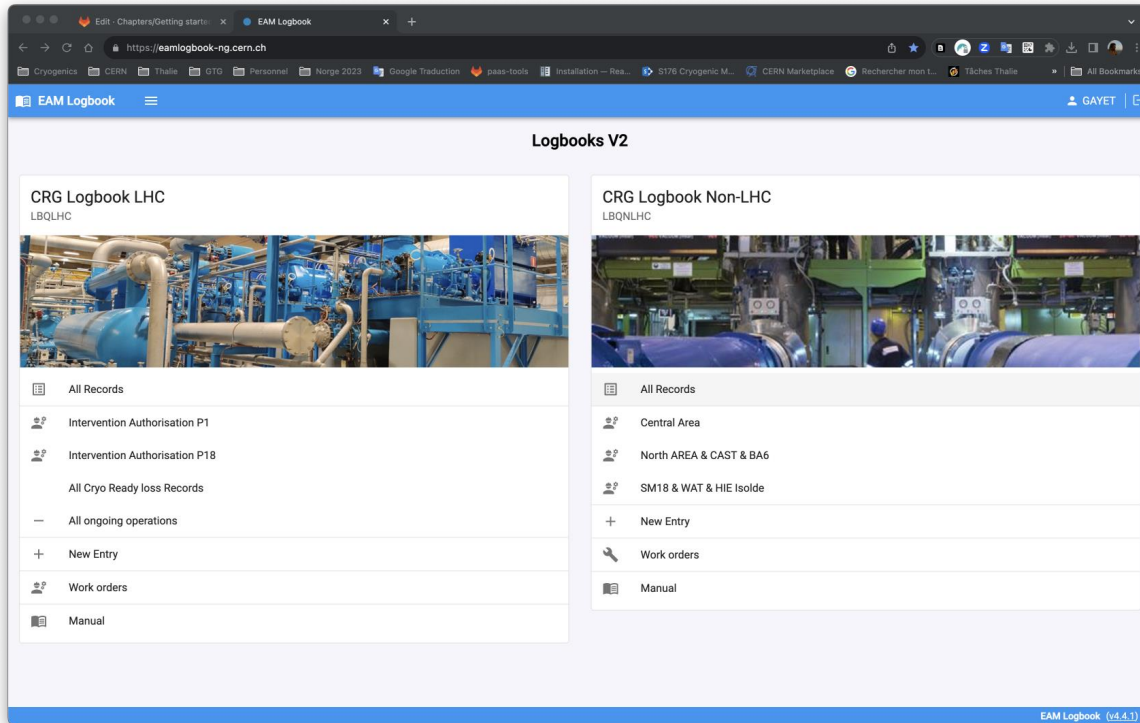
The latest pdf version of this guide can be downloaded [here](#)

Contents:

- [1. Opening the CRG Logbooks](#)
- [2. LIST view](#)
- [3. EVENT View](#)
 - [3.1. Base Log Details Block](#)
 - [3.2. EVENT DETAILS Block](#)
 - [3.3. CRYO Position Capture Block](#)
 - [3.4. Intervention Activity Block](#)
 - [3.5. EDMS DOCUMENTS associated to the Event](#)
 - [3.6. LINKS block](#)

Resources v: 1.0.0

Cryogenic Logbook 2024



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Open the Logbooks Guidelines

..

To be extended

Logbook ListView

The screenshot shows a web browser window with the URL <https://eamlogbook-ng.cern.ch/LBQNLHC/main>. The page title is "EAM Logbook" and it displays a list of records under the "All_Records" filter. The table has the following columns: Icon, Site, Event Start Date, Date Updated, Case, Description, Event End Date, Nature, Subtype, Source, Status, Equipment, and Subject. The records are color-coded: orange for faults, light blue for ongoing operations, and light green for information. The status column shows "Active", "Closed", or "CANC".

Icon	Site	Event Start Date	Date Updated	Case	Description	Event End Date	Nature	Subtype	Source	Status	Equipment	Subject
🔔	SM18 TF CLIENTS	23-NOV-2023 20:17	23-NOV-2023 20:23	117238	M7 TT847 < 15 K		Fault		Beep	Active		QLKA
🔔	8243-8253 Central Liquefier	23-OCT-2023 16:31	23-NOV-2023 17:13	116623	Prepurnis toujours en service meme compresseurs a l'arret	24-OCT-2023 11:29	Fault		Ronde/Inspection	Active		QLAP
🔔	B44 Test Facility SPS	23-NOV-2023 16:54	23-NOV-2023 16:58	117237	test		Ongoing operation			CANC		Q451
🔔	NA Infra North Area	20-NOV-2023 17:00	23-NOV-2023 16:42	117160	Transfert Helium cryolab -> ZN		Ongoing operation	Balance Helium ct	Other observation source	Active		
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🔔	NP00 Infra NEUTRINO	22-NOV-2023 11:59	23-NOV-2023 12:09	117200	Qualification soupapes cryostatats NP02-NP04		Report			Active		
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🔔	B163 Test Facility	21-NOV-2023 14:30	22-NOV-2023 08:51	117190	complement LHe 6000L		Information			Active		QLDH
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🔔	SM18 TF INFRA	21-NOV-2023 19:33	21-NOV-2023 20:04	117183	Full stop boite froide 6kw		Fault		Beep	Active		QLR1
🔔	SM18 TF CLIENTS	21-NOV-2023 10:10	21-NOV-2023 14:34	117174	Start Process V4		Ongoing operation			Active		QLKV
🔔	SM18 TF CLIENTS	27-OCT-2023 15:24	21-NOV-2023 14:20	116733	Start Process B2		Ongoing operation			Active		QLFB

We have defined a set of :

- Font colour
- Background colour
- Icons

that are adapted to Cryo operation and common to the two logbooks

Logbook ListView

The image shows a screenshot of the Dataspy application interface. On the left, there is a sidebar menu with a dropdown menu open, listing various logbook categories. The top dropdown is labeled 'All Records Default' and is associated with the 'LHC' label. The bottom dropdown is labeled 'All_Records' and is associated with the 'Non LHC' label. The main area of the application displays a table of logbook records with columns for Event End Date, Nature, Subtype, Source, Status, Equipment, and Subj. The table shows several rows of data, including entries for 'Fault', 'Ongoing operation', and 'Report'.

LHC

- All Records Default
- 1. Shift Handover
- All Active Lock Out
- All ongoing operations
- Intervention Authorisation P1
- Intervention Authorisation P18
- Intervention Authorisation P2
- Intervention Authorisation P4
- Intervention Authorisation P5
- Intervention Authorisation P6
- Intervention Authorisation P8
- P1 ATLAS Logbook
- P18-P2 Logbook
- P4 Logbook
- P5 CMS Logbook
- P6 Logbook
- P8 Logbook

Non LHC

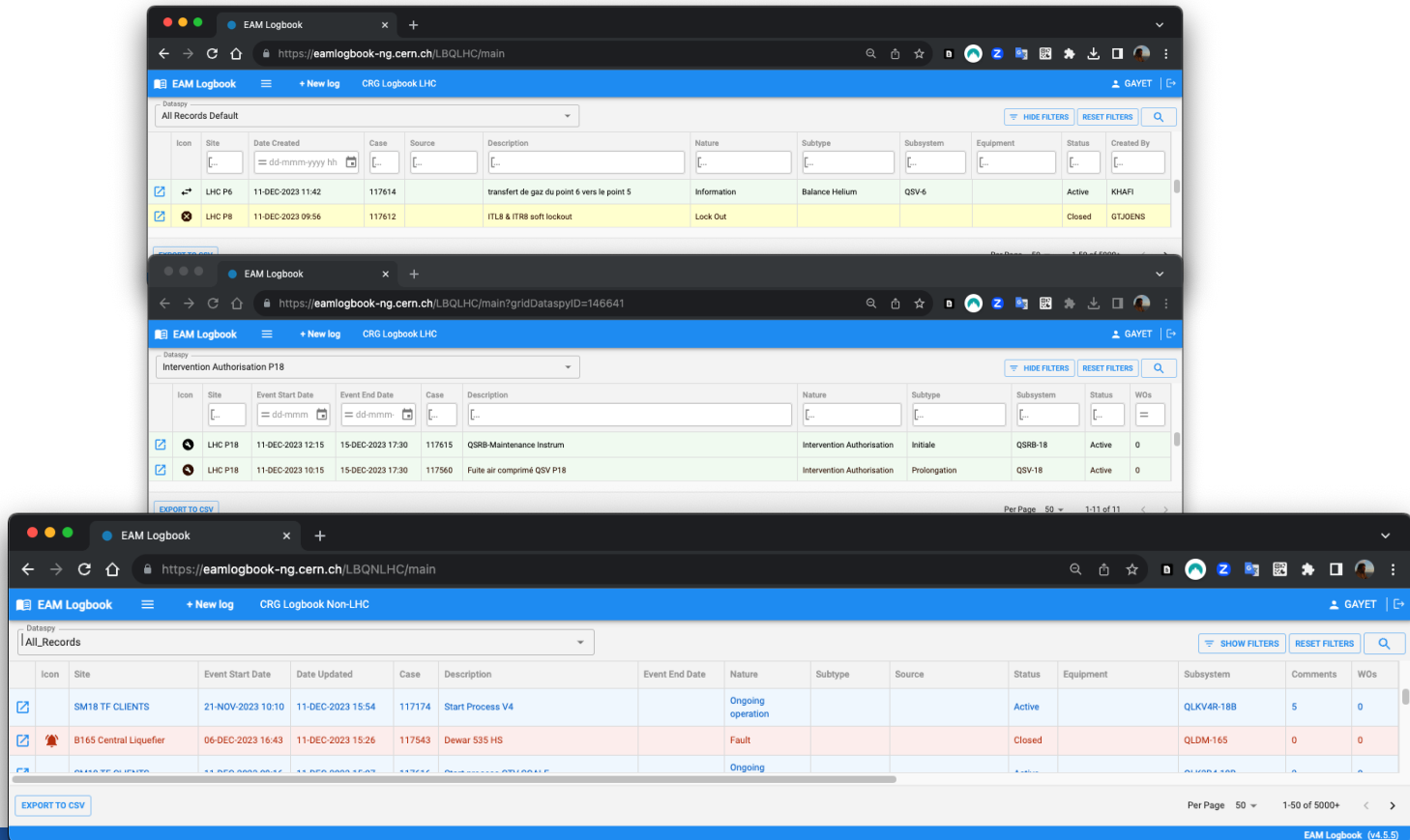
- All_Records
- All_Records new
- Central Area
- HIE Ongoing Operation
- North AREA & CAST & BA6
- SM18 & WAT & HIE Isolde
- SM18 Ongoing Operations
- WAT Ongoing Operation

Event End Date	Nature	Subtype	Source	Status	Equipment	Subj
	Fault		Beep	Active		QLKA
24-OCT-2023 11:29	Fault		Ronde/Inspection	Active		QLAP
	Ongoing operation			CANC		Q451
	Ongoing operation	Balance Helium ct	Other observation source	Active		
	Information			Active		
	Information		Ronde/Inspection	Active		
	Ongoing operation		Other observation source	Active		QLA4
04	Report			Active		
	Ongoing operation			Active		QLKA
	Ongoing operation			Closed		QLF0
						QLI03
						QLDH
						QLR1
						QLDH
						QLR1
						QLKV
						QLFB

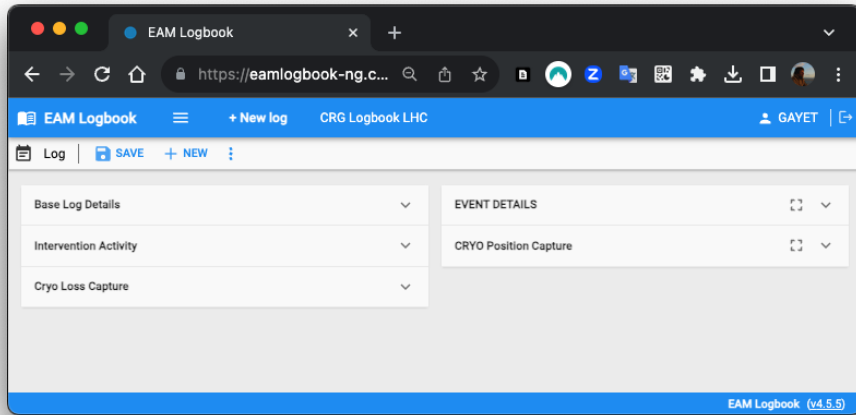
We have defined one sets of predefined ListView for each logbook.

Logbook ListView

We have also defined different ListView layouts following the requests of the Operations Teams



Logbook LogView : Create a New Log



Five blocks presented

A screenshot of the 'Base Log Details' form in the EAM Logbook application. The form contains the following fields:

- Description* (text input)
- Nature* (dropdown menu)
- Subtype* (dropdown menu)
- Source* (dropdown menu)
- Status* (dropdown menu, currently showing 'A - Active')
- Created By (text input)
- Date Created (calendar icon)
- Updated By (text input)
- Date Updated (calendar icon)
- Event Start Date (text input, format: dd-mmm-yyyy hh:mm, with calendar icon)
- Event End Date (text input, format: dd-mmm-yyyy hh:mm, with calendar icon)
- Intervention (checkbox, currently unchecked)

However, to create the Log we just need to fill four mandatory fields we have chosen.

- *Description*: shall be as precise as possible to ease the event identification.
- *Nature & Subtypes*: define precisely the nature of the Event
- *Source*: Origin of the information,
- *Status*: Actual state of the EVENT

Logbook LogView : Nature/Subtypes

Nature: is the Type of the event, it shall be selected in the following list:

Nature	Usage
Cryo Ok/Maintain loss	For a Fault with a loss of the Cryo OK or Cryo Maintain (<i>in LHC accelerator</i>)
Fault	For a Fault without a loss of the Cryo OK or Cryo Maintain
Ongoing operation	To inform that a specific operation is Ongoing
Report	To report from an activity
Instructions	To transmit instruction to other Operation team members
Modification request	To present modifications requested by the operation teams.
Information	To transmit Information or report a Beep without Fault
Lock Out	To Inform that a Lockout is Ongoing
Intervention Authorisation	To authorise an intervention on a facility and to inform the other people
Old Logbook	To present events from the APEX logbook (2006-2018)

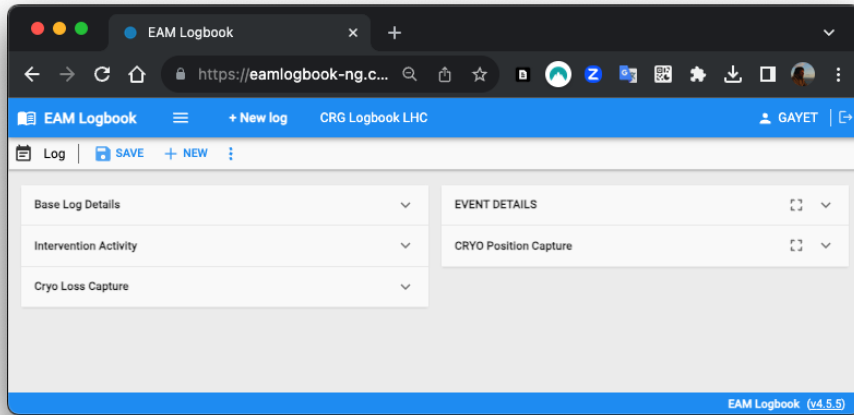
Logbook LogView : Nature/Subtypes

Subtypes : to define precisely the nature of the Event.

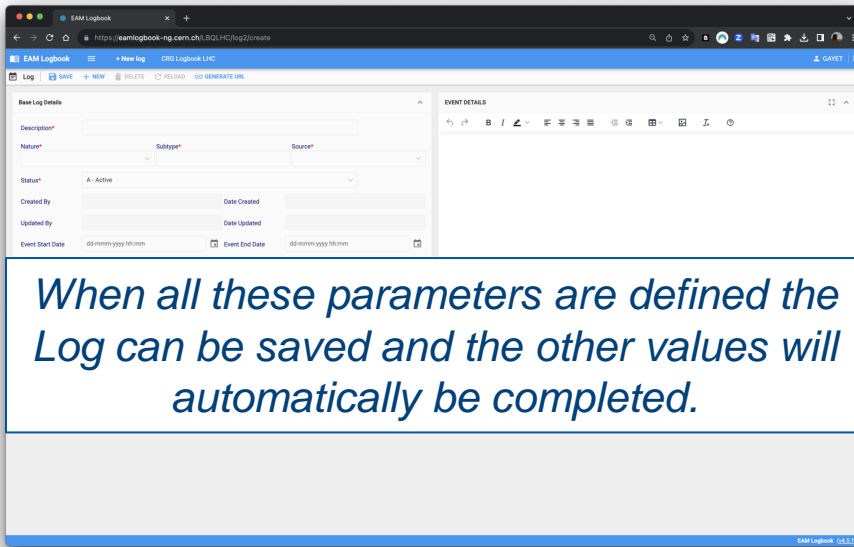
Fault	Failure without the loss of Cryo Ok Conditions
Cryo OK/Maintain Loss	Failure with the loss of Cryo Ok Conditions
Subtype	Power failure
	Water & compressed air failure
	Communication failure
	Instrumentation failure
	Mechanical failure
	Control Software failure
	Control Hardware failure
	Vacuum failure
	User failure
	Process tuning failure
	General operation failure
	Human error failure
Ongoing operation	
Subtype	Production
	Users
	Maintenance
	GBalance Helium ct
Report	Activity Report
Subtype	Weekly Report
	Intervention
Instructions	Instruction for operators
Subtype	CCC consignes
	Shift Handover
	Liquid Transfer
	Gaz Transfer
	Safety

Modification request	Operation requests for Modification
Subtype	P&ID documentation
	Electrical documentation
	Control documentation
	Other documentation
	Control logic
	User interface
	Electrical cabling
	Mechanics
	GMAO-CMMS
Information	Info for the operation team
Subtype	Call to CERN Best Effort
	Note Coupure Utility
	Information
	Beep Without failure
Lock Out	Lock-out
Subtype	Helium
	Electricity
	Water
Intervention Authorisation	Work permit for intervention
Subtype	Initial
	On Hold
	Prolongated
Old Logbook	Event from the APEX logbook
Subtype	Old Event

Logbook LogView : Create New Event



Five blocks presented

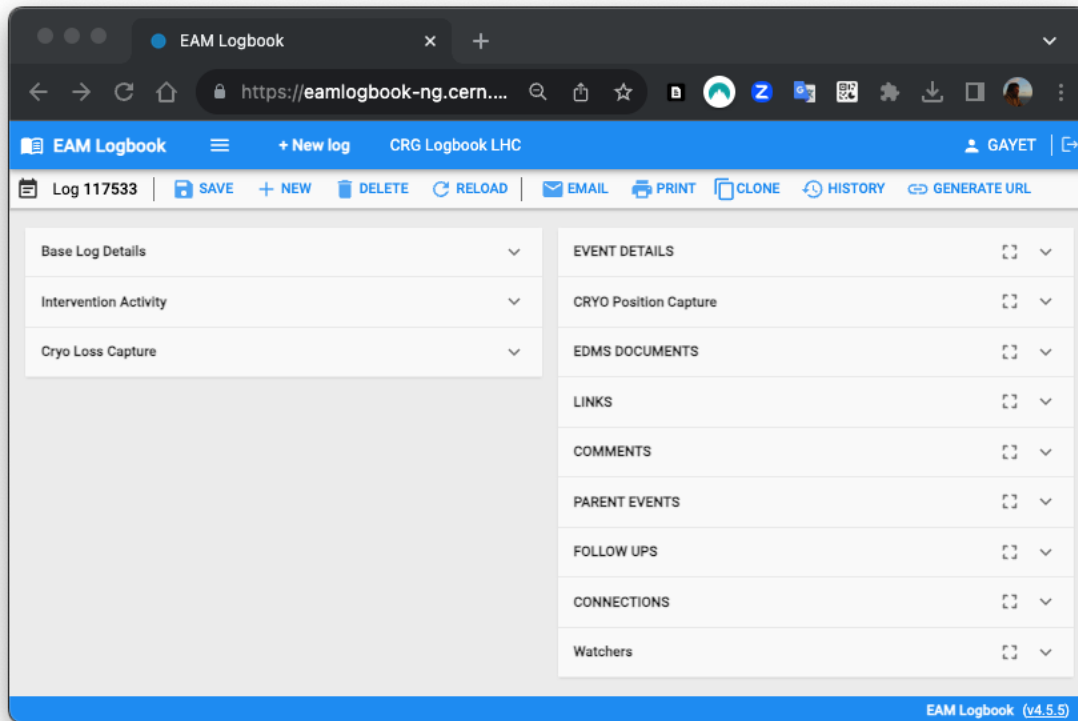


However, to create the Log we just need to fill four mandatory fields we have chosen.

- *Description*: shall be as precise as possible to ease the event identification.
- *Nature & Subtypes*: define precisely the nature of the Event
- *Source*: Origin of the information,
- *Status*: Actual state of the EVENT

When all these parameters are defined the Log can be saved and the other values will automatically be completed.

Logbook LogView : Full Event



Nine blocks presented most of them equivalent to the standard block already presented.

However, we have defined specific blocks dedicated to cryogenic operation usage (Layout) .

Logbook LogView : Cryo Blocks

Cryo Position Capture, block developed by the EAM team to ease the capture of the equipment Position Name in EAM :

- either the specific structure of the Cryogenic position in EAM
- or in an autocompletion mechanism

The screenshot displays a web interface titled "CRYO Position Capture". It features a sidebar on the left with four labels: "Site", "Subsystem", "Equipment", and "Equipment Class". The "Equipment" field is active, showing a dropdown menu with a list of equipment names. The first item in the list, "QSCB-4-P", is highlighted with a blue border. The list includes various cryogenic equipment identifiers and their descriptions, such as "POMPE-DE-PURGE", "SUCTION-PRESSURE-TRANSMITTER", and "VANNE PNEUMATIQUE".

Equipment
QSCB-4-P
QSCB-4-P319 - POMPE-DE-PURGE
QSCB-4-PT100 - SUCTION-PRESSURE-TRANSMITTER
QSCB-4-PV198 - BY-PASS-PV199
QSCB-4-PV131 - BY-PASS-PV130
QSCB-4-PV130 - ISOLEMENT-HE-MP
QSCB-4-PV105 - VANNE PNEUMATIQUE
QSCB-4-PV101 - BY-PASS-PV100
QSCB-4-PV100 - ISOLEMENT-HE-BP
QSCB-4-PT102 - LP Return Line
QSCB-4-PT130 - PRESSION-HE-MP
QSCB-4-PT170 - PRESSION-HE-HP
QSCB-4-PT175 - Pressure For Flow Measurement Compensation
QSCB-4-PT177 - DEBITMET.-REGUL.HP/MP
QSCB-4-PT178 - DEBITMET.
QSCB-4-PT179 - PRESSION-ENTREE-CV195
QSCB-4-PT185 - PRESSION-ALIM.TAMPON
QSCB-4-PT199 - DEBITMETRIE-HE-HP
QSCB-4-PT500 - WATER-PRESSURE-TRANSMITTER

Logbook LogView : Cryo Blocks

Cryo Position Capture, block developed by EN-AM for Cryo to ease the capture of the equipment Position Name in EAM based :

- either the specific structure of the Cryogenic position in EAM
- or thanks to an autocompletion mechanism

CRYO Position Capture

Site	Q04L - LHC P4
Subsystem	QSCB-4 - COMPRESSOR SYSTEM - SYSTEME DE COMPRESSION
Equipment	QSCB-4-PT130 PRESSION-HE-MP
Equipment Class	Q4ITB - TRANSMITTERS for BEAMEX - TRANSMETTEURS pour BEAMEX

Logbook LogView : Cryo Blocks

Intervention Activities, used to capture information about :

- Intervention performed by the operation crew.
- Details for “*Interventions Authorisation*” Nature Events.

Intervention Activity ^

Executed By	<input type="text"/>
Date Requested	<input type="text" value="11-Dec-2023 11:39"/> 
Arrival On Site	<input type="text" value="dd-mmm-yyyy hh:mm"/> 
Effective Start Date	<input type="text" value="11-Dec-2023 11:39"/> 
Performed Actions	<input type="text"/>
Intervention End Date	<input type="text" value="dd-mmm-yyyy hh:mm"/> 

Logbook LogView : Cryo Blocks

Cryo Loss Capture, used when the Nature is “Cryo OK/Maintain Loss”, layout developed by CRG and durations calculation implemented by EAM support.

Cryo Loss Capture

Cryo ready loss Cryo ready nature: CRYO Maintain

AFT Fault Type: [Dropdown menu with options: CRYO-OP-PNO-BSCR, CRYO-OP-PNO-DFB, CRYO-OP-PNO-OTHER, CRYO-OP-PNO-REF, CRYO-O..., CRYO-PI..., CRYO-PI..., CRYO-PI..., CRYO-PI..., CRYO-PROD-PLC, CRYO-TUNNEL-CONTROL, CRYO-TUNNEL-INSTRUM, CRYO-TUNNEL-OTHER, CRYO-TUNNEL-PLC, TECHNICAL SERVICES CV]

Cryo Ready Loss Start: dd-mmm-yyyy hh:mm to dd-mmm-yyyy nn:mm

Cryo ready loss duration: [Field]

Machine/Load Status: [Dropdown menu with options: INJPROB, INJSTUP, PRERAMP, RAMP, FLATTOP, SQUEEZE, ADJUST, STABLE, UNSTABLE, BEAMDUMP]

Category: [Dropdown menu with options: Cryo, Users, Utilities]

Logbook LogView : Cryo Blocks

Cryo Loss Capture, used when the Nature is “Cryo OK/Maintain Loss” NON LHC

Cryo Loss Capture

Cryo ready loss Cryo ready nature

Cryo Ready Loss Start

Machine/Load Status Category

- Stopped
- Ramping
- Powered
- Idle
- Empty
- Filling or Ready to Fill

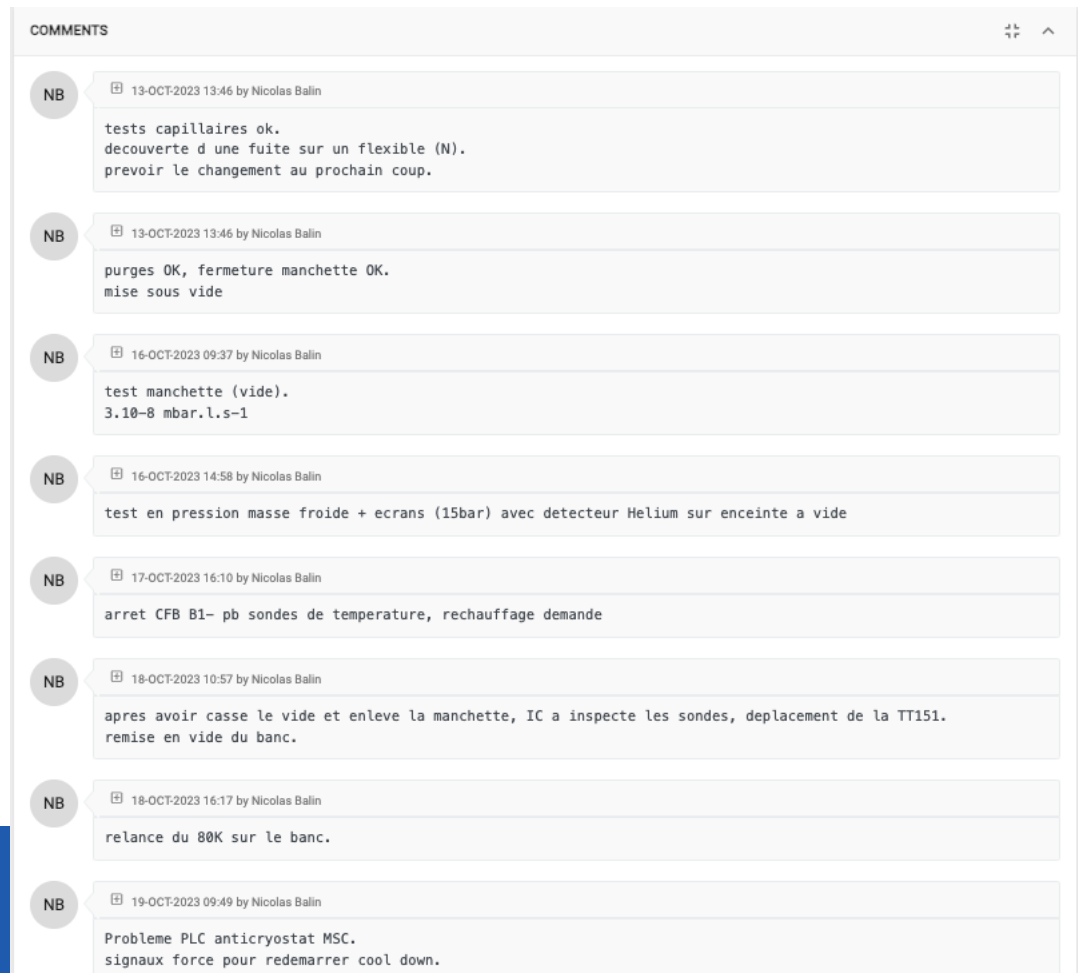
- CERN Cryo
- Contractor Cryo
- Users
- Utilities

CRYO OK

Logbook LogView : Cryo Usage

We use several standard blocks for specific action by the Cryo operation teams

Comments : Used to update the logs with a date to follow the event history



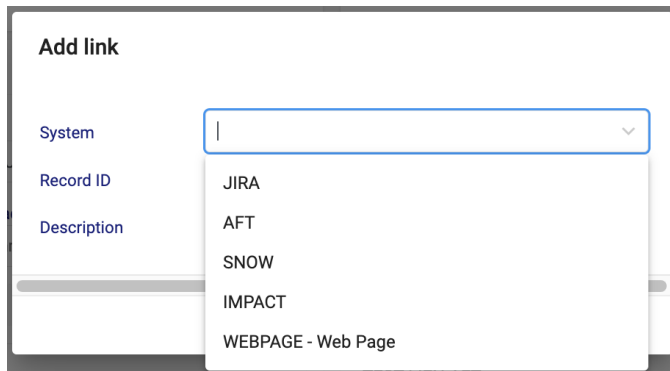
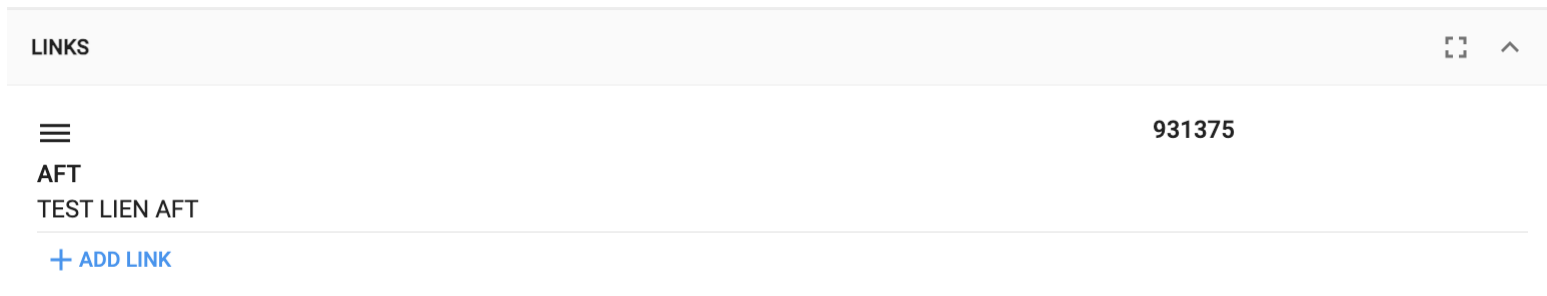
The screenshot displays a 'COMMENTS' section with a list of entries. Each entry consists of a circular icon with the initials 'NB', a timestamp and author name, and a text block describing an event. The entries are as follows:

- 13-OCT-2023 13:46 by Nicolas Balin**
tests capillaires ok.
decouverte d une fuite sur un flexible (N).
prevoir le changement au prochain coup.
- 13-OCT-2023 13:46 by Nicolas Balin**
purges OK, fermeture manchette OK.
mise sous vide
- 16-OCT-2023 09:37 by Nicolas Balin**
test manchette (vide).
3.10⁻⁸ mbar.l.s-1
- 16-OCT-2023 14:58 by Nicolas Balin**
test en pression masse froide + ecrans (15bar) avec detecteur Helium sur enceinte a vide
- 17-OCT-2023 16:10 by Nicolas Balin**
arret CFB B1- pb sondes de temperature, rechauffage demande
- 18-OCT-2023 10:57 by Nicolas Balin**
apres avoir casse le vide et enleve la manchette, IC a inspecte les sondes, deplacement de la TT151.
remise en vide du banc.
- 18-OCT-2023 16:17 by Nicolas Balin**
relance du 80K sur le banc.
- 19-OCT-2023 09:49 by Nicolas Balin**
Probleme PLC anticryostat MSC.
signaux force pour redemarrer cool down.

Logbook LogView

We use several standard blocks for specific action by the Cryo operation teams

Links : Used to connect to other CERN Tools



- AFT For Cryo losses in LHC
- Impact for “Lockout” or “Intervention Authorisation”

Logbook LogView

We use several standard blocks for specific action by the Cryo operation teams

Follow Ups to connect to existing Workorders

FOLLOW UPS			
LINK WORK ORDER		CREATE WORK O/R V2	
Number	Description	Status	Delete
18901733	Bump test - Vibration shape	TX	

to create New Workorders

Soon a new one to connect to our Instrumentation Logbook.

Create Work Order/Request

Description*

Equipment*

Location

Type*

Dep./Service Unit*

Status

Problem Code

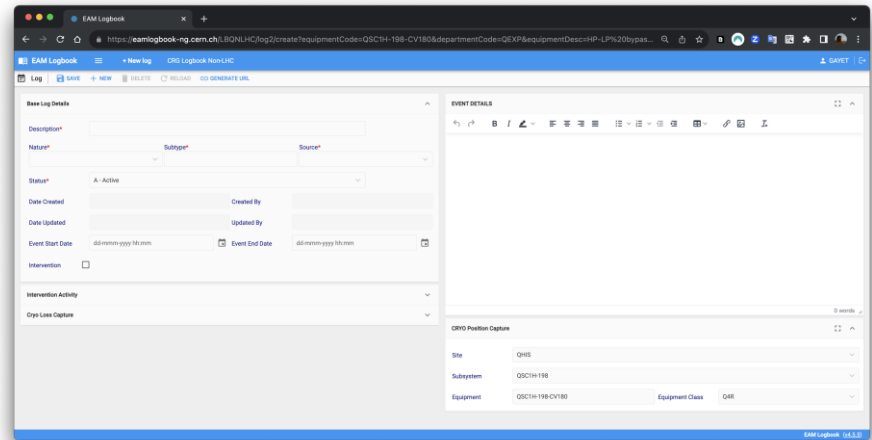
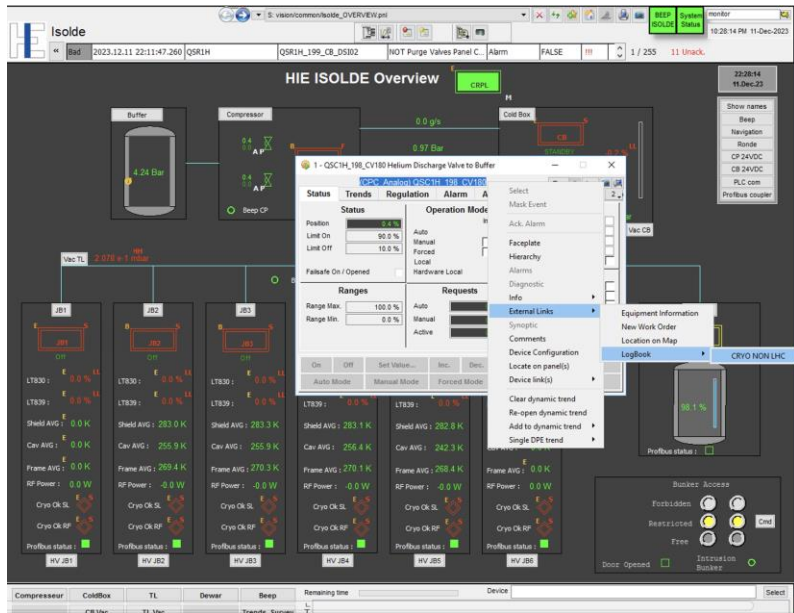
Standard WO

Sched. Start Date

Sched. End Date

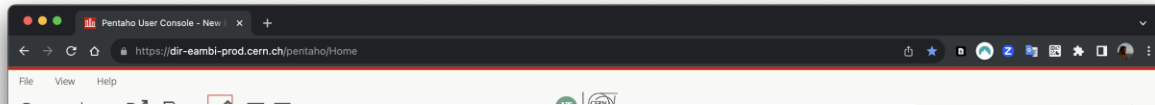
Logbook Integration with UNICOS

These logbooks are also accessible from the Supervision of the Cryogenic UNICOS Control system allowing the Operators to create a new log associated to a control device thanks to a generic module developed by BE-ISC.

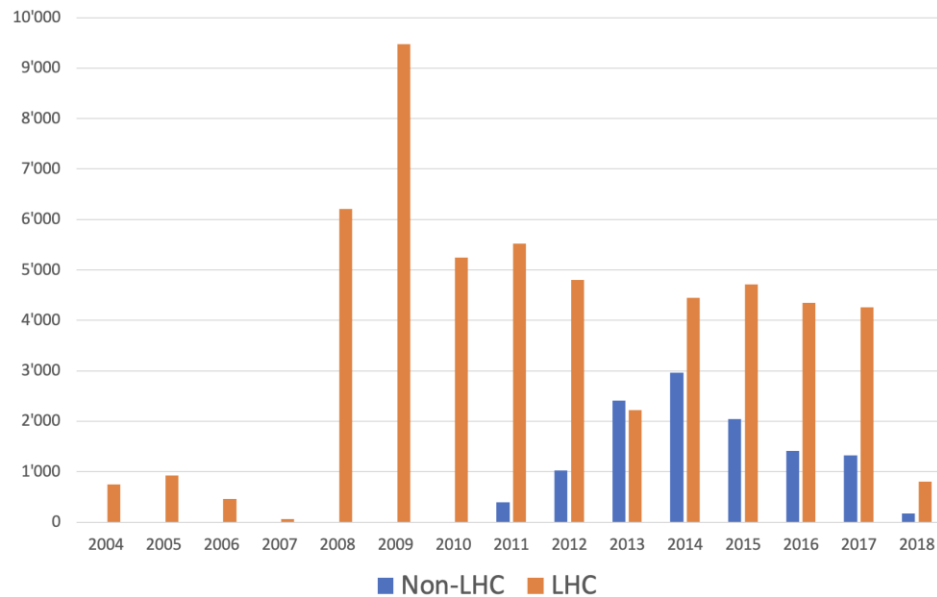


Logbook Statistics

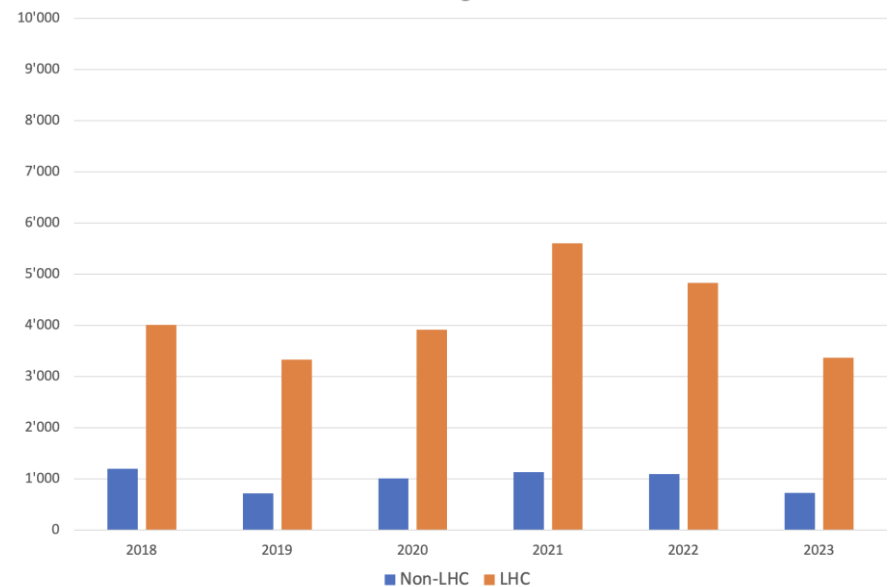
A new Pentaho cube has been developed by the EAM support to analyse the content of the logbooks. The results can be exported as Excel files, tables or graphs.



APEX logbook



EAM Logbook



Conclusion

The New Cryogenic Operation EAM based logbooks are ready to be deployed.

They will allow to :

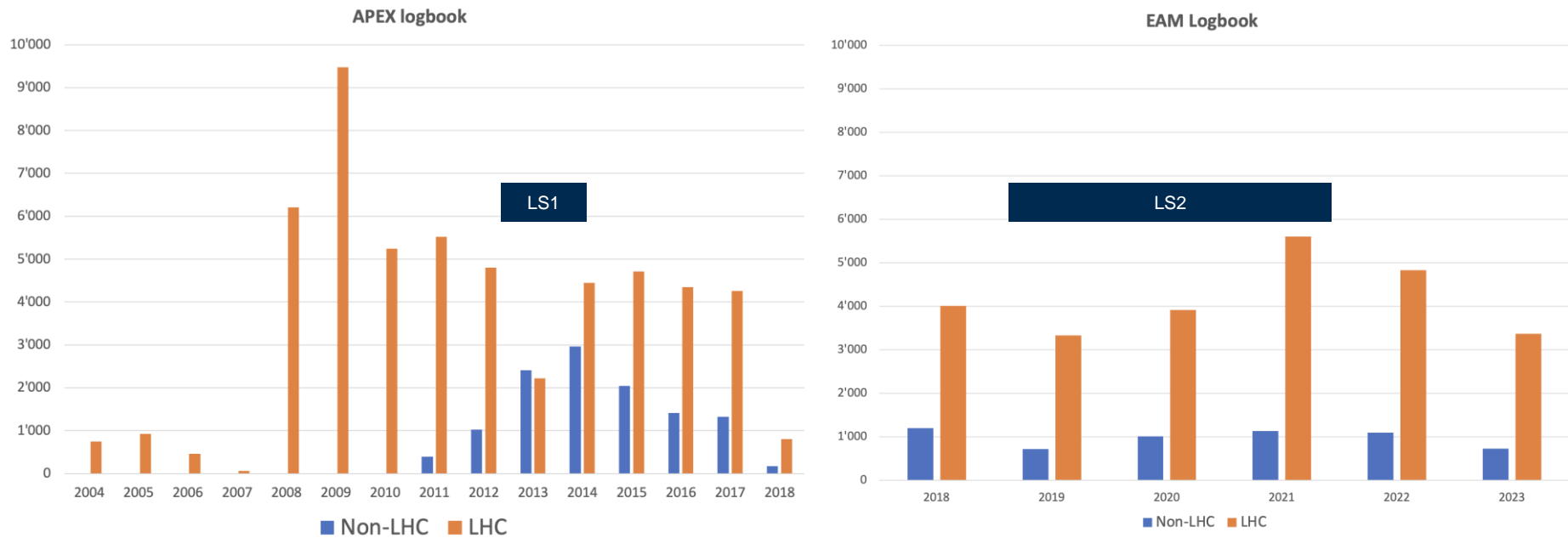
- Better describe and identify the operation events.
- Connect to EAM for follow up and access to more information about equipment.
- Connect to other CERN operation tools for a better integration.
- Create new events from the Control system with the right equipment name.
- Make statistics on their contents.

These logbooks will be improved with the feedback of users, our new configuration capability

Thanks to the EAM team for their support !



Number of Events Capture



LHC :

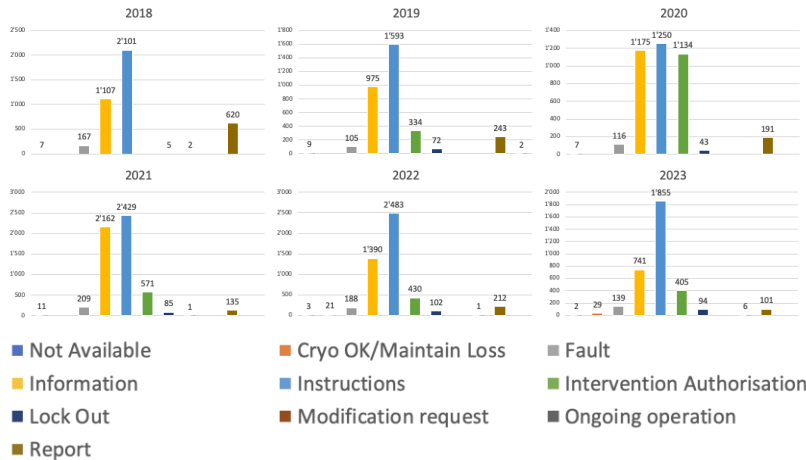
- Event Capture has **not been affected** by the current EAM logbook > **around 4 500 events/year**
- The Long Shutdown 1 (LS1) has affected the Event Capture (↓) but not the LS2

Non-LHC :

- **Small reduction** of the Event Capture by the current EAM logbook => **now around 1000/year**
- The Long Shutdown 1 (LS1) has affected the Event Capture (↑) but not the LS2

Event Nature Evolution for LHC

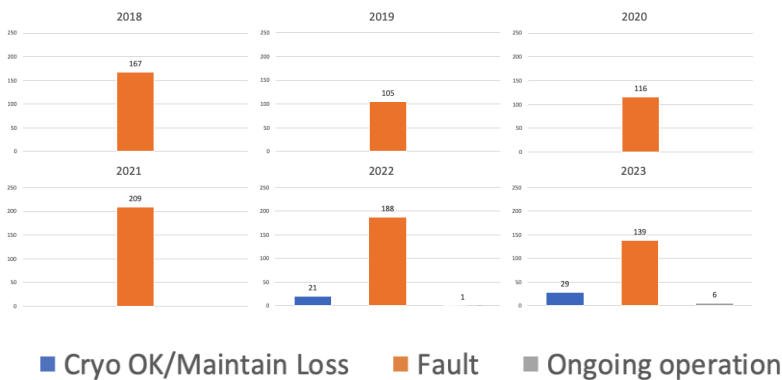
All Event Natures



Clear instructions have been given to the Operation team to fill the Logbook.

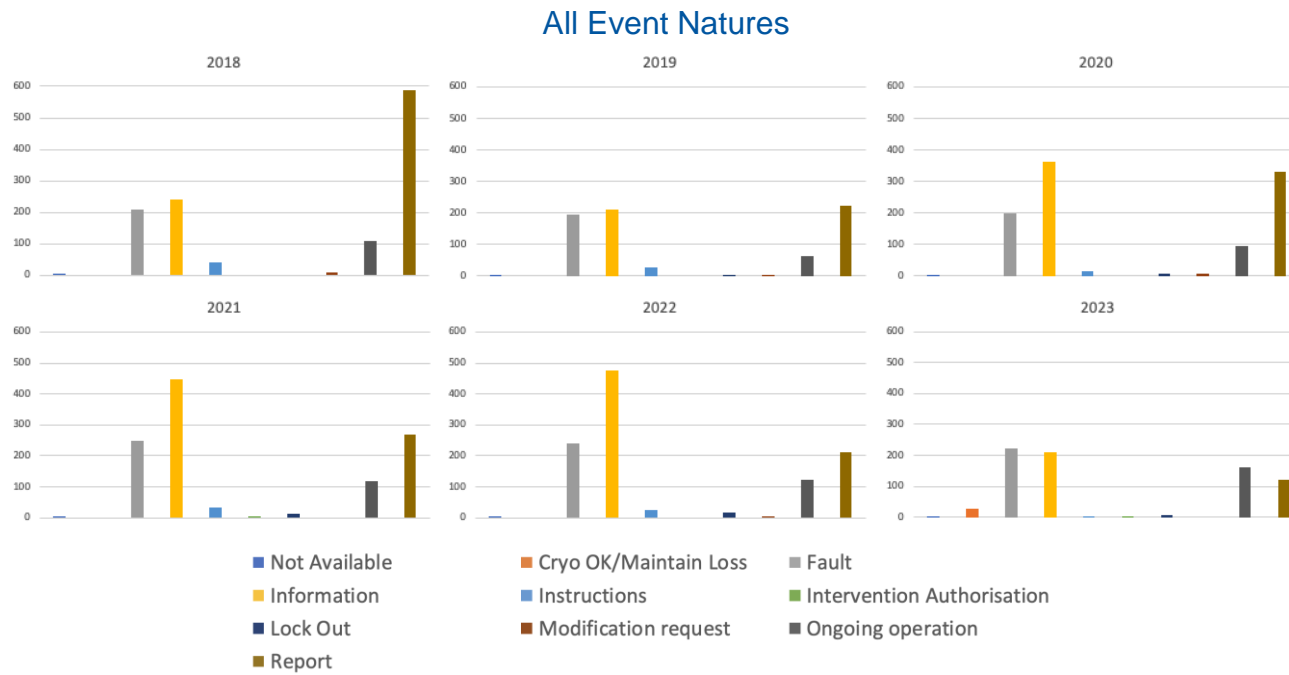
From 2018 to 2023 the **Communication Events** dominates. From 2019 the **Operation events** have increased to follow the support teams activities.

Fault & Operation Events



The **Faults & Operation Events** are a small percentage of the captures. The main part of the being the Failures.

Event Nature Evolution for Non-LHC

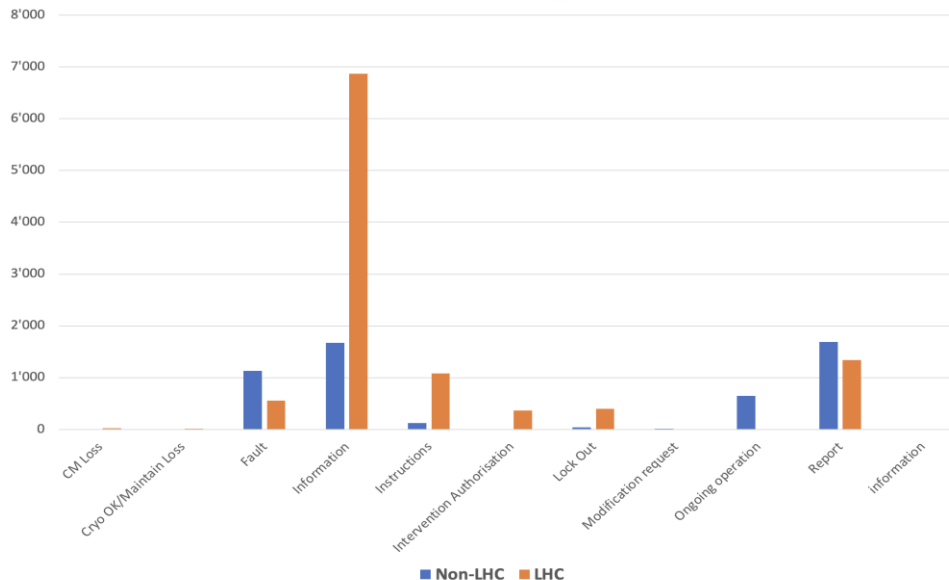


None homogeneous and clear recommendations have been transmitted to the operation teams, making **this Logbook more difficult to analyse.**

- **Information and instructions are not as used** as for the LHC Logbook.
- However, it can be noted that the **number of Fault is almost constant and proportionally higher** than in LHC.
- **Very few Intervention** or Lock-out have been registered but the teams were **using a paper version to manage the authorisation.**
- The Ongoing operations are used at a higher level than in LHC probably related to the purpose of some facilities (Test installations).

Lack of Subtype and Source capture 2018-2023

Events Without Subtypes



Subtypes : To refine the event “Nature” hence they are different for each “Nature”: e.g., identify the origin of a fault, precise the lockout or the modification request type, etc

Source : To indicate from where the event was detected & generated.

- Beep
- SCADA Alarm
- CCC call
- Ronde/Inspection
- Other sources

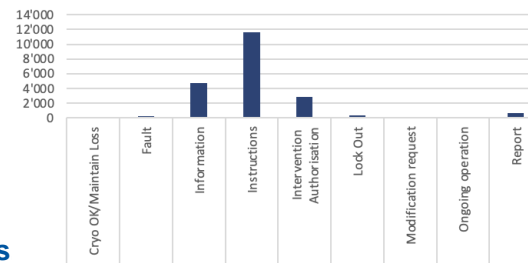
Many Events were **captured without** :

- the nature subtype
- the source that have originated them.

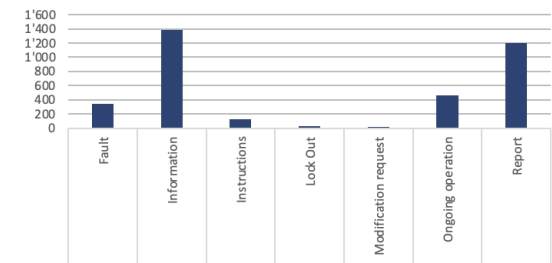
For these values:

- They were **no advice in the LHC recommendations**
- Their capture was **not mandatory**.

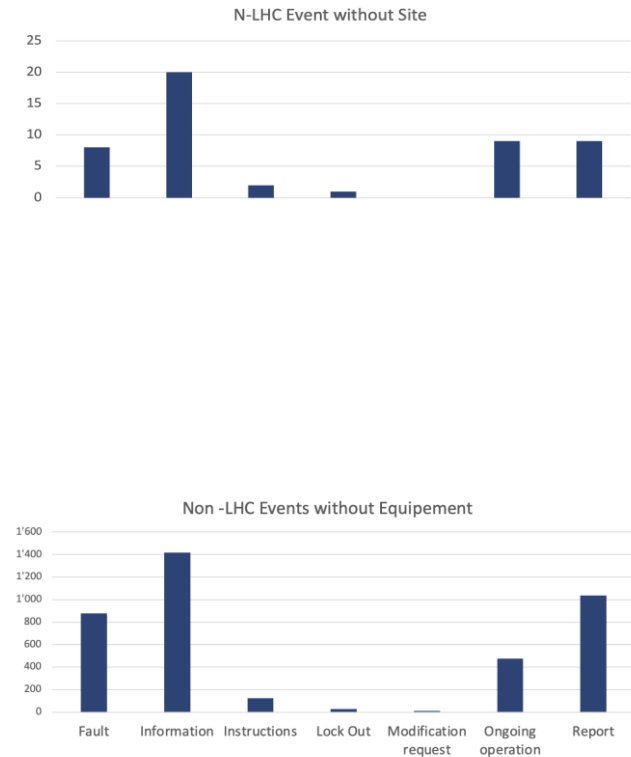
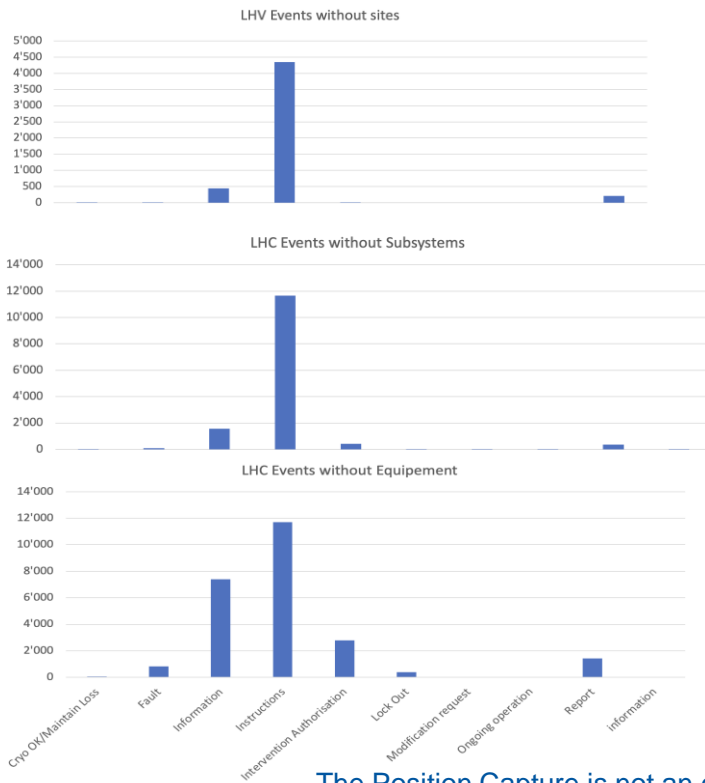
EVENT without source for LHC



Event without source for Non LHC



Lack of Position Capture 2018-2023



The Position Capture is not an easy issue as :

- **Equipment** captures are necessary to localise the origin of a **failure event**
- **Site or Subsystems** captures are sufficient for **communication purposes**

Recommendations to fill these fields **need to be provided** to the operation Teams

Feedback from the Operation Teams

The Operation Team value :

- ✓ The look & feel is nice, appreciated by all operators.
- ✓ The reaction time is generally appropriate.
- ✓ The predefined-filter of events (DataspY) fits their needs.
- ✓ The filtering of events is efficient.
- ✓ The linking between events and EDMS/EAM Work orders works correctly and is appreciated (several past problems have been corrected).

To be Improved (Bugs remaining today) :

- ✗ **Filtering is not always adequate** in some columns (e.g., impossible to filter between 2 dates)
- ✗ **Automatic search of equipment** sometimes does not working properly
- ✗ When equipment are selected, the site and subsystem **auto-filling may not always be done** correctly.
- ✗ **Sometimes, the reaction time** can be too slow (e.g., Changing a colour, dropping menu choices,...).
- ✗ A **link** between the logbook and the CERN system to **manage co-activities** (IMPACT) for the cryo lockout or interventions would be welcomed.

Improvements since 2018

- ✓ Clone an event
- ✓ Possibility to create and save predefined filters (DataspY) from the EAM application (2023)
- ✓ Reports (*Pentaho reporting*) : Statistics and save all information of an event in a pdf for printing or sharing
- ✓ Improved predefined lists for filtering use and statistics (nature field : Cryo loss)
- ✗ Open the logbook for read-access to non-EAM users and review write access.