

Update on Tools to Support On-Site Inspection Equipment Calibration, Maintenance and Protection

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INTRODUCTION

Tools are required to facilitate the calibration, maintenance and protection of deployable OSI equipment

METHODS/DATA

A software application (EIMO), physical devices and procedures have been introduced to meet the requirement that OSI equipment have been calibrated, maintained and protected

START

RESULTS

Software tools guide technical staff of the Commission through data entry and maintenance tasks. Similar interfaces support surrogate inspectors during deployment

CONCLUSION

OSI surrogate inspectors have been trained in these tools and procedure. These tools will be used during the OSI Direct Exercises in September 2023

P4.5-429

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Introduction: Tools to support on-site inspection equipment calibration, maintenance and protection

Tools to record and facilitate the calibration, maintenance and protection of deployable OSI equipment are necessary to meet the requirements of Para.38, Part II. Protocol to the Comprehensive Nuclear-Test-Ban Treaty...

When required for an on-site inspection, the Technical Secretariat shall duly certify that the equipment has been calibrated, maintained and protected...

These tools are required at HQ/TeST Centre for regular activities but also at every phase of an inspection and also at different locations during the course of an inspection. Tools therefore need to be portable, robust and intuitive.

HQ/TeST Centre



Use: regular activities incl. maintenance, storage, sealing etc

Launch Phase



Use: select equipment configurations for deployment, generate shipping paperwork etc

Point of Entry/Exit



Use: verify seals, equipment serial numbers etc

Base of Operations



Use: Interact with GIMO for field team resourcing, maintenance of equipment in the joint area etc

Field



Use: list FT equipment, record equipment left in the field etc



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P4.5-429

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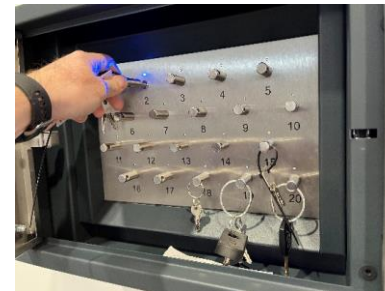
In 2021, a poster was presented at SnT that presented EIMO - the equipment and instrumentation management system for OSI. This poster provides an update to that poster and considers the broader issue of equipment maintenance, calibration and protection through both software applications and physical tools.



In 2021, an oral presentation at SnT presented the development of the first comprehensive draft list of equipment for use during OSIs, which was followed in 2022 with a Workshop on the List. Changes proposed in Workshop 25 to item references are gradually being updated in EIMO.



As well as enhancements to the EIMO application, this poster will present new physical tools to ensure protection of OSI deployable items, this includes the use of a key cabinet with 2 factor authentication.



Name	VOB Camera 1		Seal number(s)
T	Name	VOB Camera 1	
S	Name	VOB Camera 1	
S	Type	Backpack	Current New
H	System id	5730	
D	HC reference		
W	Dimensions		
C	Weight (kg)	Length (cm)	
W	Contains dangerous goods	Yes	Breadth (cm)
C			Height (cm)
D	Contents		
S	System id	HC reference	Name
S	5725	HCO01525	Camera DSLR EOS5D
S	5723	HCO12867	Lens 16-35mm EOS5D
S	5738	HCO01526	Lens 28-135mm EOS5D
S	5742	HCO01367	Flash DSLR
S	5748	HCO04935	Battery BP-511
S	5752	HCO11838	Battery BP-511
			Dangerous goods
			1230803712
			Yes
			Yes

The poster will also cover efforts to develop outputs that will accelerate the generation of shipping paperwork for an OSI and container contents lists.



INTRODUCTION

OBJECTIVES

METHODS/DATA

RESULTS

CONCLUSION



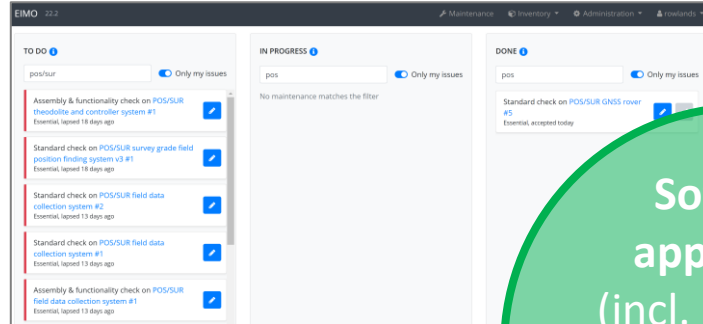
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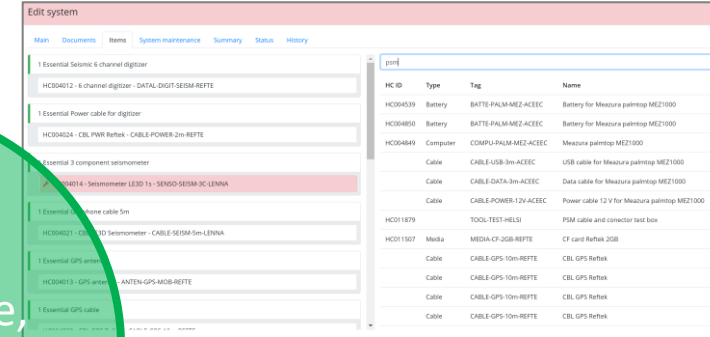
Methods: Developing a system to record and disseminate information related to equipment calibration, maintenance and protection

An effective system to record and disseminate information related to equipment calibration, maintenance and protection must incorporate **three** elements:

1. A system for data entry and data display (i.e., software application – EIMO),
2. Physical devices to enhance protection, sealing etc.,
3. Human resources to perform data entry, maintain and calibrate equipment. (Includes surrogate inspectors).



EIMO dashboard showing



EIMO interface for allocating items to a system

Software application
(incl. database, interfaces)

Hardware
(seals, key cabinet, RFID tags and gates, printers)

Human resources
(Data entry, maintenance, QC etc)



Seals added to containers are recorded in EIMO



EIMO practical as part of Directed Exercise Training, 2023

INTRODUCTION

OBJECTIVES

METHODS/DATA

RESULTS

CONCLUSION

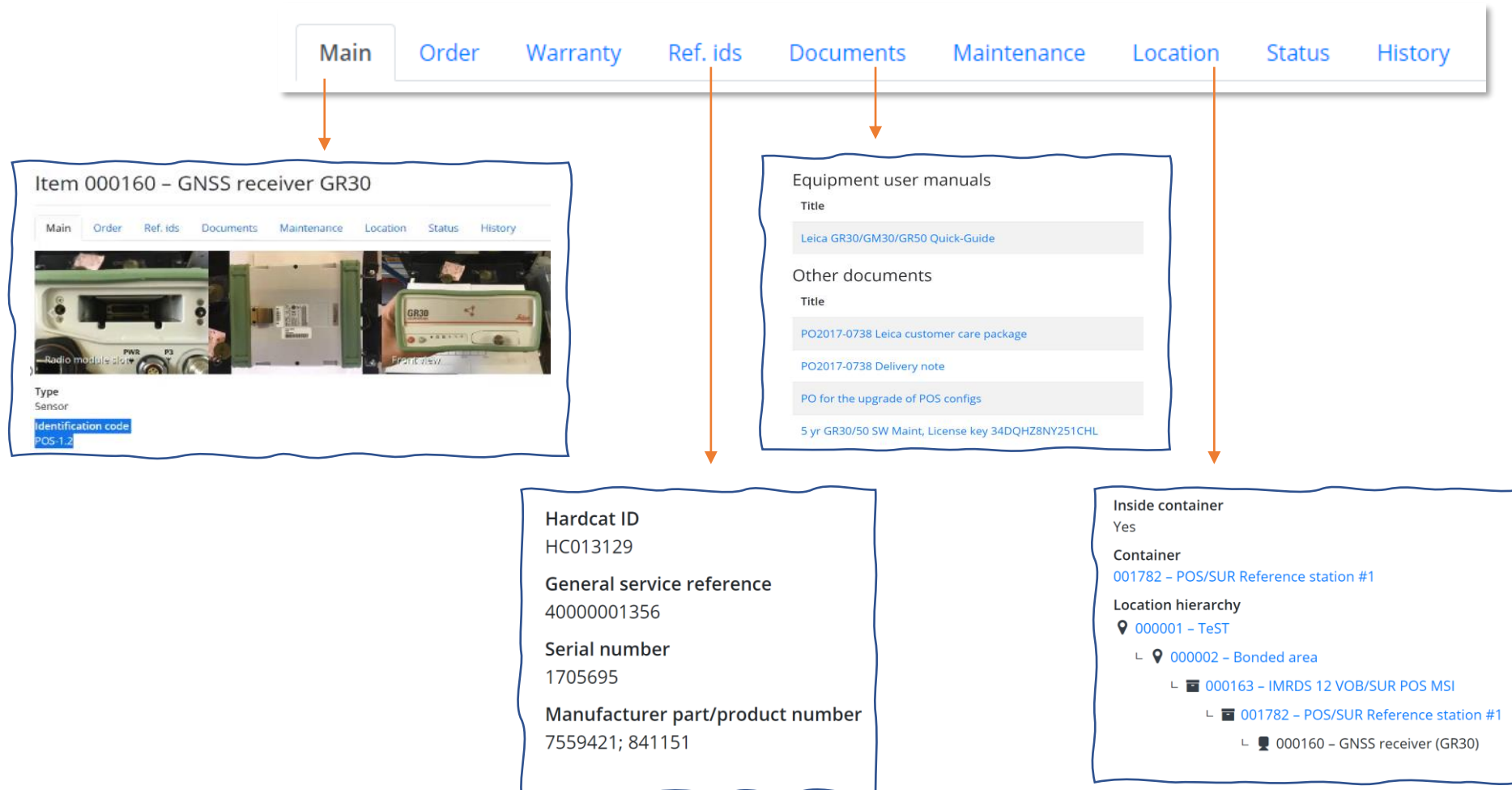


P4.5-429

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Results: Viewing information related to items

The EIMO interface is designed to be as intuitive as possible while providing all the desired functionality. The screenshots below provide an example of the information for one item.



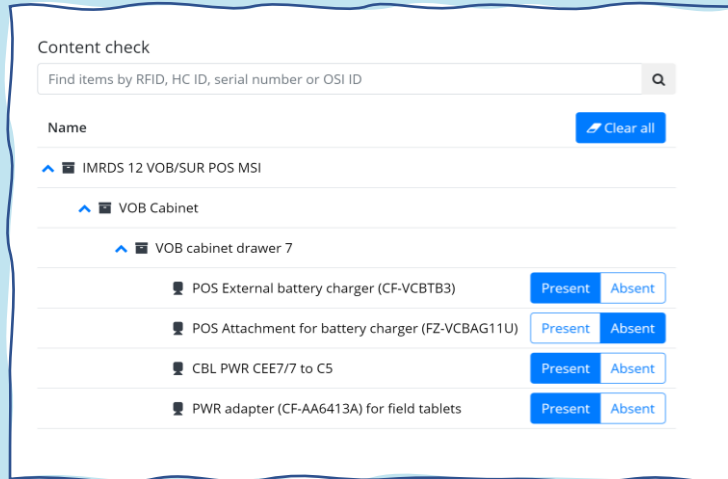
- INTRODUCTION
- OBJECTIVES
- METHODS/DATA
- RESULTS
- CONCLUSION

P4.5-429

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Results: Tools to support maintenance & system completeness

Each item/system in EIMO has a maintenance schedule. Technical officers are guided through a number of checks that they need to perform based on the type of maintenance



At the end of maintenance there is a record of whether it is fit-for-use. If not, the system is not available for deployment

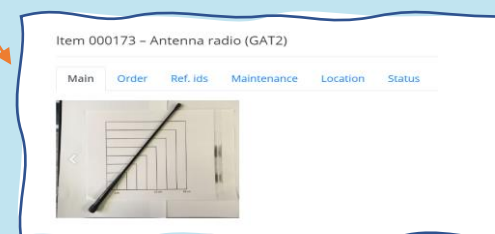


Each 'essential' item of a system is equally weighted, which means that each item needs to be registered in EIMO and allocated to a system.

Item Name	Item ID	HC ID	Type	Model
Adapter for radio antenna (GAD34)	000336			ADAPT-RADIO-LEICA
Antenna radio (GAT2)	000173		Antenna	ANTEN-RADIO-POSIT-LEICA
Carrier for POS tribrach (GRT146)	001770	HC003506		CARRI-THREA-LECIA
CBL Coax POS receiver to radio 15m	001820		Cable	CABLE-COAX-15m-LEICA
CBL coax TNC 1.5m (GEV142)	000339		Cable	CABLE-COAX-1m-LEICA
CBL coax TNC 1.5m (GEV142)	043371		Cable	CABLE-COAX-1m-LEICA
CBL Network POS GNSS (GEV168)	001790		Cable	CABLE-NETW-2m-LEICA
CBL network.GNSS to LAN (GEV168)	004411		Cable	CABLE-NETW-5m-LEICA
Charging adapter laptop Z book 14	045107			ADAPT-CUSTO-HP
GNSS antenna (AR10)	001796	HC013128	Antenna	ANTEN-GNSS-FIXED-LEICA
GNSS receiver (GR30)	000160	HC013129	Sensor	SENSO-RECEI-GNSS-LEICA
GNSS receiver mains PWR adapter & CBL	001766			POWER-MAINS-LEICA
Height hook for POS	001787	HC003494		MEASU-HOOK-LEICA



Each item in the system has its own entry, complete with photographs and detailed information – irrespective of monetary value



- INTRODUCTION
- OBJECTIVES
- METHODS/DATA
- RESULTS
- CONCLUSION

P4.5-429

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Conclusion: State of tools to support equipment calibration, maintenance and protection prior to OSI Directed Exercises 2023



Tools to Support On-Site Inspection equipment calibration, maintenance and protection involve a primary software application, EIMO, and a number of complimentary physical devices and accompanying procedures.

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DI	System id	5730		
WC	HC reference			
CD	Dimensions			
	Weight (kg)		Length (cm)	
	Contains dangerous goods	Yes	Breadth (cm)	
SI	Contents			
	System id	HC reference	Name	Serial number
	5725	HC001525	Camera DSLR EOS5D	1230803712
	5733	HC012887	Lens 16-35mm EOS5D	
	5738	HC001526	Lens 28-135mm EOS5D	
	5742	HC001357	Flash DSLR	
5748	HC004935	Battery BP-511	Yes	
5752	HC011638	Battery BP-511	Yes	

EIMO itself is designed to record information related to inspection and support equipment. EIMO functionality has been expanded and now delivers outputs to accelerate the generation of shipping paperwork. EIMO is fully compatible with RFID tags and readers and functionalities have been developed to instantly track movement of items through RFID gate.

OSI surrogate inspectors have been trained on how to use EIMO in the context of an inspection. The EIMO application, together with associated physical security measures will be exercised during the OSI Direct Exercises scheduled for September 2023.



- INTRODUCTION
- OBJECTIVES
- METHODS/DATA
- RESULTS
- CONCLUSION



P4.5-429

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