

*NUCMAT Demonstration Meeting
Yerevan-Riyadh-Helsinki, 25 October 2017*

NUCMAT

NUCLEAR MATERIALS DATABASE FOR SAFEGUARDS

Overview of v3.2

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Functional Layers

▶ Safeguards

- Accounting for and reporting of nuclear materials in full compliance with the IAEA requirements

▶ Security

- Interface between nuclear material accounting and protection of nuclear material

▶ Information Security

- Sensitive data protection in multiuser environment against external attacks and inside threat

General Capabilities and Features

- ▶ Interface could be in any language supported by Windows operation system
- ▶ Can be easily user tailored to meet user needs
- ▶ Unlimited data entry terminals (web based technology allows remotely connect and work with NUCMAT in parallel with other users)
- ▶ Variable input format

Technical basis of NUCMAT

- ▶ Web based application (only freely available internet browsers like Google Chrome, Firefox, Internet Explorer are needed to run the program)
- ▶ Based on Microsoft SQL Server 2014 Express
- ▶ Development tool is Microsoft Visual Studio 2013
- ▶ There is no need of license fees and additional program tools – only MS Office
- ▶ Installation on Windows 7, 8, 10, Windows Server 2008 and 2012
- ▶ Installation on 32 and 64 bit computers
- ▶ Installation is simple – one click installation



I. SAFEGUARDS

Basis of NUCMAT

- ▶ NUCMAT was developed with taking into account requirement/rules of following documents:
 - The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-proliferation of Nuclear Weapons, INFCIRC/153
 - Code 10 of General Part of Subsidiary Arrangements to the Agreement between Country and IAEA for the Application of Safeguards in Connection with the Treaty of the Non-proliferation of Nuclear Weapons
 - Format of Accounting Reports Submitted on Magnetic Medium or by e-mail (Fixed Code 10), IAEA
 - Nuclear Material Accounting Handbook, Services Series 15, IAEA, Vienna, May, 2008

Main Capabilities and Features

- ▶ Accounting of NM at all levels
 - State
 - LOF

Main Capabilities and Features

- ▶ Implementation of main inventory change processes of NM
- ▶ Calculation and update of inventory of NM of all types and categories
 - Source Material Accounting
 - Special fissionable materials accounting
- ▶ Calculation/closure of material balance of NM of all types and categories

Main Capabilities and Features

- ▶ Generation of all reports required by IAEA (Code 10 Format)

- ICR
- MBR
- PIL

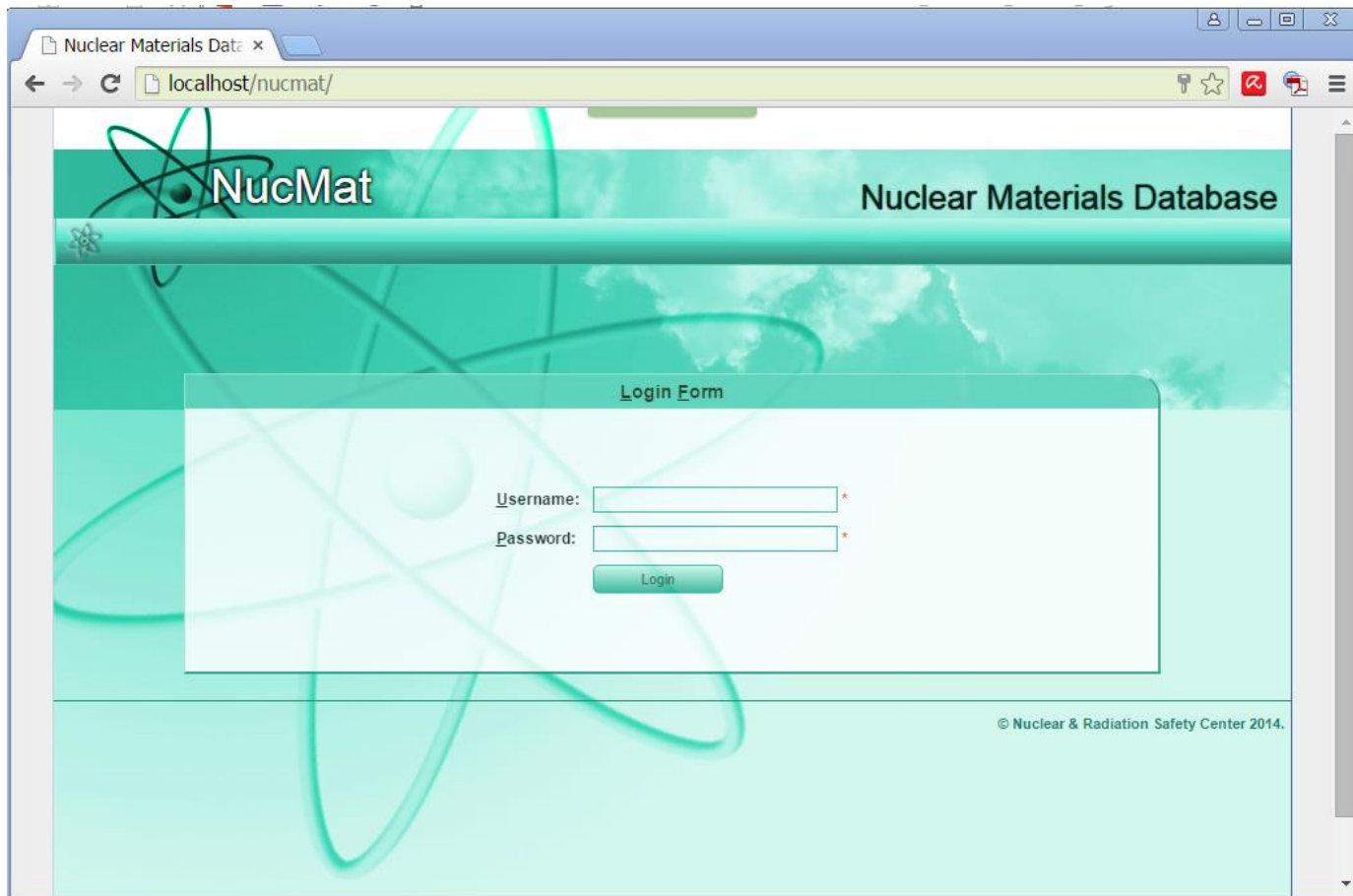
MATERIAL BALANCE REPORT (MBR) FORM R.03									
COUNTRY: NN		REPORTING PERIOD: FROM: 0000FF		TO: 031000		REPORT NO: 53		SIGNATURE	
FACILITY: NNB		PAGE NO: 1		OF: 1		PAGES			
MATERIAL BALANCE AREA: NN-B									
ENTRY NO.	CONTINUATION	ENTRY NAME	ELEMENT	ACCOUNTANCY DATA		ISOTOPE CODE	CONCISE NOTE	REPORT NO.	ENTRY NO.
				WEIGHT OF ELEMENT (UNIT)	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)				
1	PB		E	10000	G	7000			7
2	RD		E	500	G	400			7
3	LN		E	300	G	200			7
4	SF		E	100	G	90			7
5	SD		E	200	G	150			7
6	BA		E	9900	G	6960			7
7	PE		E	9900	G	6960			7
8	PB		P	5000	G				7
9	NP		P	500	G				7
10	SF		P	1000	G				7
11	SD		P	2000	G				7
12	BA		P	2500	G				7
13	PE		P	2500	G				7

MATERIAL BALANCE REPORT (MBR) FORM R.03 (QCVS)									
COUNTRY: AM		REPORTING PERIOD: FROM: 141130		TO: 150201		REPORT NO: 3		SIGNATURE	
FACILITY: AM-A		PAGE NO: 32		OF: 32		PAGES			
MATERIAL BALANCE AREA: T									
ENTRY NO.	CONTINUATION	ENTRY NAME	ELEMENT	ACCOUNTANCY DATA		ISOTOPE CODE	CONCISE NOTE	REPORT NO.	ENTRY NO.
				WEIGHT OF ELEMENT (UNIT)	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)				
1	PB		P	0 g					7
2	RD		P	123.6 g					7
3	BE		P	123.6 g					7
4	DI		P	-10 g					7
5	BA		P	113.6 g					7
6	PE		P	113.6 g					7
7	PB		T	0 kg					7
8	GA		T	189 kg					7
9	SD		T	189 kg					7
10	BE		T	0 kg					7
11	BA		T	0 kg					7
12	PE		T	0 kg					7
13	PB		D	0 kg					7
14	EQ		D	12.5 kg					7
15	RD		D	123 kg					7
16	RF		D	12.5 kg					7
17	BE		D	123 kg					7
18	BA		D	123 kg					7
19	PE		D	123 kg					7
20	PB		N	0 kg					7
21	BE		N	0 kg					7
22	BA		N	0 kg					7
23	PE		N	0 kg					7
24	PB		E	0 g		0 G			7
25	BE		E	0 g		0 G			7
26	BA		E	0 g		0 G			7
27	PE		E	0 g		0 G			7
28	PB		U	0 kg					7
29	BE		U	0 kg					7
30	BA		U	0 kg					7
31	PE		U	0 kg					7

- ▶ Automatic Management of General Ledger
- ▶ Generation of additional reports like, LII for IAEA and local authorities inspections

Access to NUCMAT

- ▶ Localhost/nucmat or server_address/nucmat



Browsing of Nuclear Materials

▶ Home menu:

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Home

Location

MBA:* KMP:* Building:* Room: Cabinet: Box:

LOF AANL
Department of
Physics of YSU
Gyumri Oncological
Dispensary

Batch number	Manufacturer	U	U235	Pu	Th	Record date	Status
> 629	629	0	0	0	0	29 Oct, 2010	Active
> 5P9	630	0	0	0	0	29 Oct, 2010	Active
> 5P9	99026335	0	0	0	0	29 Oct, 2010	Active
> IBN-7	443	0	0	11	0	29 Oct, 2010	Active
> IBN-7	348	0	0	11	0	29 Oct, 2010	Active
> IBN-7	347	0	0	11	0	29 Oct, 2010	Active
> IBN-7	359	0	0	11	0	29 Oct, 2010	Active
> IBN-24	12	0	0	44	0	29 Oct, 2010	Active
> IBN-8-7	31	0	0	0	0	29 Oct, 2010	Active
> 4P9	7390	0	0	0	0	29 Oct, 2010	Active

Page size: 10 58 items in 6 pages

Browsing of Nuclear Materials

▶ Nuclear Materials menu:

Logout

NucMat

Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Nuclear Materials / All NMs

+ Add new record Refresh

Batch number	Manufacturer	U	U235	Pu	Th	Insertion date	MBA	KMP	Status
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	All	All	<input type="text"/>
1257	10458	0	0	0	0	26 Oct, 2010	LOF	National Institute of Metrology	Active
10481	10481	0	0	0	0	26 Oct, 2010	LOF	National Institute of Metrology	Active
10482	10482	0	0	0	0	26 Oct, 2010	LOF	National Institute of Metrology	Active
1259	10483	0	0	0	0	26 Oct, 2010	LOF	National Institute of Metrology	Active
1258	10484	0	0	0	0	26 Oct, 2010	LOF	National Institute of Metrology	Active
1256	10486	0	0	0	0	26 Oct, 2010	LOF	National Institute of Metrology	Active
1255	10487	0	0	0	0	26 Oct, 2010	LOF	National Institute of Metrology	Active
1254	10488	0	0	0	0	26 Oct, 2010	LOF	National Institute of Metrology	Active
1253	10489	0	0	0	0	26 Oct, 2010	LOF	National Institute of Metrology	Active

Browsing of Nuclear Materials

General Ledger (D, N, E, U):

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration Activity

AAA [Depleted Uranium](#) / [Natural Uranium](#) / [Enriched Uranium](#) / [Uranium Unified](#) / [Plutonium](#) / [Thorium](#)

Change date	Batch number	Change code	Element code	Items count	Increase				Decrease				Inventory	Items total count	
					Receipts		Other		Shipments		Other				
					U	U235	U	U235	U	U235	U	U235			
2015-08-30		BB		0	0	0	0	0	0	0	0	0	0	0	0
2015-08-31	TT03	RD	N	1	85.6	0	0	0	0	0	0	0	85.6	0	1
2015-09-01	TT03	DI	N	1	0	0	52	0	0	0	0	0	137.6	0	1
2015-09-02		BE		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-03		BB		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-04		BE		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-05		BB		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-06	HH03	RF	N	2	951	0	0	0	0	0	0	0	1036.6	0	3
2015-09-07	HH03	EQ	N	2	0	0	0	0	0	0	951	0	85.6	0	1
2015-09-08	HH03	DQ	N	2	0	0	951	0	0	0	0	0	1036.6	0	3
2015-09-10	HH03	TW	N	2	0	0	0	0	0	0	951	0	85.6	0	1
2015-09-11	HH03	FW	N	2	0	0	951	0	0	0	0	0	1036.6	0	3
2015-09-14	HH03	SD	N	2	0	0	0	0	951	0	0	0	85.6	0	1
2015-09-15		BE		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-16		BB		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-17	LL03	RF	N	2	420.3	0	0	0	0	0	0	0	505.9	0	3
2015-09-19		BE		0	0	0	0	0	0	0	0	0	505.9	0	3

Browsing of Nuclear Materials

General Ledger (D, N, E, U):

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration Activity

AAA [Depleted Uranium](#) / [Natural Uranium](#) / [Enriched Uranium](#) / [Uranium Unified](#) / [Plutonium](#) / [Thorium](#)

Change date	Batch number	Change code	Element code	Items count	Increase		Other		Decrease		Other		Inventory		Items total count
					Receipts		Other		Shipments		Other				
					U	U235	U	U235	U	U235	U	U235			
2015-08-30		BB		0	0	0	0	0	0	0	0	0	0	0	0
2015-08-31	TT03	RD	N	1	85.6	0	0	0	0	0	0	0	85.6	0	1
2015-09-01	TT03	DI	N	1	0	0	52	0	0	0	0	0	137.6	0	1
2015-09-02		BE		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-03		BB		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-04		BE		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-05		BB		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-06	HH03	RF	N	2	951	0	0	0	0	0	0	0	1036.6	0	3
2015-09-07	HH03	EQ	N	2	0	0	0	0	0	0	951	0	85.6	0	1
2015-09-08	HH03	DQ	N	2	0	0	951	0	0	0	0	0	1036.6	0	3
2015-09-10	HH03	TW	N	2	0	0	0	0	0	0	951	0	85.6	0	1
2015-09-11	HH03	FW	N	2	0	0	951	0	0	0	0	0	1036.6	0	3
2015-09-14	HH03	SD	N	2	0	0	0	0	951	0	0	0	85.6	0	1
2015-09-15		BE		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-16		BB		0	0	0	0	0	0	0	0	0	85.6	0	1
2015-09-17	LL03	RF	N	2	420.3	0	0	0	0	0	0	0	505.9	0	3
2015-09-19		BE		0	0	0	0	0	0	0	0	0	505.9	0	3

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Home

MBAs
KMPs
Layouts

Location

MBA* KMP* Rooms Cabinet Box

AFGANSTAN-LOF
ALZHR
AMZ
ESTON
GEO

MIPHI
Workshop

Batch number Manufacturer U U235 Pu Th Record date

Batch number	Manufacturer	U	U235	Pu	Th	Record date
ES01	ES01	1256.0	112.0	0.0	0.0	12 Nov, 2014
E004	ES004	1000.0	112.0	0.0	0.0	12 Nov, 2014

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NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Locations / KMPs

+ Add new record Refresh

Name	Code	Type	MBA	Installation	Establishment date
AFG01-FL	AFF-1	Flow	AFGANSTAN-LOF	<input type="checkbox"/>	01 Aug, 2014
AFG-Inv-01	AFG02	Inventory	AFGANSTAN-LOF	<input checked="" type="checkbox"/>	01 Aug, 2014
Factory	F	Inventory	UZBEK	<input type="checkbox"/>	26 Oct, 2014
Factory	A	Inventory	LATV	<input checked="" type="checkbox"/>	26 Oct, 2014
Flow KMP 2	K2	Flow	Test mba	<input type="checkbox"/>	05 Nov, 2014
Hospital	H	Inventory	ALZHR	<input type="checkbox"/>	26 Oct, 2014
Inc.	1	Flow	GEO	<input type="checkbox"/>	05 Nov, 2014
Incom	1	Flow	MOLD	<input checked="" type="checkbox"/>	05 Nov, 2014
Incoming	1	Flow	AMZ	<input checked="" type="checkbox"/>	05 Nov, 2014
Incoming	1	Flow	LATV	<input checked="" type="checkbox"/>	26 Oct, 2014

Page size: 10 35 items in 4 pages

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NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Locations / KMPs

+ Add new record Refresh

Name	Code	Type	MBA	Installation	Establishment date
Name*		MBA*	AFGANSTAN-LOF	Installation:	<input type="checkbox"/>
Code*		Establishment date*			
Type*	Flow	Description:			

Save Cancel

U	Valod	Workshop	VERPHY	YSU
U	D	W	ZZZ	A
Inventory	Inventory	Inventory	Inventory	Inventory
UZBEK	AMZ	ESTON	AMZ	AMZ
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
26 Oct, 2014	06 Nov, 2014	26 Oct, 2014	03 Nov, 2014	06 Nov, 2014

Page size: 10 35 items in 4 pages

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Development/
update of
accounting
infrastructure:
Flow KMP

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Locations / Layouts

+ Add new record Refresh

Name	Type	KMP		
<input type="text"/>	All	All		
11-05	Box	Factory		
12	Room	Factory		
12	Building	Storage		
122	Building	Storage		
15	Room	MIPHI		
18	Room	University		
34	Room	MiPHI		
34-98	Box	Factory		
45	Room	University		
45	Room	YSU		

Page size: 10 57 items in 6 pages

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Locations / Layouts

+ Add new record Refresh

Name: Type: All KMP: All

Add new record

Name:

KMP: AFG-Inw-01 (AFGANSTAN-LC)

Type: Building

Save Cancel

Test Cab11	Cabinet	Receipt LOF		
track	Building	Shop		
ttt	Building	Velod		
TTT	Building	Factory		
Wagon	Building	MIPHI		
Yellow	Cabinet	YSU		
Yellow	Cabinet	Politekh		

Page size: 10 57 items in 6 pages

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NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Locations / Layouts

+ Add new record Refresh

Name: Type: All KMP: All

Add new record

Name:

KMP: University (AAUST_LOF)

Type: Room

Building: Lab_Nuc

Save Cancel

Yellow	Cabinet	Politekh		
Yellow	Cabinet	YSU		

Page size: 10 62 items in 7 pages

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Development/
update of
accounting
infrastructure:
Layouts

Logout

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Home

-Location-

MBA* KMP.* Building.* Enrichment* Cabinet* Box*

AALOFS
AAUST_LOF
AFGANSTAN-LOF
ALZHIR

Country
Facility
Enrichment
Fuel type

Batch number Manufacturer U U235 Pu Th Record date

No records to display.

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Logout

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Auxiliary / Facility

+ Add new record Refresh

Title Code

Add new record

Title* Code*

Save Cancel

ANPP	AM-A		
Fac2234	F2		
YERPHY	AMZ-Y		

Page size: 10 3 items in 1 pages

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Logout

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

Auxiliary / Facility

+ Add new record Refresh

Title Code

Add new record

Title* Code*

Save Cancel

ANPP	AM-A		
Fac2234	F2		
YERPHY	AMZ-Y		

Page size: 10 3 items in 1 pages

Nuclear & Radiation Safety Center 2014. © Nucmat v.3.0 - release 11

Development/
update of
accounting
infrastructure:
Auxiliary
information

Accounting for Nuclear Materials

The screenshot displays the NucMat Nuclear Materials Database interface. At the top right, there is a "Logout" link. The main header features the "NucMat" logo and the title "Nuclear Materials Database". Below this is a navigation menu with tabs for "Home", "Nuclear Materials", "Locations", "Operations", "Auxiliary", "Reports", and "Administration". The "Operations" tab is currently selected, and a dropdown menu is open, listing various actions: "Shipment", "Receipt", "Transfer", "Accidental Gain", "Accidental Loss", "Exemption", "De-exemption", "Transfer to waste", "Retransfer from waste", "Initial Inventory", "Shipper-Receiver Difference", and "Difference".

The main content area is titled "Home" and contains several input fields for data entry:

- Location:** A dropdown menu with "MBA*" selected. Other options include AABAN, AABUL, AALAT, AALOFS, and AALUOS.
- KMP*:** An empty text input field.
- Building:** An empty text input field.
- Room:** An empty text input field.
- Cabinet:** An empty text input field.
- Box:** An empty text input field.

Below these fields are search and filter options:

- Batch number:** An empty text input field with a search icon.
- Manufacturer:** An empty text input field with a search icon.
- Pu:** An empty text input field with a search icon.
- Th:** An empty text input field with a search icon.
- Record date:** A date selection field with a calendar icon.

A message at the bottom of the form area states: "No records to display."

At the bottom of the page, the footer text reads: "Nuclear & Radiation Safety Center 2014. © Nucmat v.3.0 - release 11"

Generation of Reports: PIL

The screenshot shows the NucMat Nuclear Materials Database interface. At the top, there is a navigation menu with links for Home, Nuclear Materials, Locations, Operations, Auxiliary, Reports, and Administration. Below the menu is a dialog box titled "PIL Reporting Options". The dialog box contains the following fields and controls:

- MBA: A dropdown menu labeled "Select MBA".
- PIT date: A date input field with a calendar icon.
- Report number: An input field with a "Max report number: 16" label and an "Is final" checkbox.
- Excel format: A checkbox.
- Buttons: "OK" and "Cancel".

PHYSICAL INVENTORY LISTING (PIL) FORM R.02/c															
COUNTRY Armenia							DATE 150717								
FACILITY Location outside Facility							REPORT NO. 16								
MATERIAL BALANCE AREA AM-Z							PAGE NO. 1 OF 9 PAGES				SIGNATURE				
ENTRY NO	CONTINUATION	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ACCOUNTANCY DATA							CORRECTION TO		
						ELEMENT	WEIGHT OF ELEMENT	UNIT, kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)	ISOTOPE CODE	MESUR. BASIS	CONCISE NOTE	REPORT NO.	ENTRY NO.	
1	3	20	21	29	33	37	38	46	48	56	72	73	74	78	80
1		KMP-A	4P9	1	QSOA	P	0	g			M				5
2		KMP-A	5P9	1	QSOA	P	0	g			M				5
3		KMP-A	629	1	QSOA	P	0	g			M				5
4		KMP-A	CINP	1	VOAB	D	0.037	kg			M				5
5		KMP-A	IBN-24	1	QSOA	P	44	g			M				5
6		KMP-A	IBN-7	1	QSOA	P	11	g			M				5

Generation of Reports: ICR

NucMat Nuclear Ma

Home Nuclear Materials Locations Operations Auxiliary Reports Administration

ICR Reporting Options

MBA: Storage

Date: 6/28/2014 to 7/17/2015

Report number: Max report number: 4
12 Is final

Excel format:

OK Cancel

INVENTORY CHANGE REPORT (ICR) FORM R.01.1/c																			
COUNTRY Armenia										REPORTING PERIOD, FROM 140628 TO 150709									
FACILITY Location outside Facility										REPORT NO. 5									
MATERIAL BALANCE AREA S										PAGE NO. 1 OF 5 PAGES									
ENTRY NO	CONTINUATION	DATE OF INVENTORY CHANGE	MBA/COUNTRY		TYPE OF INVENTORY CHANGE	KMP CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ACCOUNTANCY DATA							CORRECTION TO		
			FROM	TO						ELEMENT	WEIGHT OF ELEMENT	UNIT, kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)	ISOTOPE CODE	MESUR. BASIS	CONCISE NOTE	REPORT NO.	ENTRY NO.	
1	3	4	10	14	18	20	21	29	33	37	38	46	48	56	72	73	74	78	80
1		150330	RUS	S	RF	1	75042	1	BQ1F	E	120685.74	g	4342.31	G	N				2
2		150330	RUS	S	RF	1	75044	1	BQ1F	E	120644.32	g	4344.3	G	N				2
3		150330	RUS	S	RF	1	75045	1	BQ1F	E	120650.48	g	4344.52	G	N				2
4		150330	RUS	S	RF	1	75050	1	BQ1F	E	120721.79	g	4347.19	G	N				2
5		150330	RUS	S	RF	1	75046	1	BQ1F	E	120670.58	g	4343.21	G	N				2
6		150330	RUS	S	RF	1	75048	1	BQ1F	E	120793.06	g	4349.61	G	N				2
7		150330	RUS	S	RF	1	75049	1	BQ1F	E	120610.76	g	4338.06	G	N				2

Generation of Reports: MBR

The screenshot shows the NucMat web application interface. The top navigation bar includes links for Home, Nuclear Materials, Locations, Operations, Auxiliary, Reports, and Administration. A dialog box titled "MBR Reporting Options" is open, containing the following fields and controls:

- MBA: Storage (dropdown menu)
- Date: 5/2/2015 (calendar icon) to 5/10/2015 (calendar icon)
- Report number: Max report number: 3, with a text input field containing 4 and a checked "Is final" checkbox.
- Excel format: checked checkbox.
- Buttons: OK and Cancel.

MATERIAL BALANCE REPORT (MBR) FORM R.03												
COUNTRY AAUSTRIA				REPORTING PERIOD, FROM 141026 TO 141118								
FACILITY				REPORT NO. 3								
MATERIAL BALANCE AREA ABN-Z				PAGE NO. 1 OF 5 PAGES					SIGNATURE			
ENTRY NO	CONTINUATION		ENTRY NAME	ACCOUNTANCY DATA						CORRECTION TO		
				ELEMENT	WEIGHT OF ELEMENT	UNT. kg/g	WEIGHT OF FISSILE ISOTOPES (URANIUM ONLY) (G)	ISOTOPE CODE	CONCISE NOTE	REPORT NO.	ENTRY NO.	
1	3	18		37	38	46	48	56	73	74	78	80
		PB		P	0.0	g						7
		FW		P	449.1	g						7
		RF		P	449.1	g						7
		TW		P	449.1	g						7
		BE		P	449.1	g						7
		BA		P	449.1	g						7
		PE		P	449.1	g						7
		PB		T	0.0	g						7
		DQ		T	4735.0	g						7

Generation of Reports in MS Excel format, Checking with QCVS

Excel ribbon: FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW LOAD TEST TEAM

Cell: R108

PHYSICAL INVENTORY LISTING (PIL) FORM R.02/c (QCVS)

COUNTRY		AM	DATE		150320	
FACILITY		AM-Z	REPORT NO.		16	
MATERIAL BALANCE AREA		AM-Z	PAGE NO. OF PAGES		SIGNATURE	
			46			

ENTRY NO.	CONTINUATION	KMF CODE	NAME OR NUMBER OF BATCH	NUMBER OF ITEMS IN BATCH	MATERIAL DESCRIPTION	ELEMENT	ACCOUNTANCY DATA				CORRECTION TO	
							WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPE(S) (URANIUM ONLY) (G)	ISOTOPE CODE	MEASURE BASIS	CONCISE NOTE
1		KMF	4P9	1	QSOA	P	0 g			M		5
2		KMF	5P9	1	QSOA	P	0 g			M		5
3		KMF	629	1	QSOA	P	0 g			M		5
4		KMF	CINP	1	VOAB	D	0.037 kg			M		5
5		KMF	IBN-24	1	QSOA	P	44 g			M		5
6		KMF	IBN-7	1	QSOA	P	11 g			M		5
7		KMF	IBN-8-7	1	QSOA	P	0 g			M		5
8		KMF	10481	1	QSOA	P	0 g			M		5
9		KMF	10482	1	QSOA	P	0 g			M		5
10		KMF	1215	1	QSOA	P	0 g			M		5
11		KMF	1216	1	QSOA	P	0 g			M		5
12		KMF	1217	1	QSOA	P	0 g			M		5
13		KMF	1218	1	QSOA	P	0 g			M		5
14		KMF	1219	1	QSOA	P	0 g			M		5
15		KMF	1220	1	QSOA	P	0 g			M		5
16		KMF	1221	1	QSOA	P	0 g			M		5
17		KMF	1222	1	QSOA	P	0 g			M		5
18		KMF	1223	1	QSOA	P	0 g			M		5
19		KMF	1224	1	QSOA	P	0 g			M		5
20		KMF	1225	1	QSOA	P	0 g			M		5
21		KMF	1226	1	QSOA	P	0 g			M		5
22		KMF	1227	1	QSOA	P	0 g			M		5
23		KMF	1228	1	QSOA	P	0 g			M		5
24		KMF	1229	1	QSOA	P	0 g			M		5

Excel ribbon: FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW LOAD TEST TEAM

Cell: A59

MATERIAL BALANCE REPORT (MBR) FORM R.03 (QCVS)

COUNTRY		AM	REPORTING PERIOD: FROM		141130		TO		150201	
FACILITY		AM-A	REPORT NO.		3		PAGE NO. OF PAGES		SIGNATURE	
MATERIAL BALANCE AREA		T	32							

ENTRY NO.	CONTINUATION	ENTRY NAME	ELEMENT	WEIGHT OF ELEMENT	UNIT kg/g	WEIGHT OF FISSILE ISOTOPE(S) (URANIUM ONLY) (G)	ISOTOPE CODE	CONCISE NOTE	CORRECTION TO	
									REPORT NO.	ENTRY NO.
1		PB	P	0 g						7
2		RD	P	123.6 g						7
3		BE	P	123.6 g						7
4		DI	P	-10 g						7
5		BA	P	113.6 g						7
6		PE	P	113.6 g						7
7		PB	T	0 kg						7
8		GA	T	189 kg						7
9		SD	T	189 kg						7
10		BE	T	0 kg						7
11		BA	T	0 kg						7
12		PE	T	0 kg						7
13		PB	D	0 kg						7
14		EQ	D	12.5 kg						7
15		RD	D	123 kg						7
16		RF	D	12.5 kg						7
17		BE	D	123 kg						7
18		BA	D	123 kg						7
19		PE	D	123 kg						7
20		PB	N	0 kg						7
21		BE	N	0 kg						7
22		BA	N	0 kg						7
23		PE	N	0 kg						7
24		PB	E	0 g				0 G		7
25		BE	E	0 g				0 G		7
26		BA	E	0 g				0 G		7
27		PE	E	0 g				0 G		7
28		PB	U	0 kg						7
29		BE	U	0 kg						7
30		BA	U	0 kg						7
31		PE	U	0 kg						7

II. SECURITY

History of NM

▶ Tracking history of NMs

Batch number	Manufacturer	U	U235	Pu	Th	Record date						
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
> AAA05	AAB05	12456.23	1245.23	789.45	0	28 Oct, 2014						
✓ AAA06	AAB06	22456.23	3245.23	889.23	0	15 Nov, 2014						
Batch number	U	U235	Pu	Th	Inventory code	Record date	KMP	Building	Room	Cabinet	Box	
AAA06	-1000	-100	-10	0	DI	20 Nov, 2014	Radiology	North-I				
AAA06	22456.23	3245.23	889.23	0	DQ	15 Nov, 2014	Radiology	North-I				
AAA06	22456.23	3245.23	889.23	0	EU	14 Nov, 2014	Radiology	North-I				
AAA06	22456.23	3245.23	889.23	0	RF	28 Oct, 2014	Radiology	North-I				

History of NM

- ▶ Tracking history of NMs
 - All Information about nuclear material even after shipment, loss, exemption , transfer to waste is kept in the history of the nuclear material

>	KK04	KL04	146987.12	4567.12	100.98		31 Mar, 2017				Active	
>	KK01	KL01	134090	3450	0	0	02 May, 2017				Active	
>	DD03	DF03	325000	0			05 Apr, 2017				Inactive	
✓	DD04	DF04	325000	0			28 Mar, 2017				Inactive	
	Batch number	U	U235	Pu	Th	Inventory code	Record date	KMP	Building	Room	Cabinet	Box
	DD04	325000	0	0	0	SD	28 Mar, 2017					
	DD04	325000	0	0	0	RF	27 Mar, 2017	Pool	Rack			

Logs

▶ Inventory Logs

Username	Type	Code	Format	Batch number	Manufacturer	Date
admin	StartingPoint	EDT	Update	JJ01	JK01	09 Apr, 2017 15:30:40
admin	StartingPoint	DEL	Delete	DD02	DF02	09 Apr, 2017 15:24:40
admin	StartingPoint	DEL	Delete			09 Apr, 2017 13:03:08
admin	StartingPoint	EDT	Update	FF01	FG010202	09 Apr, 2017 12:55:00
admin	AccidentalLoss	EDT	None		KL01	09 Apr, 2017 09:29:00
admin	AccidentalGain	INS	None	KK04	KL04	09 Apr, 2017 08:54:49
admin	ReceiptDomestic	RD	Insert	KK03	KL03	09 Apr, 2017 08:52:42
admin	AccidentalGain	INS	None	KK02	KL02	09 Apr, 2017 08:50:16
admin	ReceiptDomestic	RD	Insert	KK01	KL01	09 Apr, 2017 08:48:25
admin	StartingPoint	DEL	Delete			09 Apr, 2017 08:43:25
admin	ShipmentDomestic	SD	Insert		DF04	08 Apr, 2017 02:04:27
admin	ShipmentDomestic	SD	Insert		DF03	08 Apr, 2017 01:58:39
admin	TransferOperation	TRAN	None		FG01	08 Apr, 2017 01:55:49
admin	TransferOperation	TRAN	None		DF03	08 Apr, 2017 01:51:30
admin	TransferOperation	TRAN	None		DF03	08 Apr, 2017 01:38:15
admin	AccidentalGain	INS	None	JJ06	JK06	08 Apr, 2017 01:31:33
admin	AccidentalGain	INS	None	JJ05	JK05	08 Apr, 2017 01:31:19

Logs

▶ Login/Logout



The screenshot shows the NucMat Nuclear Materials Database interface. The header includes the NucMat logo and the title "Nuclear Materials Database". A navigation menu contains links for Home, Nuclear Materials, Locations, Operations, Auxilliary, Reports, Administration, and Activity. A "Refresh" button is located in the top right corner of the table area.

Username	Reference	Type	Date
admin	admin	Login	22 Oct, 2015 15:39:30
admin	admin	Login	22 Oct, 2015 15:06:43
admin	admin	Login	22 Oct, 2015 12:37:37
admin	admin	LoginFailed	22 Oct, 2015 12:35:26
admin	admin	LoginFailed	22 Oct, 2015 12:35:08
admin	admin	Login	10 Sep, 2015 00:32:09
admin	admin	Login	09 Sep, 2015 23:45:58
admin	admin	Login	09 Sep, 2015 23:39:03
admin	admin	Login	09 Sep, 2015 23:36:32
admin	admin	Login	09 Sep, 2015 23:11:57

Logs

▶ Backup/Restore



Username	Reference	Type	Date
admin	admin	Login	22 Oct, 2015 15:39:30
admin	admin	Login	22 Oct, 2015 15:06:43
admin	admin	Login	22 Oct, 2015 12:37:37
admin	admin	LoginFailed	22 Oct, 2015 12:35:26
admin	admin	LoginFailed	22 Oct, 2015 12:35:08
admin	admin	Login	10 Sep, 2015 00:32:09
admin	admin	Login	09 Sep, 2015 23:45:58
admin	admin	Login	09 Sep, 2015 23:39:03
admin	admin	Login	09 Sep, 2015 23:36:32
admin	admin	Login	09 Sep, 2015 23:11:57

Logs

▶ Reports



Username	Type	Format	Date
admin	ICR	CrystalReport	07 Sep, 2015 14:22:20
admin	ICR	CrystalReport	07 Sep, 2015 14:22:17
admin	ICR	Excel	07 Sep, 2015 14:19:40
admin	PIL	Excel	22 Aug, 2015 22:45:18
admin	PIL	CrystalReport	22 Aug, 2015 22:45:15
admin	PIL	CrystalReport	22 Aug, 2015 22:44:54
admin	PIL	Excel	22 Aug, 2015 22:43:09

III. DATA SECURITY

Secure Code

- ▶ Authentication and Authorization
 - Confirmation of the identity of a users
 - determination what user can and can't do within NUCMAT
- ▶ SQL Injection attacks
 - No SQL scripts can be passed (no use of string concatenation)
 - Using stored procedures and SQL parameters
- ▶ Script exploits
 - No possibility to post scripts: ASP.NET prevents users from typing most script code into a form field and posting it to the server.
- ▶ No use of cookies
- ▶ Use of “private” variables in the code instead of “public” variables

Users rights (1 / 2)

- ▶ **Super-admin**
 - Can do everything
- ▶ **Supervisor**
 - User management
 - Log browsing
 - Report generation
 - Browsing of nuclear material inventory
 - NO Inventory changes
- ▶ **Write**
 - Browsing of nuclear material inventory
 - Inventory changes
 - Report generation
 - NO access to Logs
 - NO access to user management
- ▶ **Read**
 - Browsing of nuclear material inventory
 - Report generation

Users rights (2 / 2)

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration Activity

+ Add new record Refresh

Username	Firstname	Lastname	Email	User rights	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	All	
admin			admin@test.com	SuperAdmin	
John				Write	
Mikle	Read	Write	test@test.am	Read	
sysadmin			admin@test.am	Supervisor	

Limited access

- ▶ Limited access to database: Access only to the MBA to which user have access granted

The screenshot displays the NucMat Nuclear Materials Database interface. The header includes the logo and navigation menu: Home, Nuclear Materials, Locations, Operations, Auxiliary, Reports, Administration, and Activity. Below the header is a table of users with columns for Username, Firstname, Lastname, Email, and User rights. The 'rw' user is selected, and their details are shown in a form below. The form includes fields for Username, Firstname, Lastname, Phone, Email, User rights, and Description. The 'MBA' field is a dropdown menu with 'Reactor' and 'Storage' options.

Username	Firstname	Lastname	Email	User rights	
admin			admin@test.com	SuperAdmin	
rw	Read	Write	test@test.am	Read	

Details for "rw"

Username:* User rights:

Firstname: Description:

Lastname:

Phone: MBA:

Email:

Password rules and requirements (1 / 3)

- ▶ NUCMAT randomly generated passwords
 - Minimal length – 13 symbols,
 - Shall not coincide with name of user,
 - Shall not have meaning,
 - Shall contain elements from ALL following symbols:
 - Upper case character(от А до Z),
 - Lower case character(а до z),
 - Main 10 numbers (0–9),
 - Special symbols (for example, \$, #, %).

Password rules and requirements (2 / 3)

Username:*	<input type="text"/>	User rights:	SuperAdmin <input type="button" value="v"/>
Firstname:	<input type="text"/>	Description:	<input type="text"/>
Lastname:	<input type="text"/>	MBA:	Storage YerPhl <input type="button" value="v"/>
Phone:	<input type="text"/>		
Email:	<input type="text"/>		
Password:*	<input type="text" value="5]8^w*#XbO9mJ"/> Mask Generate excellent		
Confirm password:*	<input type="text"/>		

Password rules and requirements (3 / 3)

- ▶ User entered password
 - NUCMAT assess meeting with above mentioned requirement
 - Users are strongly recommended to use ONLY passwords that get “excellent” grade by NUCMAT

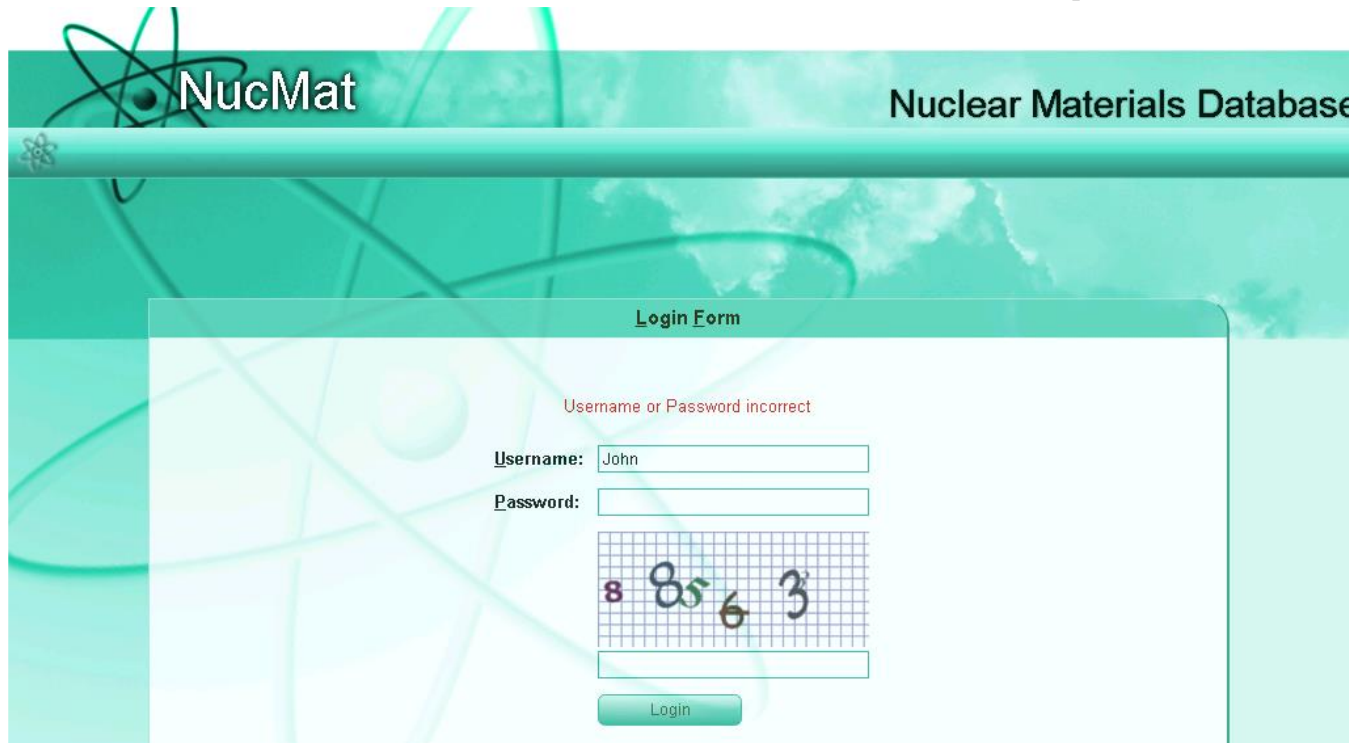
The screenshot displays a web application interface for adding a new user record. At the top, there is a header with a '+ Add new record' button on the left and a 'Refresh' button on the right. Below the header, there is a table with columns for Username, Firstname, Lastname, Email, and User rights. Each column has a search filter icon. Below the table, there is a form titled 'Add new record'. The form contains the following fields:

- Username:*
- Firstname:
- Lastname:
- Phone:
- Email:
- Password:*
- Confirm password:*
- User rights: SuperAdmin (dropdown menu)
- Description: (text area)
- MBA: Storage, YerPhl (list box)

The Password field shows a generated password 'ad56Z*3!' with a strength indicator 'medium'. There are 'Mask' and 'Generate' buttons next to the password field.

User Security Controls

- ▶ Protection against robot-attack:
 - CAPTCHA after 3 failed attempts
 - lock out after 10 failed attempts



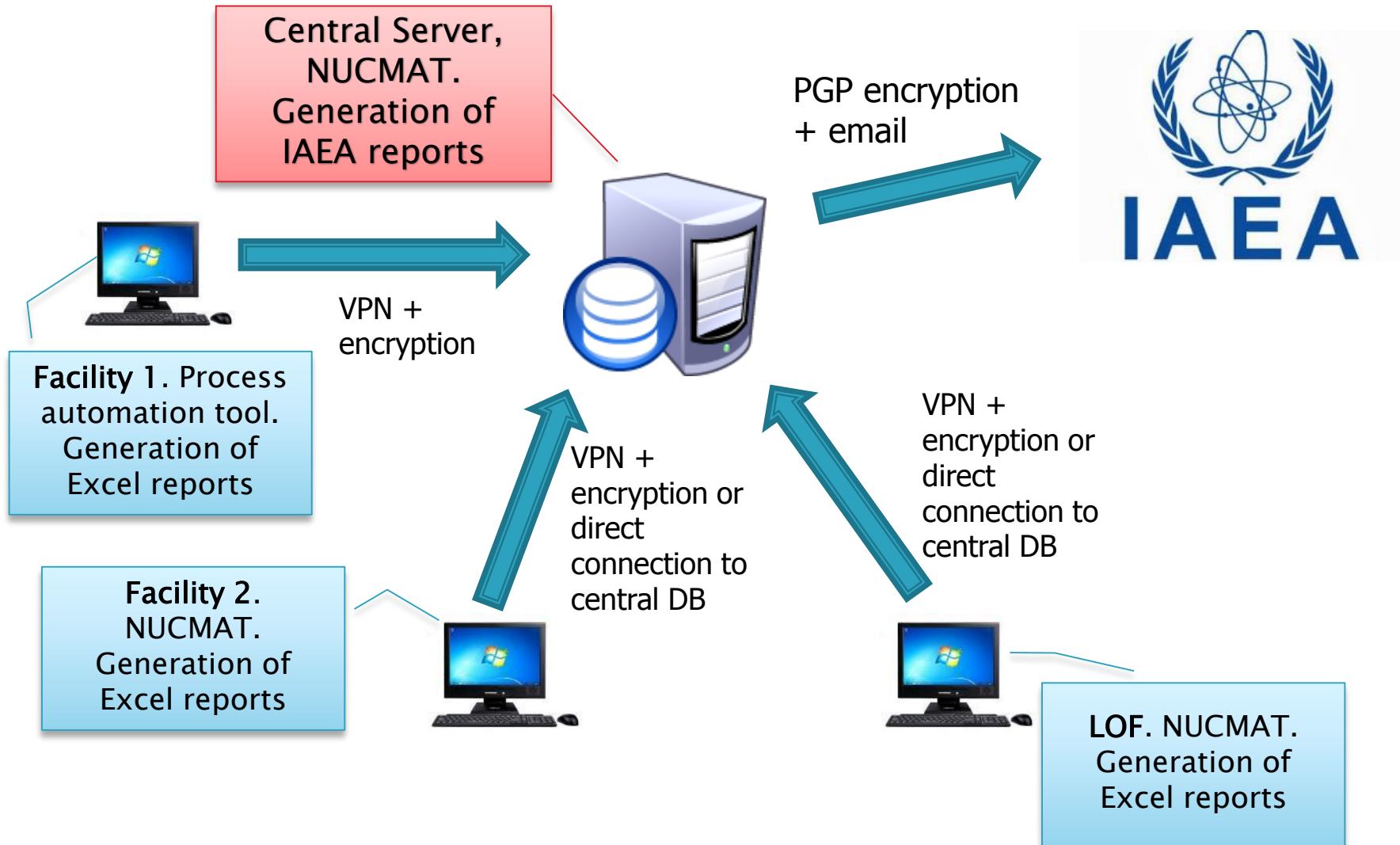
The screenshot displays the NucMat login interface. At the top left, the logo features a stylized atom symbol next to the text "NucMat". To the right, the text "Nuclear Materials Database" is visible. The main content area is titled "Login Form" and contains a red error message: "Username or Password incorrect". Below this message are two input fields: "Username:" with the value "John" and "Password:". A CAPTCHA challenge is presented as a grid of numbers: 8, 8, 5, 6, 3. Below the CAPTCHA is an empty input field for the user to type the numbers. At the bottom of the form is a "Login" button.

Independent assessment

- ▶ Independent Security Vulnerability Test Result
 - Overall – good
- ▶ Data Encryption

A Good security rating indicates that the capabilities or approach is the best option evaluated and aligns with industry best practices.

Deployment (example)



Communication of Inventory Data to State Authority

- ▶ stand alone use of the system is possible
- ▶ Automatic or manual data transfer from Facilities/LOFs to State Authority via VPN could be established as frequent as required

Export/Import MBA

- ▶ Export import Facility and LOF information:

The screenshot displays the NucMat Nuclear Materials Database Administration interface. The page features a navigation menu with the following items: Home, Nuclear Materials, Locations, Operations, Auxiliary, Reports, Administration (selected), and Activity. A dropdown menu is open under 'Administration', showing options: Users, Backup / Restore, Import, Export MBA (xml), and Import MBA (xml). The 'Export MBA (xml)' option is highlighted. Below the navigation menu, there is a table of users with columns for Username, Firstname, Lastname, and Email. The table contains three rows of user data. At the bottom of the table, there is a link for 'Details for "John"'. The interface also includes a language selector set to 'English' and a 'Logout' button in the top right corner.

Username	Firstname	Lastname	Email	
admin	Vinik	Puxikyan	admin@internet.com	
AnnaM	Anna	Melkumyan	AnnaM	
John			John@mail.ru	Read

IV. QA/QC

Error Detection During Input

- ▶ Preventing not allowed symbols:
 - Drop down lists, cross-references

The screenshot displays a data entry form for nuclear fuel elements. The form is organized into two columns of input fields. The left column includes: Batch number* (text input: TT001), Batch count* (text input: 3), Physical form* (dropdown: Fuel elements (B)), Element* (dropdown: Enriched uranium (E)), Fuel type: (dropdown: Please select), Burnup* (text input: 12500), Enrichment (dropdown: 1.60 (4)), and Weight* (radio buttons for U, U235, Pu). The right column includes: Manufacture* (text input: TR001), Insertion date* (calendar icon), Chemical form: (dropdown: ADU (K)), Containment code: (dropdown: Birdcage (8)), Irradiation status: (dropdown: Irradiated fuel (G)), and Measurement basis: (dropdown: Labelled (L)). Below these fields is a 'Location' section with a table of input fields: MBA* (dropdown: LOF, SEUA, Storage, Test), KMP*, Building*, Room, Cabinet, and Box. A Description* text area is located below the location fields. At the bottom left, there are 'Save' and 'Cancel' buttons.

Error Detection During Input

- ▶ Preventing not allowed symbols:
 - Customization of the drop down lists

The screenshot displays the 'NucMat Nuclear Materials Database' web interface. At the top, there is a navigation menu with links for Home, Nuclear Materials, Locations, Operations, Auxiliary, Reports, and Administration. Below the navigation is a header bar with a '+ Add new record' button and a 'Refresh' button. The main form area is titled 'Add new record' and contains several input fields and dropdown menus. The 'Name' field is empty, and the 'Code' field is also empty. The 'Country' dropdown menu is set to 'All'. The 'Establishment date' field is empty. Below these fields, there are three more input fields: 'Name*', 'Code*', and 'Establishment date*'. The 'Country*' dropdown menu is set to 'AAUSTRIA'. The 'Facility' dropdown menu is set to 'Please select'. The form is divided into three columns of dropdown menus for material properties: 'Physical form', 'Fuel element', and 'Chemical form'. The 'Physical form' dropdown menu is set to 'Ceramics (J)'. The 'Fuel element' dropdown menu is set to 'Depleted uranium (D)'. The 'Chemical form' dropdown menu is set to 'ADU (K)'. Below these dropdown menus, there is a 'Default Properties' section with several more dropdown menus: 'Burnup', 'Physical form', 'Fuel element', 'Chemical form', 'Irradiation status', 'Containment code', and 'Measurement basis'. The 'Burnup' dropdown menu is set to 'Burnup'. The 'Physical form' dropdown menu is set to 'Ceramics (J)'. The 'Fuel element' dropdown menu is set to 'Depleted uranium (D)'. The 'Chemical form' dropdown menu is set to 'ADU (K)'. The 'Irradiation status' dropdown menu is set to 'Fresh fuel (F)'. The 'Containment code' dropdown menu is set to 'Bridgman (8)'. The 'Measurement basis' dropdown menu is set to 'Labelled (L)'. At the bottom of the form, there are 'Save' and 'Cancel' buttons.

Error Detection During Input

- ▶ Preventing data falling out of acceptable range:

The screenshot shows the NucMat Nuclear Materials Database interface. At the top, there is a navigation bar with links: Home, Nuclear Materials, Locations, Operations, Auxiliary, Reports, Administration, and Activity. Below this is a dropdown menu for 'Reactor'. A red error message is displayed: '■ Isotope weight can't be more than 1% of elements weight.' The form contains several input fields and dropdown menus:

- Batch number: * JN01
- Batch count: * 1
- Physical form: * Ceramics (J)
- Element: * Depleted uranium (D)
- Isotope: * U235 only (G)
- Weight: * U: 125000, U235: * 3000
- Unit: G Kg
- Manufacturer: * KJ01
- Insertion date: * 5/4/2017
- Chemical form: Carbide/graphite (Y)
- Containment code: Birdcage (8)
- Irradiation status: Description of NM (O)
- Measurement basis: Labelled (L)

Below the main form is a 'Location' section with five columns: KMP:*, Building:*, Room:, Cabinet:, and Box:. The KMP: column has a dropdown menu with options: Core, Fresh_Fuel_Unit, and Pool. The Building: column has a dropdown menu with the option: Rack. The Room: column has a dropdown menu with the option: 45-09 (Box). The Cabinet: and Box: columns are empty.

Error Detection During Input

▶ Preventing duplicate serial number:

NucMat Nuclear Materials Database

Home Nuclear Materials Locations Operations Auxiliary Reports Administration Activity

From:
MBA:
To:

Duplicate item. No action

Batch number:* Manufacturer:*
Batch count:* Insertion date:*
Physical form:* Chemical form:
Element:* Containment code:
Isotope: Irradiation status:
Weight:*
 Measurement basis:
Unit: G Kg

Location

KMP:*	Building:*	Room:	Cabinet:	Box:
Core	Rack	67-22 (Box)		
Fresh_Fuel_Unit				
Pool				

User notifications/warnings

NucMat
Nuclear Materials Database

⚙️
[Home](#)
[Nuclear Materials](#)
[Locations](#)
[Operations](#)
[Auxiliary](#)
[Reports](#)
[Administration](#)
[Activity](#)

Date should be higher than last operation date

Reactor ▾
[Depleted Uranium](#) /
 [Natural Uranium](#) /
 [Enriched Uranium](#) /
 [Uranium Unified](#) /
 [Plutonium](#) /
 Thorium

📅
Begin Inventory
End Inventory

Change date	Batch number	Change code	Items count	Increase	Other	Decrease	Other	Inventory	Items total count	Comments
				Receipts	Other	Shipments	Other			
				Th	Th	Th	Th			
2017-03-26		BB	0	0	0	0	0	0	0	
2017-03-28	JJ02	GA	1	0	456	0	0	456	1	
2017-03-28	JJ03	GA	1	0	416	0	0	872	2	
2017-04-29	JJ02	RM	1	0	0	0	456	416	1	
2017-04-29	JJ03	RM	1	0	0	0	416	0	0	
2017-04-29	JJ23	RP	2	0	872	0	0	872	2	

⏪ ⏩ 1 ⏪ ⏩
Page size: 50
8 items in 1 pages

User notifications/warnings

Home Nuclear Materials Locations Operations Auxiliary Reports Administration Activity

Start point
No open inventory for this MBA

MBA:*
Reactor
Storage

KMP:*

Building:*

Room:

Cabinet:

Box:

Manufacturer
No records to display.

Flow KMP

Change date

U

U235

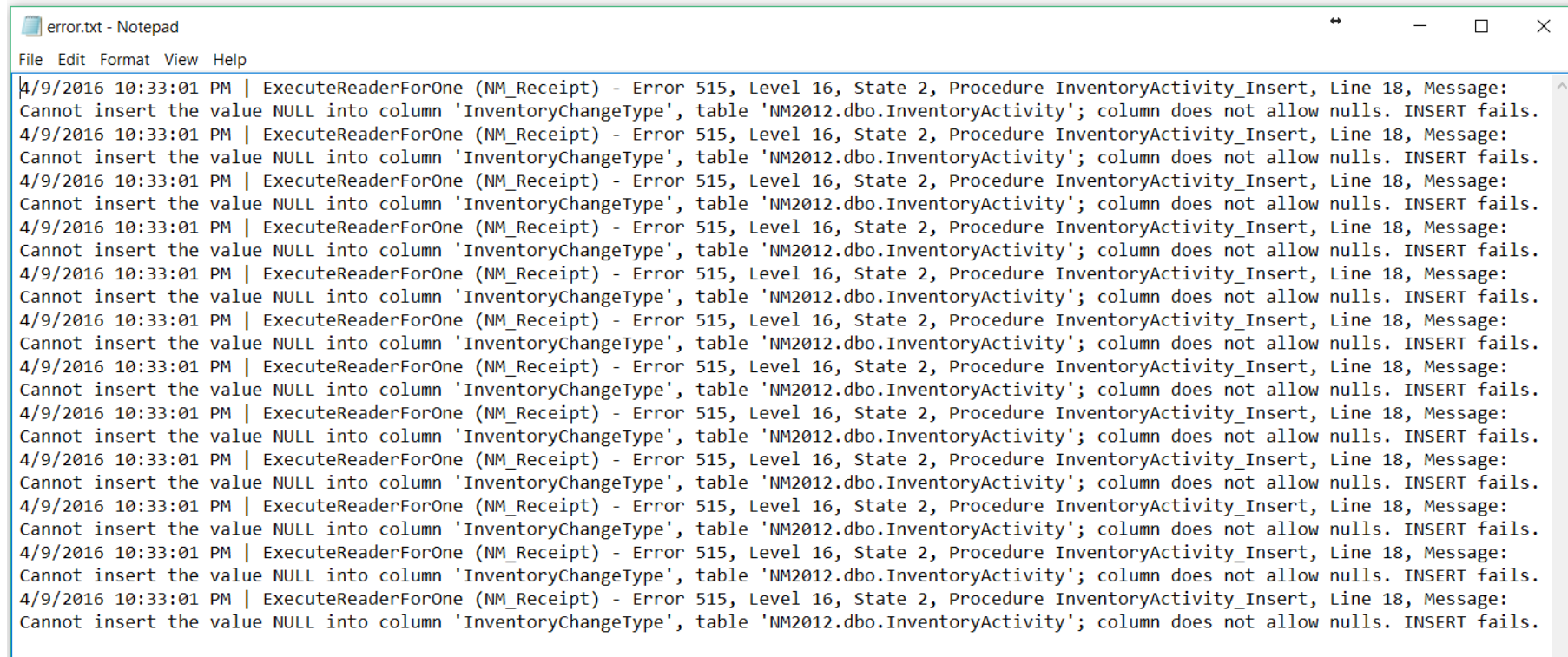
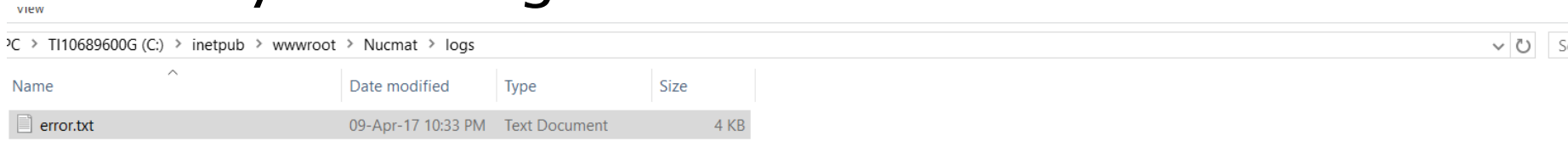
Pu 675.120

Th

Save

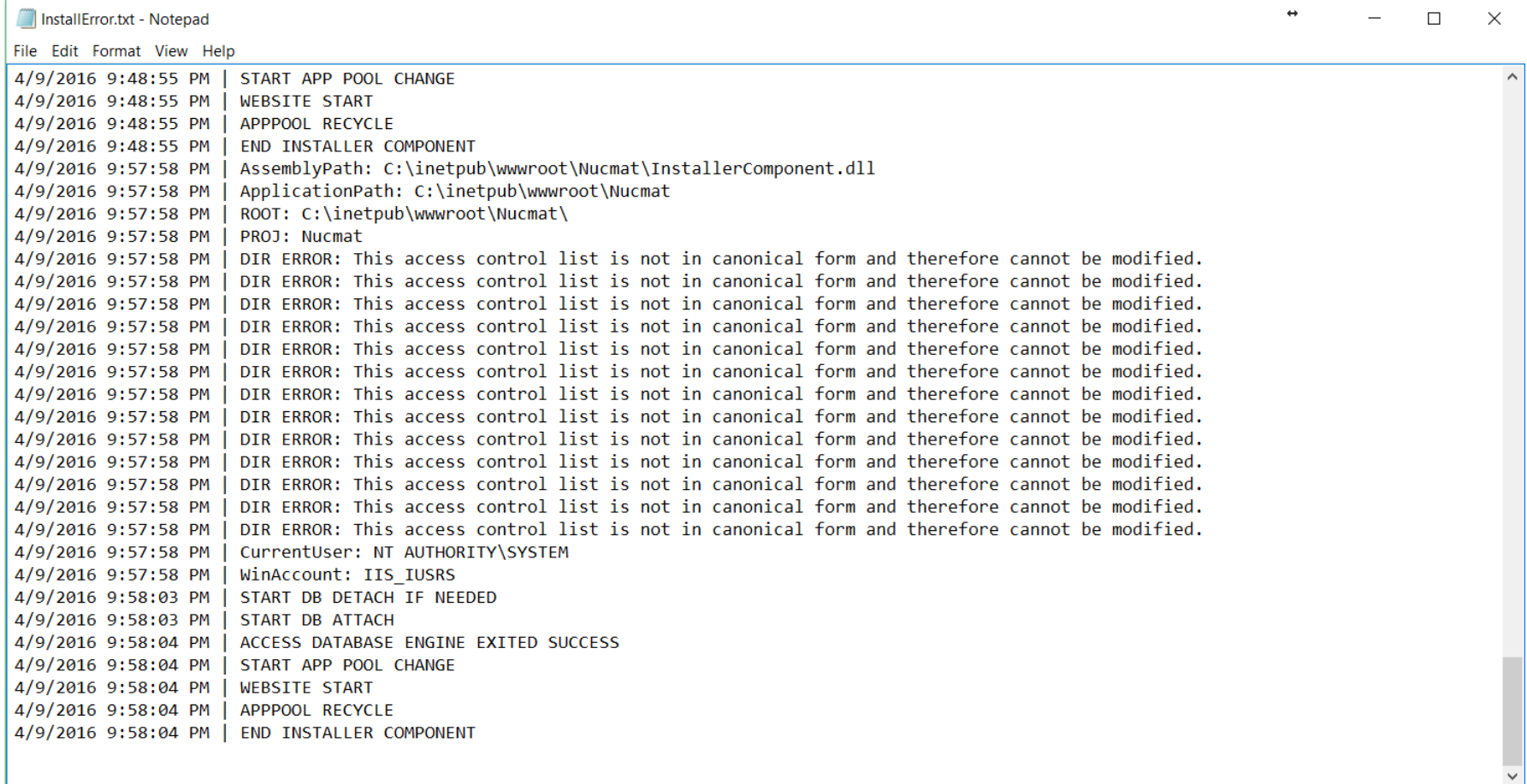
Error logging

▶ Activity error log



Error logging

► Install error log



```
InstallError.txt - Notepad
File Edit Format View Help
4/9/2016 9:48:55 PM | START APP POOL CHANGE
4/9/2016 9:48:55 PM | WEBSITE START
4/9/2016 9:48:55 PM | APPPOOL RECYCLE
4/9/2016 9:48:55 PM | END INSTALLER COMPONENT
4/9/2016 9:57:58 PM | AssemblyPath: C:\inetpub\wwwroot\Nucmat\InstallerComponent.dll
4/9/2016 9:57:58 PM | ApplicationPath: C:\inetpub\wwwroot\Nucmat
4/9/2016 9:57:58 PM | ROOT: C:\inetpub\wwwroot\Nucmat\
4/9/2016 9:57:58 PM | PROJ: Nucmat
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | DIR ERROR: This access control list is not in canonical form and therefore cannot be modified.
4/9/2016 9:57:58 PM | CurrentUser: NT AUTHORITY\SYSTEM
4/9/2016 9:57:58 PM | WinAccount: IIS_IUSRS
4/9/2016 9:58:03 PM | START DB DETACH IF NEEDED
4/9/2016 9:58:03 PM | START DB ATTACH
4/9/2016 9:58:04 PM | ACCESS DATABASE ENGINE EXITED SUCCESS
4/9/2016 9:58:04 PM | START APP POOL CHANGE
4/9/2016 9:58:04 PM | WEBSITE START
4/9/2016 9:58:04 PM | APPPOOL RECYCLE
4/9/2016 9:58:04 PM | END INSTALLER COMPONENT
```

IV. Other Topics

User Support

Online help-desk through web-site

The screenshot shows a web browser window displaying the NUCMAT website. The browser's address bar shows 'nucmat.com'. The website header includes the NUCMAT logo and a navigation menu with links for HOME, ABOUT NUCMAT, DEMO, SUPPORT, ARIS, and CONTACT US. The main content area features a large image of a server tower, a desktop monitor, and a laptop, all displaying the NUCMAT website interface. Below this image, there are three prominent green circular icons: an information icon (i), a hand pointing at a screen icon, and a silver envelope icon with the NUCMAT logo. Underneath each icon is a text label: 'ABOUT NUCMAT', 'DEMO', and 'CONTACT US'. At the bottom of the page, there are three small text prompts: 'Click to read brief description of NUCMAT', 'Click to find more about demo version of NUCMAT', and 'Click to find out how to contact us'. The Windows taskbar is visible at the bottom of the screen, showing the time as 3:03 PM on 09-Apr-17.

User Support

- ▶ User group of NUCMAT within US NRC Regulatory Partnership Program
- ▶ Annual User Meetings
 - ▶ Feedback/proposals from users
 - ▶ Action plan with priorities
- ▶ User trainings

Update of NUCMAT

- ▶ User initiatives
- ▶ Strategic development plan

- ▶ Release note
 - ▶ Bugs fixed
 - ▶ New features added
 - ▶ Installation
 - ▶ Requirements
 - ▶ First time installation

User Manual



USER MANUAL

Version 3.2

Yerevan 2017

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QMS system

- ▶ Process oriented QMS
- ▶ Core process
 - ▶ Development of Software Tools

Certificate

Standard **ISO 9001:2008**
Certificate Registr. No. 01 100 051339

Certificate Holder: **Nuclear and Radiation Safety Center (NRSC) CJSC**
4 Tigran Mets Street
0010 Yerevan
Armenia

Scope: Technical and scientific expertise, safety analysis, research and development in the field of nuclear and radiation safety, security of nuclear facilities, radiological measurements

Proof has been furnished by means of an audit that the requirements of ISO 9001:2008 are met.

Validity: The certificate is valid from 2016-05-25 until 2018-09-14.

2016-07-13

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Thank you!

