

ROMANIA

**National Commission for Nuclear Activities Control
(CNCAN)**

Report on Progress in Decommissioning Activities

Dr. Lucian BIRO
Director General

**IAEA R²D²P Workshop on Cost Estimates
Manila, 30 March - 03 April 2009**



Contents

- ✱ Up to date information on the regulatory body;
- ✱ Decommissioning Related Events Organized by CNCAN - Few Examples;
- ✱ IAEA Project ROM/4/024;
- ✱ VVR-S Reactor Decommissioning Status;
- ✱ Conclusions



**Up to date information on the
regulatory body**

CNCAN Responsibilities (1)

By Law CNCAN is responsible for:

- ✿ **Nuclear Legislation & Regulations**
- ✿ **Nuclear Safety**
- ✿ **Radiation Protection**
- ✿ **Quality Assurance**
- ✿ **Safeguards**
- ✿ **Emergency Preparedness**
- ✿ **Physical Protection**
- ✿ **Nuclear and Radiological Security**
- ✿ **Nuclear Liability**
- ✿ **Transportation**
- ✿ **Radioactive Waste Management**
- ✿ **Operators Certification**
- ✿ **International Treaties and Conventions**



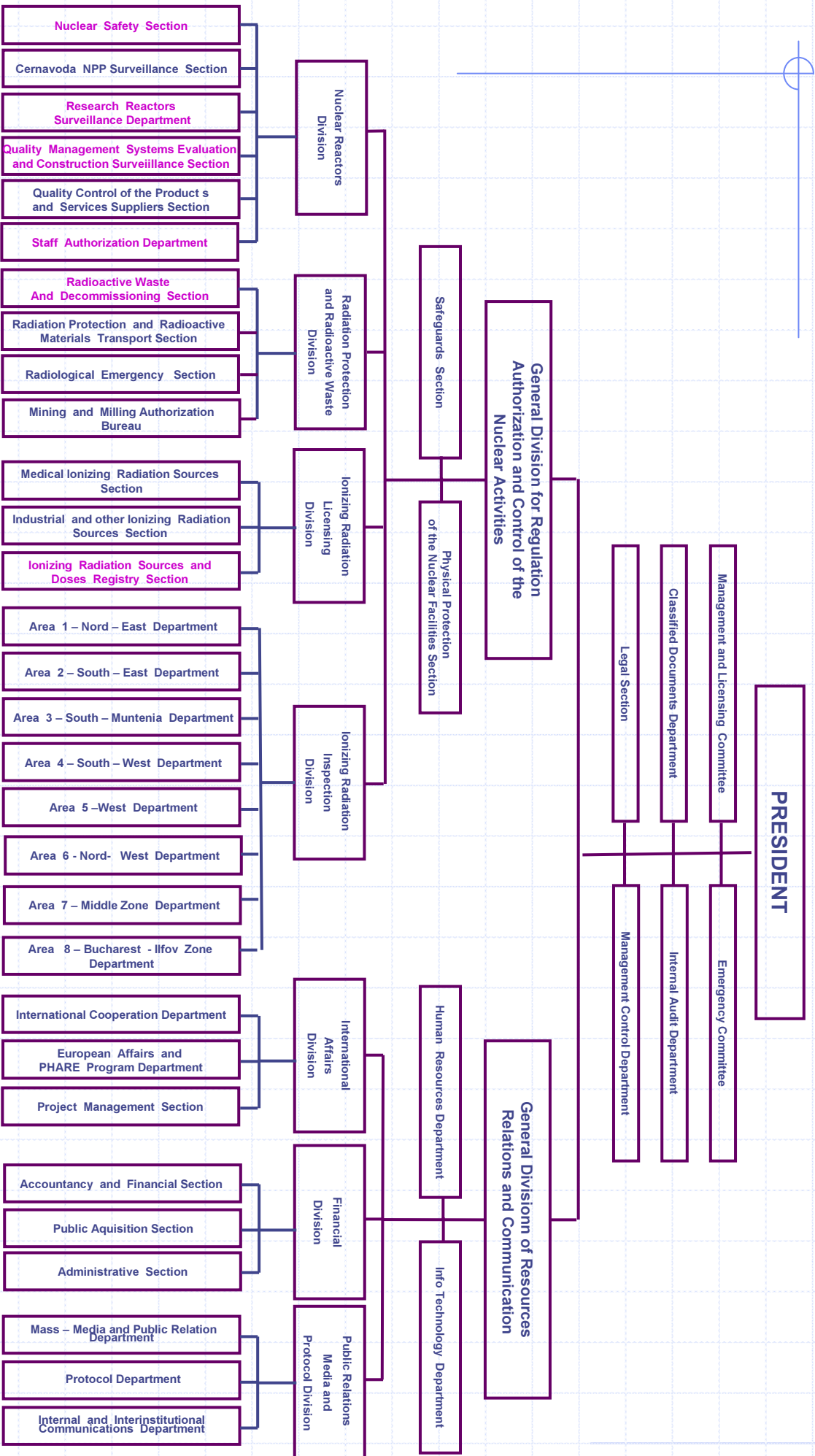
CNCAN Responsibilities (2)

CNCAN maintains regulatory control over:

- ✱ **Power reactors**
- ✱ **Research reactors**
- ✱ **Nuclear research and test establishments**
- ✱ **Uranium mines and mills**
- ✱ **Uranium refining and conversion facilities**
- ✱ **Fuel fabrication facilities**
- ✱ **Heavy water production facilities**
- ✱ **Radioactive waste management facilities**
- ✱ **Prescribed substances and items, and**
- ✱ **Radioisotopes & ionising radiation applications**



CNCCAN New Organization Structure



Legal Framework

- Basic Pillars for CNCAN Activities -

The grid displays the following legislative acts:

- Row 1 (Green):**
 - NIN-01: NORMELE FUNDAMENTALE DE SECURITATE RADIOLICĂ
 - NIN-02: NORMELE DE SECURITATE RADIOLICĂ PRIVIND MANIPULAREA OPERARII SAU A ÎNCHEIERII UNOR SISTEME
 - NIN-03: NORMELE DE SECURITATE RADIOLICĂ PRIVIND PROCEDURI DE ALTERNANȚĂ
 - NIN-04: NORMELE PRIVIND MANIPULAREA PERSONALULUI ÎN CALITATEA PERSONALULUI SPECIALIZAT
 - NIN-05: NORMELE DE AUTORIZARE A LOCALITĂȚII DE SERVICIU SAU DE HABITAT ÎN TERITORIUL UNOR ZONE SPECIALE AȘTEPTĂNTE
 - NIN-06: NORME DE EXAMINARE INDIVIDUALĂ
 - NIN-07: NORME PRIVIND ELIMINAREA PERSONALULUI DE EMERGENȚĂ LA ACTIVITĂȚI NUCLEARE ÎN ÎNCHEIERAREA UNOR ZONE AȘTEPTĂNTE ȘI ÎN PROTECTIA RADIOLICĂ
 - NIN-08: NORME PRIVIND DESEMNEZAREA DESEMNEZĂRII UNOR ZONE SPECIALE
 - NIN-09: NORME DE SECURITATE RADIOLICĂ ÎN PRACTICA DE RADIOLICĂ ÎN PRACȚICA DE RADIOLICĂ
 - NIN-10: NORME DE SECURITATE RADIOLICĂ ÎN PRACTICA DE RADIOLICĂ DE ÎMBUNĂTĂȚIRE ȘI ÎN PRACTICA DE RADIOLICĂ
- Row 2 (Yellow):**
 - NIN-01: NORME DE SECURITATE RADIOLICĂ PRIVIND PROCEDURI DE AUTORIZARE A LOCALITĂȚII DE SERVICIU SAU DE HABITAT ÎN TERITORIUL UNOR ZONE SPECIALE AȘTEPTĂNTE
 - NIN-02: NORME DE MANIPULARE OPERARII SAU ÎNCHERIERII UNOR SISTEME ÎN PRACTICA DE SECURITATE RADIOLICĂ
 - NIN-03: NORME DE SECURITATE RADIOLICĂ PRIVIND PROCEDURI DE ÎMBUNĂTĂȚIRE ȘI ÎN PRACTICA DE RADIOLICĂ
 - NIN-04: NORMELE PRIVIND ALIMENTELE ȘI PRODUSII DE ORIGINE ANIMALĂ ȘI UNUL ȘI UN ALTOR PRODUSE SAU ALTE PRODUSE DE ORIGINE ANIMALĂ
 - NIN-05: NORME DE SECURITATE RADIOLICĂ PRIVIND PROCEDURI DE AUTORIZARE A LOCALITĂȚII DE SERVICIU SAU DE HABITAT ÎN TERITORIUL UNOR ZONE SPECIALE AȘTEPTĂNTE
 - NIN-06: NORME PRIVIND EXAMINAREA INDIVIDUALĂ A PERSONALULUI ÎN CALITATEA PERSONALULUI SPECIALIZAT
 - NIN-07: NORME PRIVIND ELIMINAREA PERSONALULUI DE EMERGENȚĂ LA ACTIVITĂȚI NUCLEARE ÎN ÎNCHEIERAREA UNOR ZONE AȘTEPTĂNTE ȘI ÎN PROTECTIA RADIOLICĂ
 - NIN-08: NORME PRIVIND DESEMNEZAREA DESEMNEZĂRII UNOR ZONE SPECIALE
 - NIN-09: NORME DE SECURITATE RADIOLICĂ ÎN PRACTICA DE RADIOLICĂ ÎN PRACȚICA DE RADIOLICĂ
 - NIN-10: NORME DE SECURITATE RADIOLICĂ ÎN PRACTICA DE RADIOLICĂ DE ÎMBUNĂTĂȚIRE ȘI ÎN PRACTICA DE RADIOLICĂ
- Row 3 (Blue):**
 - NIN-01: NORME DE SECURITATE RADIOLICĂ PRIVIND PROCEDURI DE AUTORIZARE A LOCALITĂȚII DE SERVICIU SAU DE HABITAT ÎN TERITORIUL UNOR ZONE SPECIALE AȘTEPTĂNTE
 - NIN-02: NORME DE SECURITATE RADIOLICĂ PRIVIND PROCEDURI DE ÎMBUNĂTĂȚIRE ȘI ÎN PRACTICA DE RADIOLICĂ
 - NIN-03: NORMELE PRIVIND ALIMENTELE ȘI PRODUSII DE ORIGINE ANIMALĂ ȘI UNUL ȘI UN ALTOR PRODUSE SAU ALTE PRODUSE DE ORIGINE ANIMALĂ
 - NIN-04: NORME DE SECURITATE RADIOLICĂ PRIVIND PROCEDURI DE AUTORIZARE A LOCALITĂȚII DE SERVICIU SAU DE HABITAT ÎN TERITORIUL UNOR ZONE SPECIALE AȘTEPTĂNTE
 - NIN-05: NORME PRIVIND EXAMINAREA INDIVIDUALĂ A PERSONALULUI ÎN CALITATEA PERSONALULUI SPECIALIZAT
 - NIN-06: NORME PRIVIND ELIMINAREA PERSONALULUI DE EMERGENȚĂ LA ACTIVITĂȚI NUCLEARE ÎN ÎNCHEIERAREA UNOR ZONE AȘTEPTĂNTE ȘI ÎN PROTECTIA RADIOLICĂ
 - NIN-07: NORME PRIVIND DESEMNEZAREA DESEMNEZĂRII UNOR ZONE SPECIALE
 - NIN-08: NORME DE SECURITATE RADIOLICĂ ÎN PRACTICA DE RADIOLICĂ ÎN PRACȚICA DE RADIOLICĂ
 - NIN-09: NORME DE SECURITATE RADIOLICĂ ÎN PRACTICA DE RADIOLICĂ DE ÎMBUNĂTĂȚIRE ȘI ÎN PRACTICA DE RADIOLICĂ
 - NIN-10: NORME DE SECURITATE RADIOLICĂ ÎN PRACTICA DE RADIOLICĂ DE ÎMBUNĂTĂȚIRE ȘI ÎN PRACTICA DE RADIOLICĂ



CNCAN Regulation for Decommissioning

ROMANIA
MINISTERUL APELOR ȘI PROTECȚIEI MEDIULUI
COMISIA NAȚIONALĂ PENTRU CONTROLUL ACTIVITĂȚILOR NUCLEARE

NSN-15

**NORMELE DE DEZAFECTARE A OBIECTIVELOR
ȘI INSTALAȚIILOR NUCLEARE**



Main Nuclear Installations in Romania - Decommissioning Related Locations -



National Strategy for Nuclear Safety



GUVERNUL ROMANIEI
CANCELARIA PRIMULUI MINISTRU
COMISIA NATIONALA PENTRU CONTROLUL ACTIVITATILOR NUCLEARE
(CNCAN)



STRATEGIA NATIONALA
DE
SECURITATE NUCLEARA

2006-2009

Septembrie 2005



Report issued by CNCAN
in September 2005





Decommissioning Related Events Organized by CNCAN - Few Examples -

Event Poster Layout (1)



Event Poster Layout (2)



Event Poster Layout (3)





IAEA Project ROM/4/024

TRIGA Reactor



IAEA Project ROM/4/024 - Key Actors Involved (1) -



IAEA ROM/4/024

- Key Actors Involved (2) -

- ✱ **US:**
 - Department of Energy (DOE);
 - General Atomics (GA);
 - Permanent Mission in Vienna;

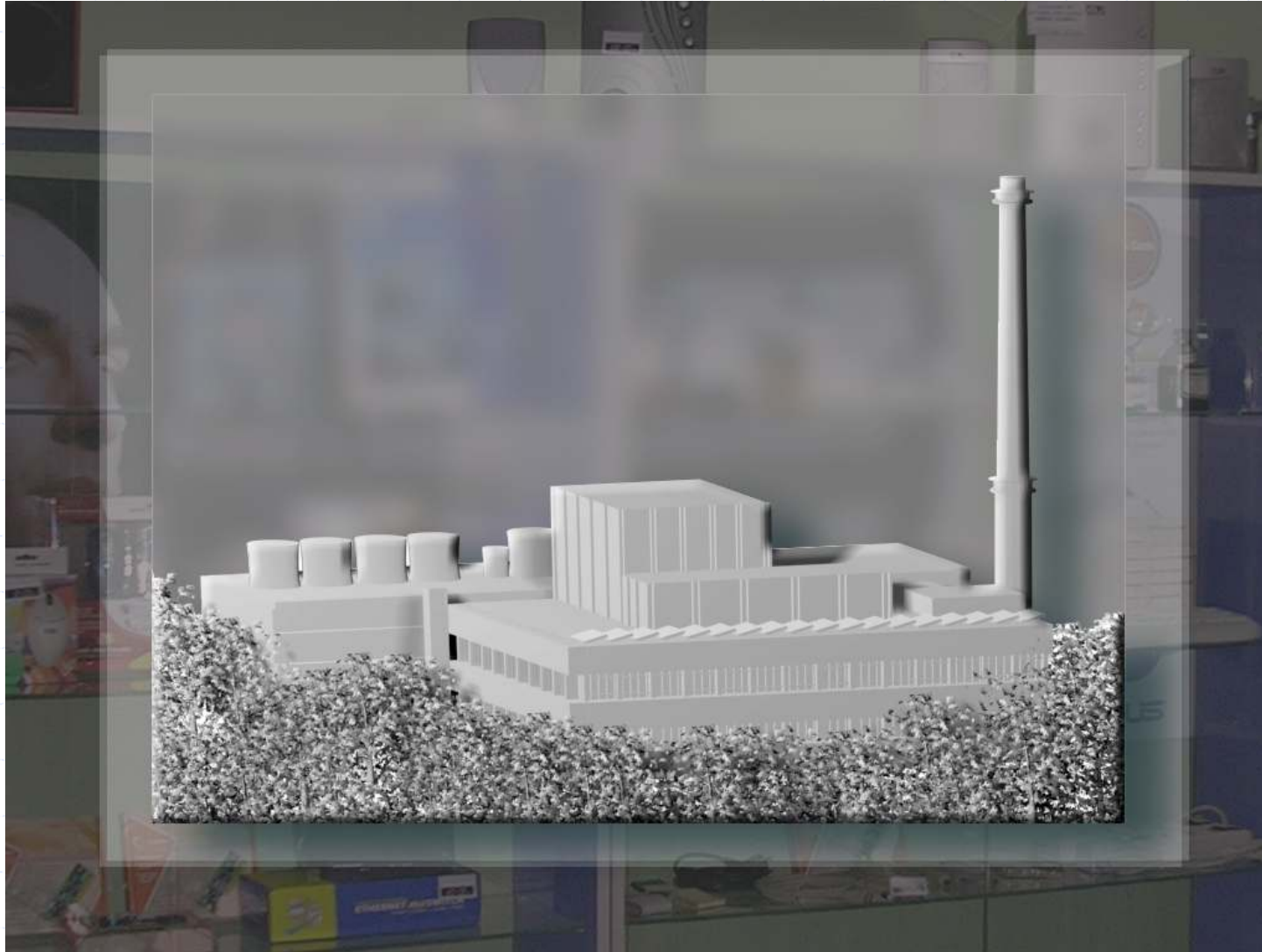
- ✱ **France:**
 - AREVA/CERCA;
 - Permanent Mission in Vienna;

- ✱ **IAEA:**
 - Technical Co-operation Department;
 - Procurement Department;
 - Research Reactor Department;
 - Legal Department;
 - Safeguards Department;

- ✱ **Romania:**
 - Permanent Mission in Vienna;
 - RAAN/SCN
 - CNCAN

TRIGA Reactor Celebration Ceremony

- 01.06.2006 -





VVR-S Reactor Decommissioning Status

VVR-S Reactor Hall



Successfully Shipping Fresh Fuel From Romania to Russia (1)

#/s RRFM 2004

Successfully Shipping Fresh Fuel From Romania to Russia... the Experience

C. Toma, M. Ciocanescu, Dr. L. Biro, Dr. A. Smirnov, J. Thomas - Authors

Presenter

8th Topical Meeting
Research Reactor Fuel Management (RRFM)
Munich, Germany
March 21-24, 2004

Russian Research Reactor Fuel Return Program



Successfully Shipping Fresh Fuel From Romania to Russia (2)

#/S RFEM 2004

Conclusions

- ⌘ Excellent coordination between the INR, CNCAN, MinAtom, SOSNY, the IAEA, and the U.S.
- ⌘ Planned and completed in only nine weeks
- ⌘ No incidents or delays
- ⌘ Legal process now defined



Russian Research Reactor Fuel Return Program



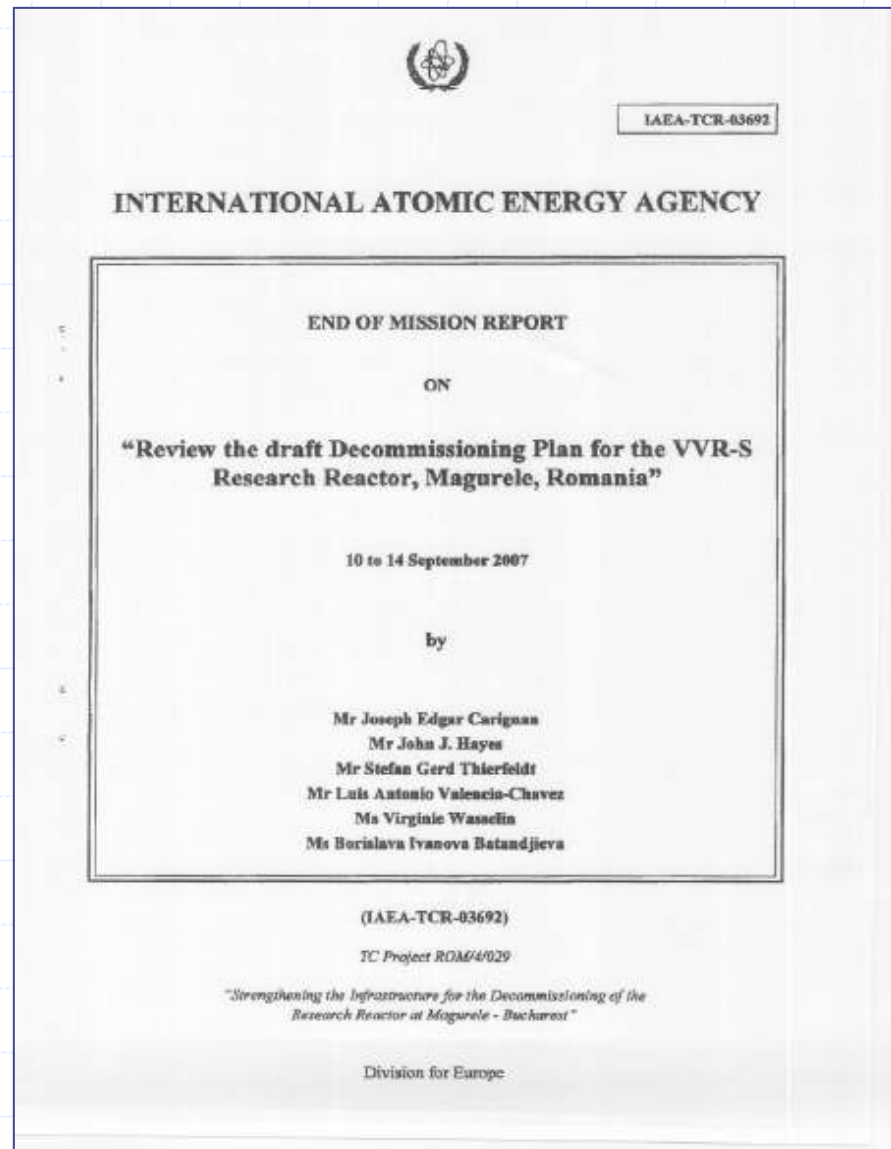
IAEA Signing Fuel Contract for VVR-S - 21.08.2003 -



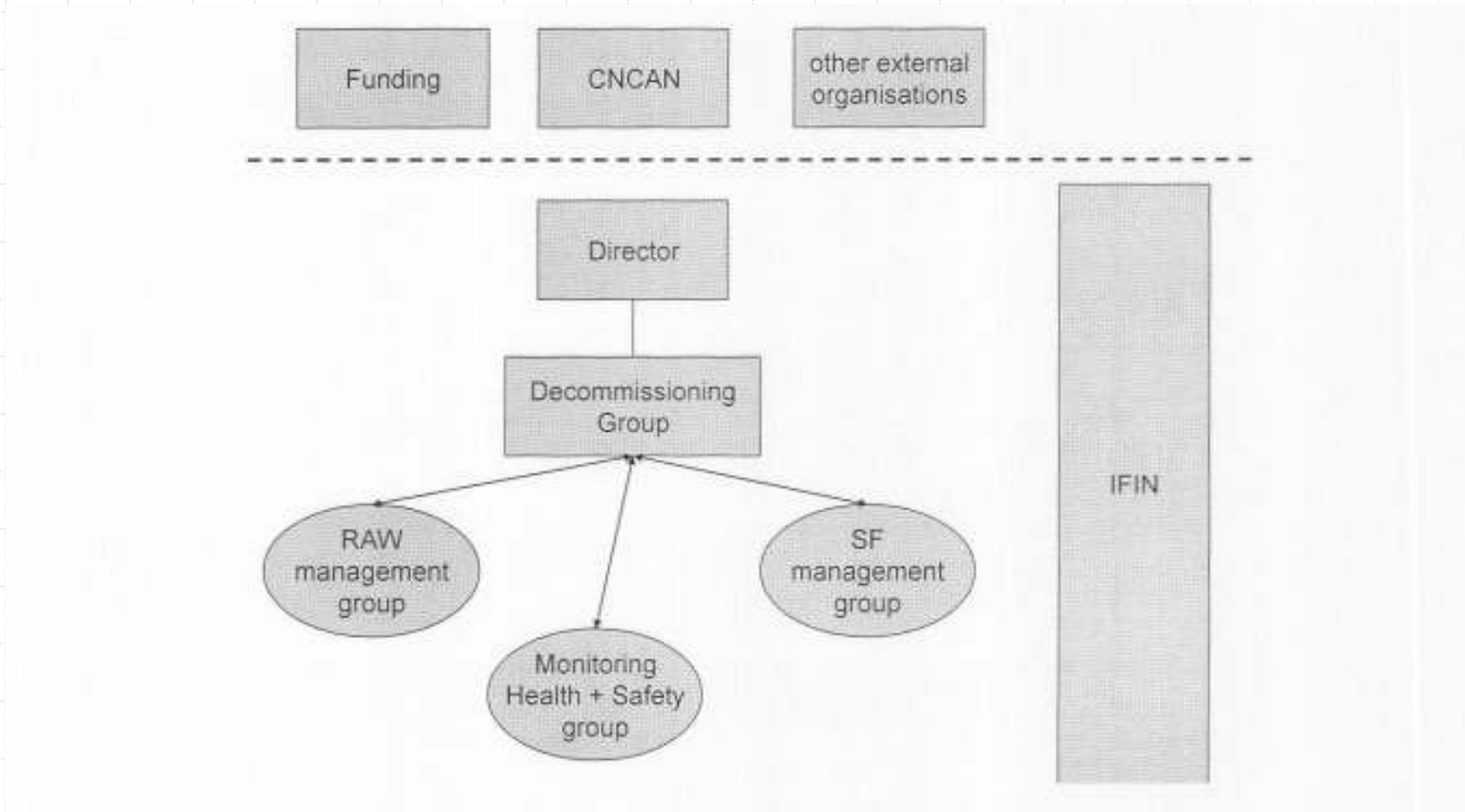
VVR-S Spent Fuel Amendment Signing Ceremony - Washington 03.12.2008 -



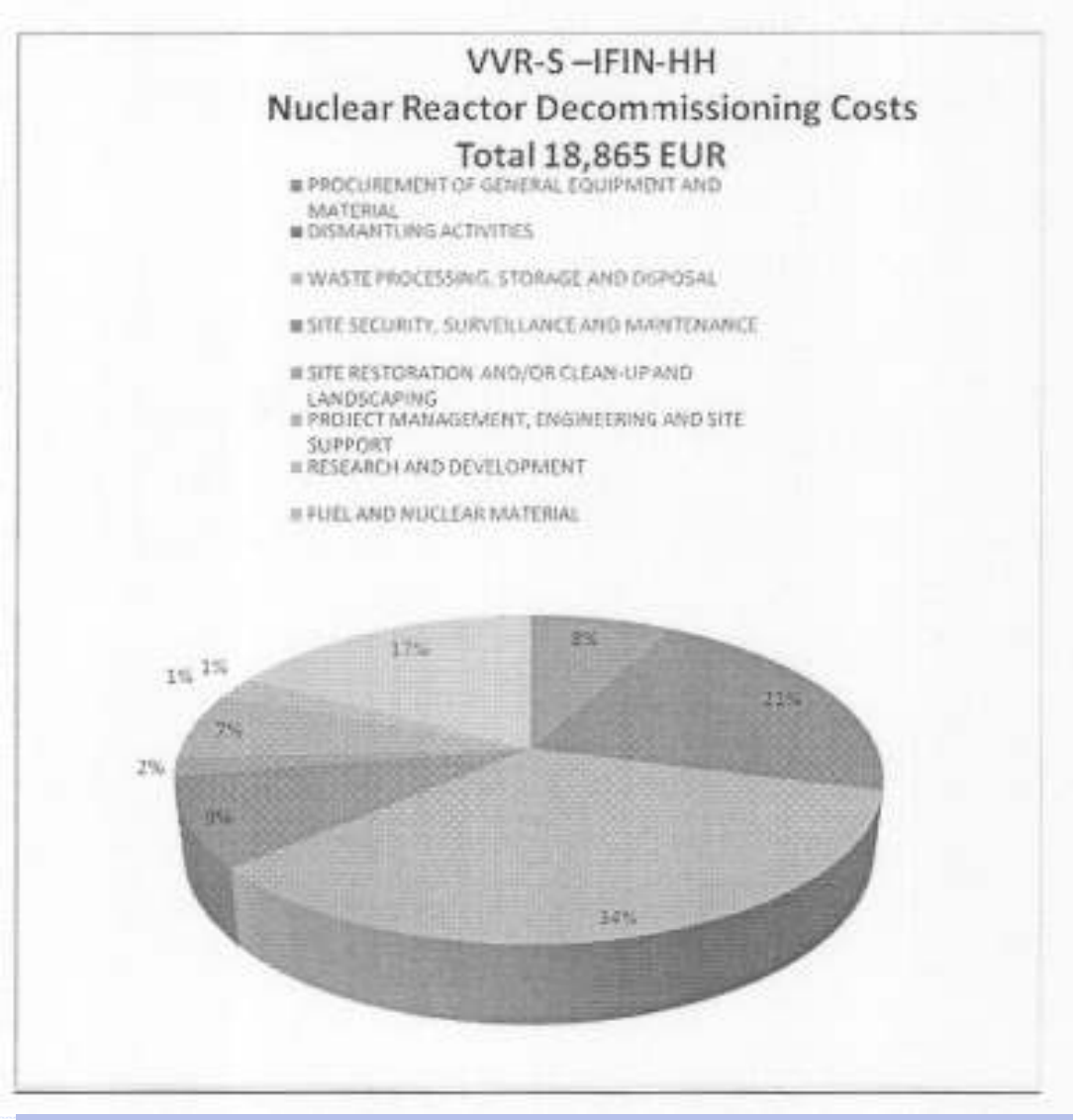
IAEA End of Mission Report - September 2007



Main internal and external groups and organisations related to VVR-S decommissioning

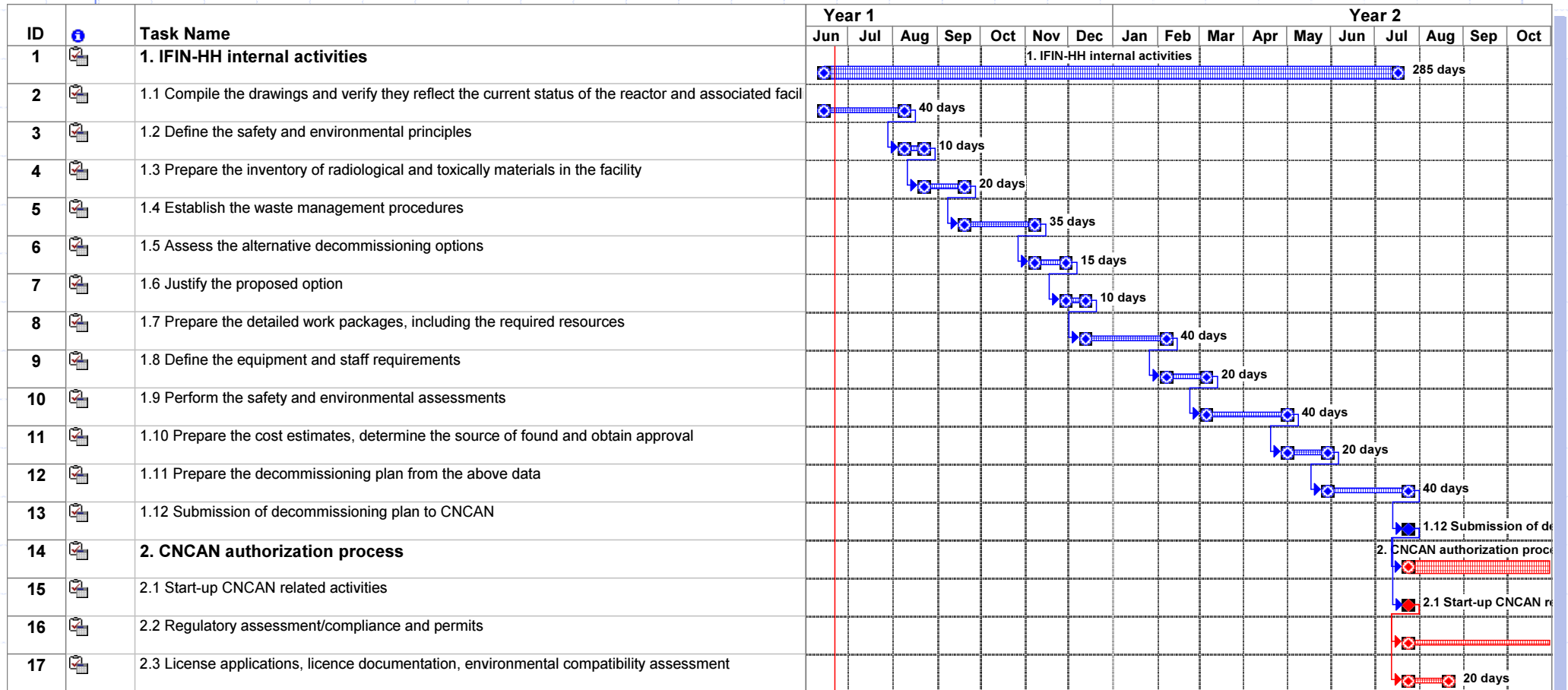


Decommissioning Costs Estimated by IFIN-HH



VVR-S Level 1 Decommissioning Schedule (1)

- Draft -



VVR-S Level 1 Decommissioning Schedule (2)

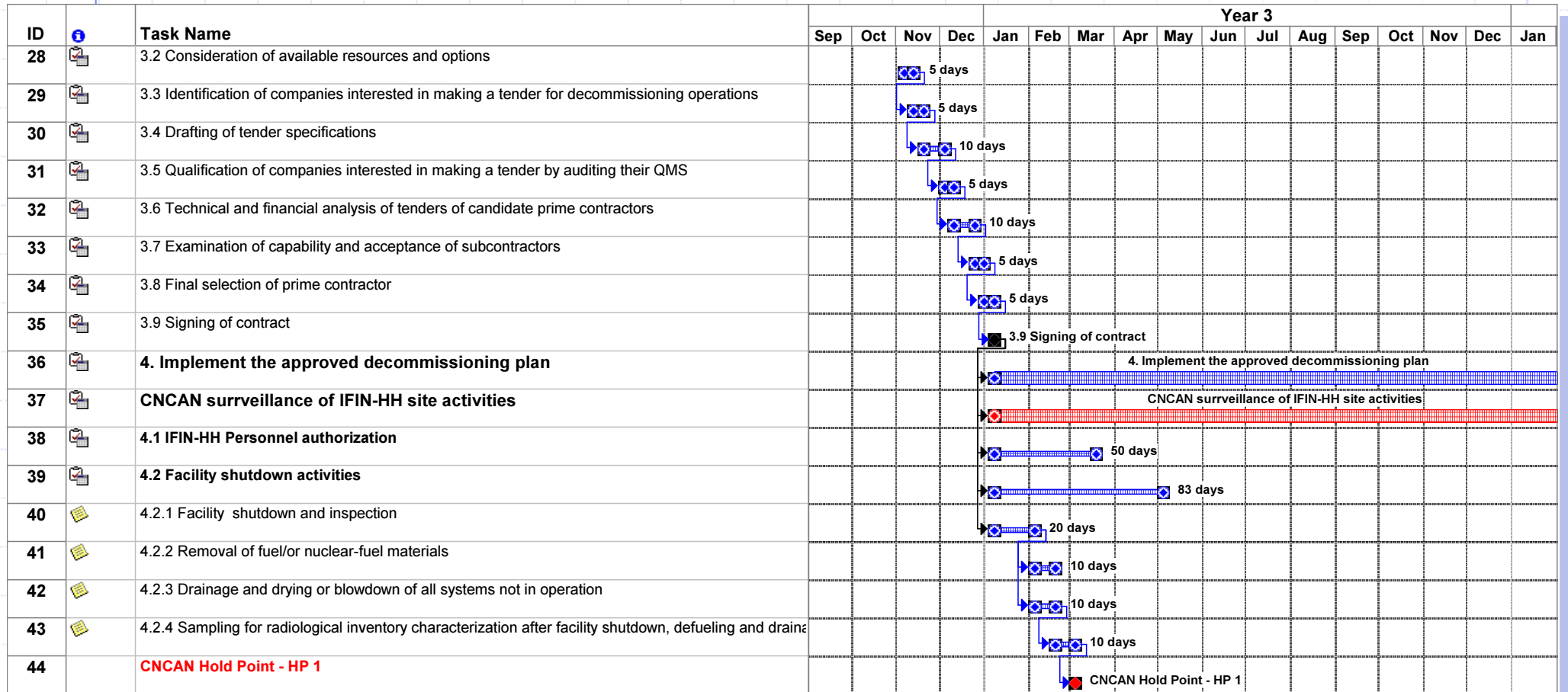
- Draft -

ID	Task Name	Year 2										Year 3						
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
13	1.12 Submission of decommissioning plan to CNCAN																	
14	2. CNCAN authorization process																	
15	2.1 Start-up CNCAN related activities																	
16	2.2 Regulatory assessment/compliance and permits																	
17	2.3 License applications, licence documentation, environmental compatibility assessment																	
18	2.4 Expenditures incurred by the authority in processing the licence																	
19	2.5 Operation and maintenance procedures																	
20	2.6 Radiological surveys for planning and licensing																	
21	2.7 Radiological surveys in the installations																	
22	2.8 Determination of release criteria and its impact on decontamination methods and decommissioni																	
23	2.9 Hazardous-material surveys and analyses																	
24	2.10 Chemical, explosive, combustible material surveys and analysis, to be carried out for the nuclea																	
25	2.11 CNCAN License																	
26	3. IFIN-HH prime contracting selection process																	
27	3.1 Evaluation of approaches from licensee self-management to turnkey contracting																	
28	3.2 Consideration of available resources and options																	
29	3.3 Identification of companies interested in making a tender for decommissioning operations																	



VVR-S Level 1 Decommissioning Schedule (3)

- Draft -



VVR-S Level 1 Decommissioning Schedule (4)

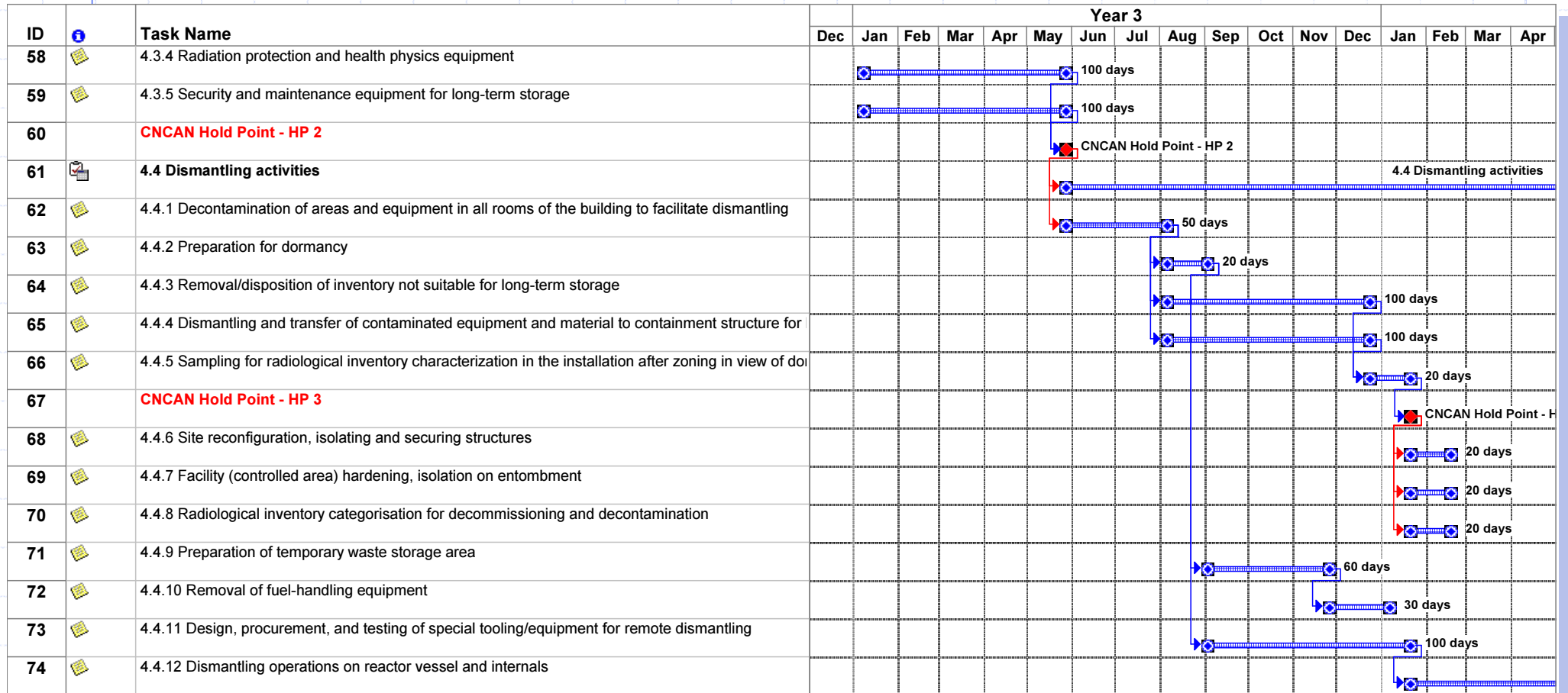
- Draft -

ID	Task Name	Year 3																	
		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
43	4.2.4 Sampling for radiological inventory characterization after facility shutdown, defueling and drainage																		
44	CNCAN Hold Point - HP 1																		
45	4.2.5 Removal of system fluids (water, oil, etc.)																		
46	4.2.6 Removal of special fluids (moderator, cooling water, etc.)																		
47	4.2.7 Decontamination of systems for dose reduction																		
48	4.2.8 Removal of waste from decontamination																		
49	4.2.9 Removal of combustible material																		
50	4.2.10 Removal of spent resins																		
51	4.2.11 Removal of other waste from facility operations																		
52	4.2.12 Isolation of electricity equipment																		
53	4.2.13 Asset recovery: Resale/transfer of facility equipment and components as well as surplus inventory																		
54	4.3 Procurement of general equipment and material																		
55	4.3.1 General site-dismantling equipment																		
56	4.3.2 Hiring of special lifting gear																		
57	4.3.3 Equipment for personnel/tooling decontamination																		
58	4.3.4 Radiation protection and health physics equipment																		
59	4.3.5 Security and maintenance equipment for long-term storage																		



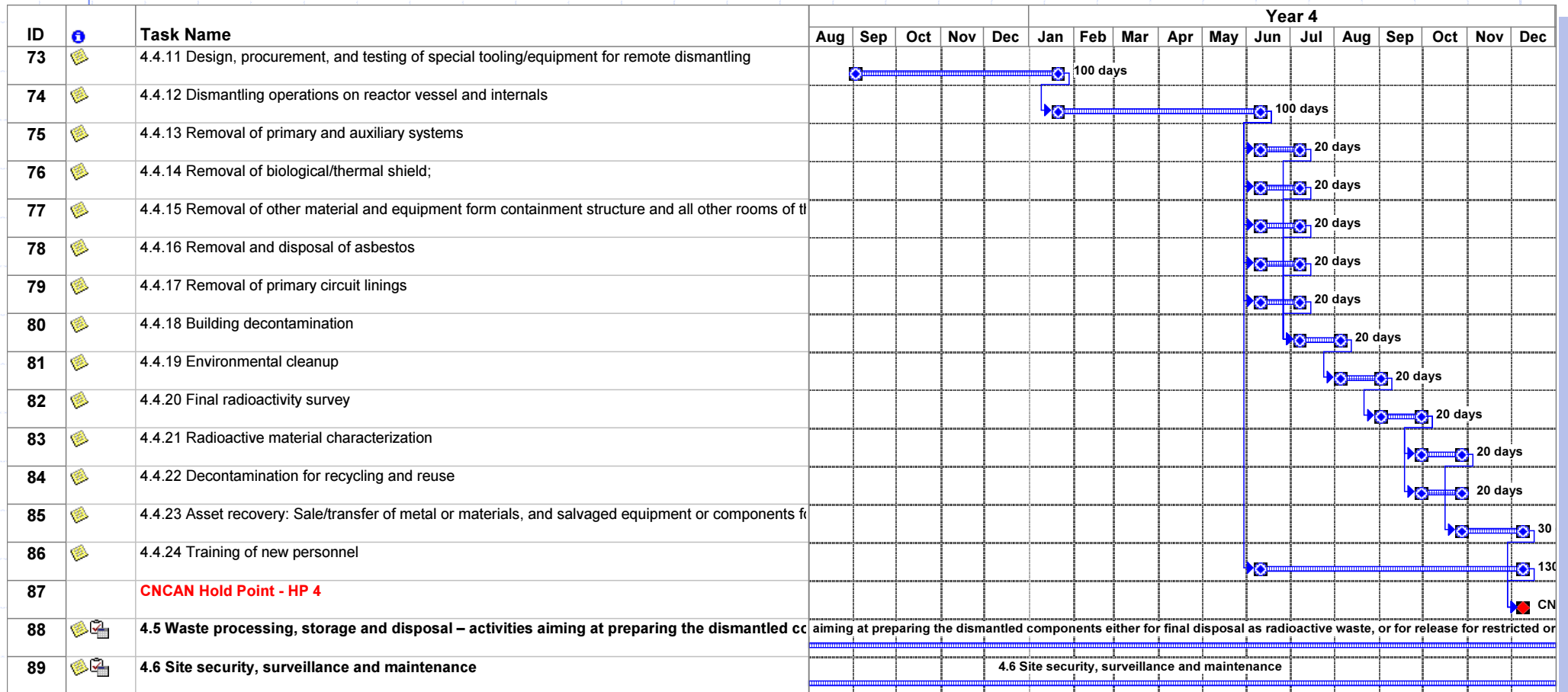
VVR-S Level 1 Decommissioning Schedule (5)

- Draft -



VVR-S Level 1 Decommissioning Schedule (6)

- Draft -



VVR-S Level 1 Decommissioning Schedule (7)

- Draft -

ID	Task Name	Year 4							Year 5									
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
77	4.4.15 Removal of other material and equipment form containment structure and all other rooms of tl		20 days															
78	4.4.16 Removal and disposal of asbestos		20 days															
79	4.4.17 Removal of primary circuit linings		20 days															
80	4.4.18 Building decontamination		20 days															
81	4.4.19 Environmental cleanup			20 days														
82	4.4.20 Final radioactivity survey				20 days													
83	4.4.21 Radioactive material characterization					20 days												
84	4.4.22 Decontamination for recycling and reuse						20 days											
85	4.4.23 Asset recovery: Sale/transfer of metal or materials, and salvaged equipment or components f							20 days										
86	4.4.24 Training of new personnel									30 days								
87	CNCAN Hold Point - HP 4										130 days							
88	4.5 Waste processing, storage and disposal – activities aiming at preparing the dismantled comp																	
89	4.6 Site security, surveillance and maintenance																	
90	4.7 Site restoration and/or cleanup and landscaping																	
91	Obtain approval of the final radiological survey plan from CNCAN																	
92	Complete the final site cleanup and radiological survey																	
93	Obtain approval from CNCAN to be released from responsibility for the site																	



VVR-S Level 1 Decommissioning Schedule (8)

- Draft -

ID	Task Name	Year 6																	
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
77	4.4.15 Removal of other material and equipment form containment structure and all other rooms of th																		
78	4.4.16 Removal and disposal of asbestos																		
79	4.4.17 Removal of primary circuit linings																		
80	4.4.18 Building decontamination																		
81	4.4.19 Environmental cleanup																		
82	4.4.20 Final radioactivity survey																		
83	4.4.21 Radioactive material characterization																		
84	4.4.22 Decontamination for recycling and reuse																		
85	4.4.23 Asset recovery: Sale/transfer of metal or materials, and salvaged equipment or components fr																		
86	4.4.24 Training of new personnel																		
87	CNCAN Hold Point - HP 4																		
88	4.5 Waste processing, storage and disposal – activities aiming at preparing the dismantled comp	comparing the dismantled components either for final disposal as radioactive waste, or for release for restricted or unrestricted																	
89	4.6 Site security, surveillance and maintenance	4.6 Site security, surveillance and maintenance																	
90	4.7 Site restoration and/or cleanup and landscaping	900 days																	
91	Obtain approval of the final radiological survey plan from CNCAN																		
92	Complete the final site cleanup and radiological survey																		
93	Obtain approval from CNCAN to be released from responsibility for the site																		



Conclusions



Conclusions

- ✱ CNCAN regulatory practices for decommissioning activities of the VVR-S reactor are in line with the IAEA safety standards;
- ✱ VVR-S decommissioning funds should be covered by the national fund for radioactive waste management and decommissioning;
- ✱ The decommissioning process for VVR-S research reactor represent an important step to create a national school for the decommissioning the Cernavoda NPP and TRIGA research reactor;
- ✱ The IAEA R²D²P workshop on cost estimates and other similar events organized by the IAEA represent a strong support for the MS whits decommissioning plans under way.