

## SAD Cost Assessment (full costs), Russian kroubles of Dec. 2004

	Equipment, work	Building work (BW)	Installation work (IW)	Equipment manufacturing or purchase	Other work	Total
1	Multiplying blanket, including working design and automatic control system		5 920,00	54 434,20	31 556,80	91 911,00
2	Beam transport line		2 000,00	22 226,50		24 226,50
3	Building construction	93 600,00				93 600,00
4	Fuel temporary storage equipment (doors, containers etc.)		1 738,20	23 582,00		25 320,20
5	Blanket and target cooling system		3 336,00	13 650,00		16 986,00
6	Air flow system for radiation control system		90,00	450,00		540,00
7	Detection system for nonhermetic FE		120,00	3 950,00	1 000,00	5 070,00
8	Fuel elements manufacturing and delivery			42 220,50		42 220,50
9	Physical security system		14 405,00	18 468,00	7 756,00	40 629,00
10	FE storage room equipping, FA production line creation		20,00	1 800,00		1 820,00
11	Radiation control system		335,00	16 500,00		16 835,00
12	Hoisting devices		380,00	4 100,00		4 480,00
13	Geodesical support			1 150,00	1 782,00	2 932,00
14	Special television			1 974,00		1 974,00
15	Auxiliary systems (water supply, sewer, heating, ventilation, electricity, communication and signalling)	1 718,00	4 267,00	9 650,00		15 635,00
16	Land improvement	396,00				396,00
	<b>Subtotal:</b>	<b>95 714,00</b>	<b>32 611,20</b>	<b>214 155,20</b>	<b>42 094,80</b>	<b>384 575,20</b>
17	Rise in the cost of the installation work in winter time, 1,5% from BW and IW	1 435,71	489,17			1 924,88
18	Premium for the commissioning				1 924,88	1 924,88
19	Temporary buildings and structures, 1,8% from BW and IW	1 722,85	587,00			2 309,85
20	Working design				26 700,00	26 700,00
21	Project examination				1 068,00	1 068,00
22	Follow-on over building works - 0,2% from subtotal				769,15	769,15
23	Technical supervising, 0,8% from subtotal				3 076,60	3 076,60
24	Unforeseen costs, 3% from subtotal	2 871,42	978,34	6 424,66	1 262,84	11 537,26
	<b>Total:</b>	<b>101 743,98</b>	<b>34 665,71</b>	<b>220 579,86</b>	<b>76 896,27</b>	<b>433 885,82</b>

## SAD Cost Assessment (ISTC channeling), Russian kroubles of Dec. 2004

	Equipment, work	Building work (BW)	Installation work (IW)	Equipment manufacturing or purchase	Other work	Total
1	Multiplying blanket, including working design and automatic control system		1 926,44	30 433,20	6 311,36	38 671,00
2	Beam transport line		400,00	13 335,90		13 735,90
3	Building construction	65 520,00				65 520,00
4	Fuel temporary storage equipment (doors, containers etc.)		347,64	14 149,20		14 496,84
5	Blanket and target cooling system		667,20	8 190,00		8 857,20
6	Air flow system for radiation control system		18,00	270,00		288,00
7	Detection system for nonhermetic FE		24,00	2 370,00	200,00	2 594,00
8	Fuel elements manufacturing and delivery			25 332,30		25 332,30
9	Physical security system		14 405,00	18 468,00	7 756,00	40 629,00
10	FE storage room equipping, FA production line creation		4,00	1 080,00		1 084,00
11	Radiation control system		67,00	16 500,00		16 567,00
12	Hoisting devices		380,00	4 100,00		4 480,00
13	Geodesical support			690,00	356,40	1 046,40
14	Special television			1 974,00		1 974,00
15	Auxiliary systems (water supply, sewer, heating, ventilation, electricity, communication and signalling)	1 030,80	853,40	5 790,00		7 674,20
16	Land improvement	237,60				237,60
	<b>Subtotal:</b>	<b>66 788,40</b>	<b>19 092,68</b>	<b>142 682,60</b>	<b>14 623,76</b>	<b>243 187,44</b>
17	Rise in the cost of the installation work in winter time, 1,5% from BW and IW	1 001,83	286,39			1 288,22
18	Premium for the commissiioning				1 288,22	1 288,22
19	Temporary buildings and structures, 1,8% from BW and IW	1 202,19	343,67			1 545,86
20	Working design				5 340,00	5 340,00
21	Project examination				213,60	213,60
22	Follow-on over building works - 0,2% from subtotal				486,37	486,37
23	Technical supervising, 0,8% from subtotal				1 945,50	1 945,50
24	Unforeseen costs, 3% from subtotal				7 295,62	7 295,62
	<b>Total:</b>	<b>68 992,42</b>	<b>19 722,74</b>	<b>142 682,60</b>	<b>31 193,07</b>	<b>262 590,83</b>

# SAD funding distribution:

- ISTC –
  - SAD core, beamline & building working design
  - SAD Automation & Control System design
  - SAD Physical Security System
  - SAD equipment manufacturing (inc. beamline components)
  - SAD FE production
  - BFS experiment (shared with ECATS)

# SAD funding distribution:

- ECATS –
  - SAD equipment manufacturing (beamline components)
  - SAD Physical Security System
  - BFS experiment (shared with ISTC)

# SAD funding distribution:

- JINR –
  - SAD building construction
  - SAD equipment manufacturing (beamline components)
  - Personnel recruitment & training
  - Accelerator M&O during startup

# Statement of

Joint Institute for Nuclear Research (JINR)

**on the scientific working programme of the Sub-critical Assembly Dubna (SAD) project, in close co-operation with the Domain DM2 ECATS activities of the European sponsored integrated project EUROTRANS.**

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The JINR representatives assume that the project can be realised providing that JINR and DM2 ECATS of EUROTRANS fund SAD project at the level 1/3 each under the condition that another 1/3 of the necessary funding will be provided by ISTC. At present time JINR is ready to take responsibility on 1.2 M Euro funding, having in mind that the rest of the funds necessary to cover 1/3 of the project cost will be covered by a collaboration that will be created in Russia.

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The assumed cost split for the project is given in the following table.

## **Cost split for the SAD project funding numbers are in M Euro**

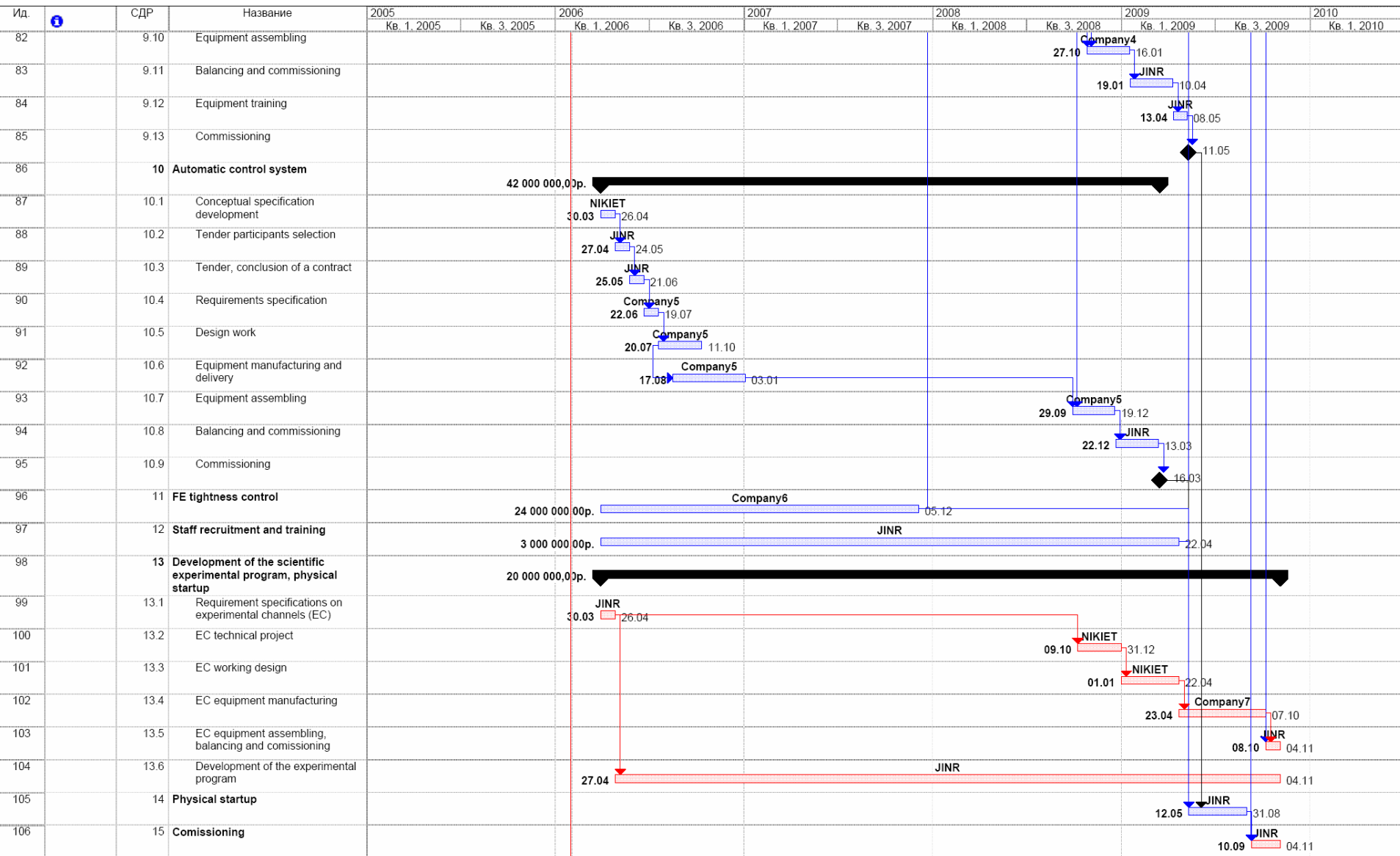
Year	ECATS	ISTC	JINR	
			Budget	Collaboration
2006	1.7	0.8	0.1	*
2007	+ 0.6 (in kind contribution)	1.5	0.1	*
2008		0.4	0.5	*
2009			0.5	*

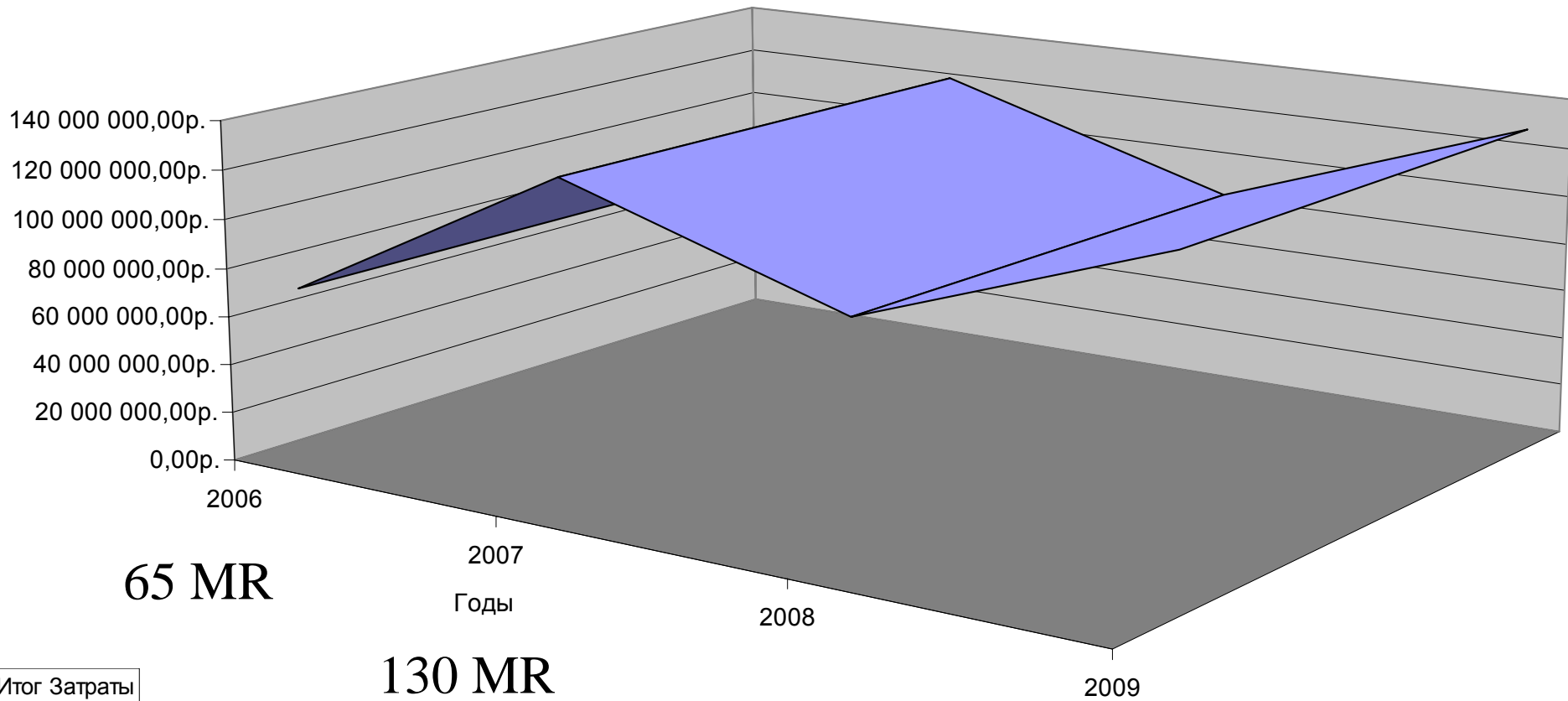
\* Numbers to be clarified after creation of the collaboration

Ид.	СДР	Название	2005		2006		2007		2008		2009		2010	
			Кв. 1, 2005	Кв. 3, 2005	Кв. 1, 2006	Кв. 3, 2006	Кв. 1, 2007	Кв. 3, 2007	Кв. 1, 2008	Кв. 3, 2008	Кв. 1, 2009	Кв. 3, 2009	Кв. 1, 2010	
1	1	<b>Documents preparation</b>	2 000 000,00p.											
2	1.1	Development and justification of the physical startup program	JINR 30.03 - 31.12											
3	1.2	Instruction on nuclear safety for FE and FA	JINR 30.03 - 26.04											
4	1.3	Conclusion from the nuclear safety department of Rostechndzor	JINR 27.04 - 03.05											
5	1.4	Development of the operation licence	JINR 30.03 - 31.12											
6	2	<b>Licenses on facility allocation and creation</b>	1 000 000 00p.											
7	3	<b>Subcritical assembly, optional equipment for shielding and primary coolant circuit</b>	82 760 000,00p.											
8	3.1	SA working design	NIKIET 30.03 - 28.02											
9	3.2	Tender on manufacturing	JINR 02.10 - 22.12											
10	3.3	Manufacturing of the equipment	SAD Eq. Production Company 25.12 - 23.11											
11	3.4	Procurement	JINR 26.11 - 21.12											
12	3.5	Equipment assembling	Construction firm 24.12 - 06.06											
13	3.6	Balancing and comissioning	JINR 09.06 - 29.08											
14	3.7	Acceptance evaluation, licensing, certification	JINR 01.09 - 21.11											
15	4	<b>SAD modelling at BFS</b>	9 300 000,00p.											
16	4.1	Experiment design	NIKIET 30.06 - 03.05											
17	4.2	BFS experiments	Obninsk 04.05 - 06.03											
18	5	<b>Facility building</b>	95 000 000,00p.											
19	5.1	Working design (building drawings)	GSPI 31.08 - 24.10											
20	5.2	Working design (equipment assembling)	GSPI 25.10 - 26.08											
21	5.3	Tender on building construction	JINR 25.10 - 19.12											
22	5.4	<b>Building construction</b>	90 800 000,00p.											
23	5.4.1	Geophysical investigation of the soil to be excavated	GSPI 30.03 - 26.04											
24	5.4.2	Excavation, existing constructions dismantling	Construction firm 01.09 - 26.10											
25	5.4.3	Geological engineering and geodesic survey	GSPI 27.10 - 23.11											
26	5.4.4	Foundation building	Construction firm 24.11 - 21.12											
27	5.4.5	Building construction	Construction firm 22.12 - 07.06											

Ид.	СДР	Название	2005		2006		2007		2008		2009		2010
			Кв. 1. 2005	Кв. 3. 2005	Кв. 1. 2006	Кв. 3. 2006	Кв. 1. 2007	Кв. 3. 2007	Кв. 1. 2008	Кв. 3. 2008	Кв. 1. 2009	Кв. 3. 2009	Кв. 1. 2010
28	5.4.6	Working design of the special crane			30.03	16.08							
29	5.4.7	Manufacturing of the special crane			17.08		03.01						
30	5.4.8	Special crane assembling and putting into operation					04.01	31.01					
31	5.4.9	Equipment assembling in concrete bulk							24.12	14.03			
32	5.4.10	Finishing of the construction works							17.03	06.06			
33	5.4.11	Diking restoring							09.06	04.07			
34	5.4.12	Rough finishing							07.07	26.09			
35	5.4.13	Fine finishing							29.09	24.10			
36	5.4.14	Land improvement							07.07	26.09			
37	6	FA production line			19 000 000,00p.								
38	6.1	FE storage room equipping			0,00p.								
39	6.1.1	Calculation of the critical masses			30.03	26.04							
40	6.1.2	Requirement specifications on equipment			30.03	26.04							
41	6.1.3	Technical project											
42	6.1.4	Equipment manufacturing			27.04	11.10							
43	6.1.5	Construction and assembling work					12.10	28.03					
44	6.1.6	Design work on containers					29.03	12.09					
45	6.1.7	Containers manufacturing			27.04	11.10							
46	6.2	FA production line creation			0,00p.								
47	6.2.1	FE and FA imitators manufacturing			30.03	16.08							
48	6.2.2	Design of the production line			30.03	21.06							
49	6.2.3	Construction and assembling work			22.06	13.09							
50	6.2.4	Putting into operation					14.09	11.10					
51	6.2.5	FA technology development					12.10	03.01					
52	7	Fuel			45 000 000,00p.								
53	7.1	Pellets fabrication											
54	7.2	Component parts manufacturing			30.03	26.04							







65 MR

130 MR

91 MR

146 MR

# #2267 Extension for 2006

## Task 1 Subcritical assembly (SA), optional protection and first loop equipment

Task description and main milestones		Participating Institutions
1.1	SA working design;	1- NIKIET, Moscow, Russia; 2- JINR, Dubna, Russia
1.2	Tender on manufacturing;	
1.3	Final report preparation.	
Description of deliverables		
1	Technical report	

## Task 2 Facility building

Task description and main milestones		Participating Institutions
2.1	Working design (building drawings);	1- GSPI, Moscow, Russia; 2- JINR, Dubna, Russia
2.2	Working design (equipment assembling);	
2.3	Tender on building construction;	
2.4	Final report preparation.	
Description of deliverables		
1	Technical report	

## Task 3 FA production line

Task description and main milestones		Participating Institutions
3.1	Technical project;	1- JINR, Dubna, Russia; 2- VNIINM, Moscow, Russia; 3- NIKIET, Moscow, Russia
3.2	Design work on containers;	
3.3	FE and FA imitators manufacturing;	
3.4	Design of the production line;	
3.5	Final report preparation.	
Description of deliverables		
1	Technical report	

## Task 4 Fuel

Task description and main milestones		Participating Institutions
4.1	Pellets fabrication;	1- JINR, Dubna, Russia; 2- VNIINM, Moscow, Russia; 3- IA Mayak, Ozerovsk, Russia
4.2	Technology on pellets storage development;	
4.3	FE components order;	
4.4	Final report preparation.	
Description of deliverables		
1	Technical report	

## Task 5 Beam line

Task description and main milestones		Participating Institutions
5.1	Beamline working design;	1- JINR, Dubna, Russia; 2- GSPI, Moscow, Russia
5.2	Vertical deflecting magnets manufacturing;	
5.3	Magnetic elements manufacturing;	
5.4	Final report preparation.	
Description of deliverables		
1	Technical report	

## Task 6 Physical security

Task description and main milestones		Participating Institutions
6.1	PS conceptual specification development;	1- JINR, Dubna, Russia; 2- GSPI, Moscow, Russia
6.2	Tender participants selection;	
6.3	Final report preparation.	
Description of deliverables		
1	Technical report	

## Task 7 Automatic control system

Task description and main milestones		Participating Institutions
7.1	ACS conceptual specification development;	1- JINR, Dubna, Russia; 2- GSPI, Moscow, Russia
7.2	Tender participants selection;	
7.3	Final report preparation.	
Description of deliverables		
1	Technical report	

## Task 8 Development of the scientific experimental program

Task description and main milestones		Participating Institutions
8.1	Requirement specifications on experimental channels (EC);	1- JINR, Dubna, Russia; 2- NIKIET, Moscow, Russia
8.2	EC technical project;	
8.3	EC working design;	
8.4	SAD modeling at BFS (experimental program);	
8.5	Final report preparation.	
Description of deliverables		
1	Technical report	

## Task 9 SAD licensing

Task description and main milestones		Participating Institutions
9.1	Delivery of the SAD safety assessment report to foreign collaborators;	1- JINR, Dubna, Russia
9.2	License on SAD facility allocation and construction;	
9.3	Final report preparation.	
Description of deliverables		
1	SAD safety assessment report	