Gamma Blockers

Overview and schedule

NATIONAL CENTRE FOR NUCLEAR RESEARCH ŚWIERK

Karol Szymczyk

17-11-2017

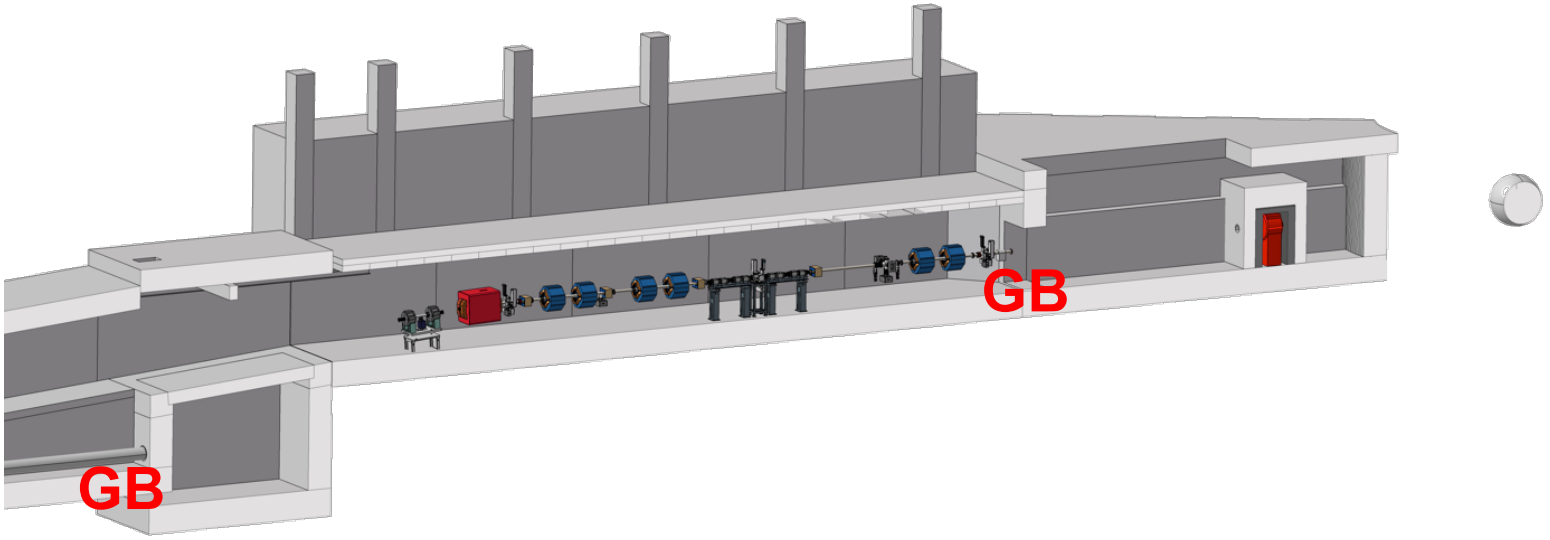
Overview

09:00 - 09:15 Committee discussion (closed) 15'	
09:15 - 09:35 Gamma Blockers overview and schedule 20'	**Karol Szymczyk**
09:35 - 09:55 Requirements and interfaces 20'	Marcin Wojciechowski
09:55 - 10:35 Radiation studies 40'	Karol Szymczyk
10:35 - 10:50 Coffee break	
10:50 - 11:30 Mechanical design 40'	Marcin Wojciechowski
11:30 - 11:45 Safety, Machine Protection and RAMI 15'	Marcin Wojciechowski
11:45 - 12:00 Quality and Verification plans 15'	Karol Szymczyk
12:00 - 13:30 Lunch	
13:30 - 14:30 Committee deliberations (closed) 1h0'	
14:30 - 15:00 Closeout 30'	

Gamma Blocker

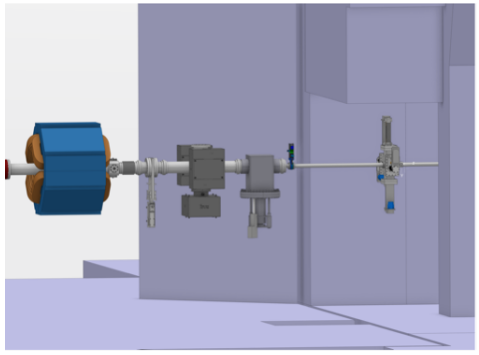
"Absorb gamma radiation from the target or beam dump, during maintenance periods."

- Gamma blocker consists of: shield plate, movement mechanism, vaccum chamber, CF beam line flanges, actuator(s),

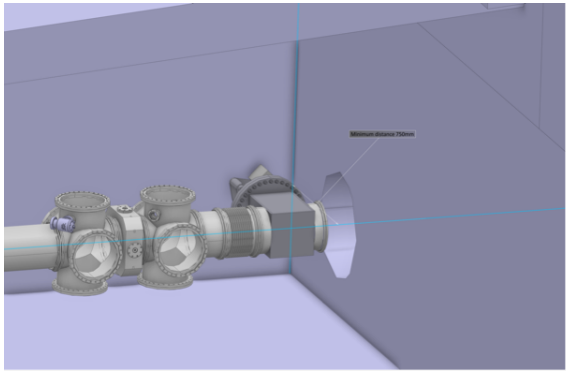


Gamma Blocker

Two Gamma Blockers:



In the A2T section 30 cm before NSW



In the Dump Line section, in front of the Tuning Dump

Requirements change

A2T GB:

1. Ball screw driven linear actuator instead of trapezoidal thread actuator **+1500€**
2. Phytron stepper motor instead of manual crank **+2100€**
3. Minor changes (chamber positioning, metrology targets, core position locks) **+1000€**

DmpL GB:

1. Bigger nominal diameter of beam line flanges **+1000€**
2. Bigger GB core **+1000€**
3. Bigger vacuum chamber **+3000€**
4. Bigger GB core travel -> longer vacuum bellow **+700€**
5. Ball screw driven linear actuator instead of trapezoidal thread actuator **+2000€**
6. Phytron stepper motor instead of manual crank **+2100/4300€**
7. Minor changes as for A2T GB **+1000€**
8. Vacuum testing equipment (bigger DN), rect flange **+1000€**

+ Manpower 6000 €

Total cost increase:
24600€

Document AIK 6.1
Deliverable Item Definition

4.1 **Deliverable Item Definition**

The Partner shall provide its contributions in accordance with the following time schedule:

Start date: T0: October 1st 2016

End date: 2018.11.30

Task no.	Deliverables	Responsible Organization	Delivery Deadline / Delivery MS
11.6.3.1	PDR Data Package (Preliminary Design Review)	Partner	Two (2) weeks prior to PDR T0+3,5 month (2016.01.13)
11.6.3.1	CDR Data Package (Critical Design Review)	Partner	Five (5) weeks prior to CDR T0+8 month (2017.06.01)
11.6.3.2	FAT Report	Partner	T0+18 month (2018.03.30)

11.6.3.2	Delivery Gamma Blocker facility element	Partner	T0+19 month (2018.04.29)
11.6.3.3	SAT Report	Partner	T0+20 month (2018.06.01)
11.6.3.3	Installation Readiness Report (for the Installation Readiness Review (IRR)	Partner	T0+26 month (2018.11.30)

Table 2. Deliverables

This overall contribution is set to the ESS ERIC Cost Book value of 112,239.00 (one hundred and twelve thousand two hundred and thirty nine) €2013 (Euro).

24.600€

NARODOWE CENTRUM BADAŃ JĄDROWYCH ŚWIERK

Change Request

EUROPEAN SPALLATION SOURCE

Document Type	Change Request
Document Number	ESS-0102111
Date	Sep 27, 2017
Revision	1
State	Released
Confidentiality Level	Internal
Page	1 (2)

Change Request - Form for ESS Class A, B and C changes

Class D and E changes are logged using Project Change Log

CHANGE DATA			
CR ID	11.00123.1	**Date created**	2017/03/21
Title of the CR	Additional funding for AIK 6.1		
Name of Change Leader	Iñigo Alonso	**Change originator**	Iñigo Alonso
Change class Approving entity	☐ Class A, European Spallation Source ERIC Council	☐ Class B DG	☒ Class C Project Manager

CHANGE ANALYSIS			
Item No		**Baseline**	
Reason for change	Scope increase		
Change description	The budgeting for the gamma blockers was done under the assumption of building two identical units with beam pipe flanges of 160mm diameter and manual actuation of the mechanism. The Dump Line unit will need to be bigger, due to the size of the beam pipe in that section (250mm), driving an increase in the size of the vacuum chamber, GB core, and linear actuator length. Additionally, the remote actuation of these units is necesary for fulfilling the PSS requirements, so stepper motors have been added to the design.		
Change Analysis (effects, risks, time, costs etc.)	Additional 24.600 euros to be added to the AIK 6.1 TA, changing it from 112.239 to 136.839 euros, to be credited to Poland as IKC.		
Change affects other projects	Affected projects: ☒ Accelerator ☐ Target ☐ CF ☐ NSS ☐ ICS ☐ ES&H ☐ Admin ☐ Initial Ops ☐ Other		
Comment	For more details please refer to the documentation presented at the Gamma Blockers PDR on 2017/03/20		

CHANGE IMPACT	
Schedule impact for affected projects	No impact
Scope impact for projects	Added stepper motors
Cost impact for projects	+24.600 euros
Safety Impact	Changes improve the safety of maintenance personnel
Risks for projects	Reduced risk of not gaining SSM approval for operation
References	

Template: Change Request (ESS-0060900 Rev: 3, Active date: Feb 10, 2017)

	Baseline	

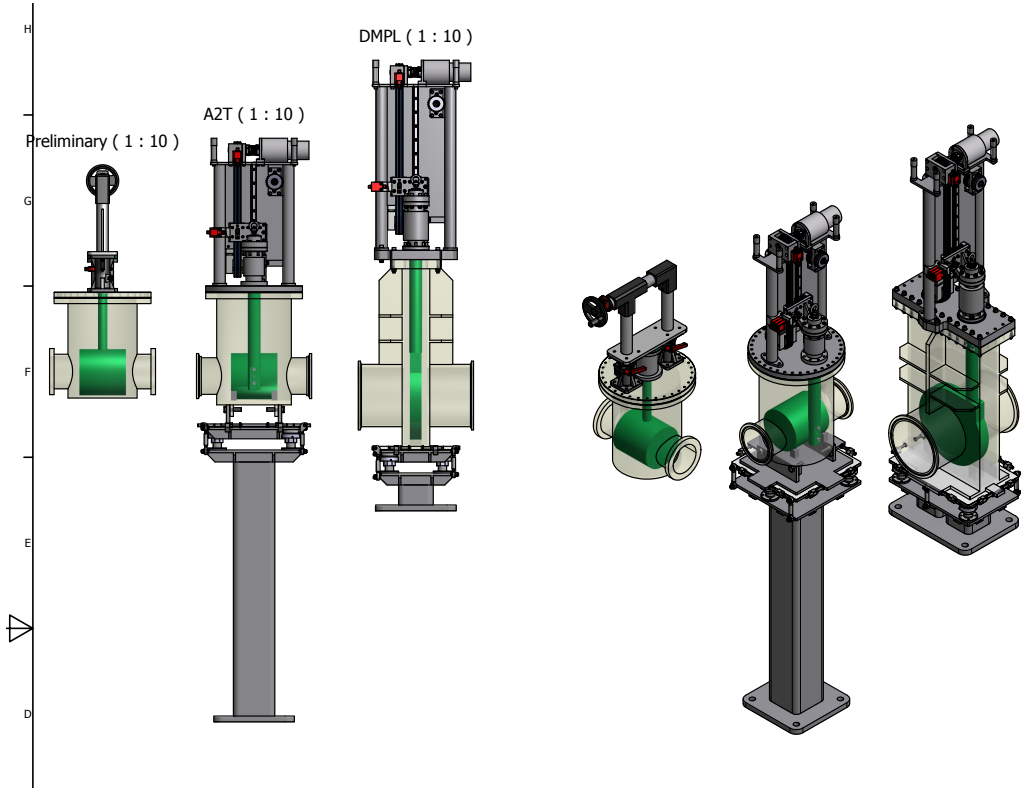
Scope increase

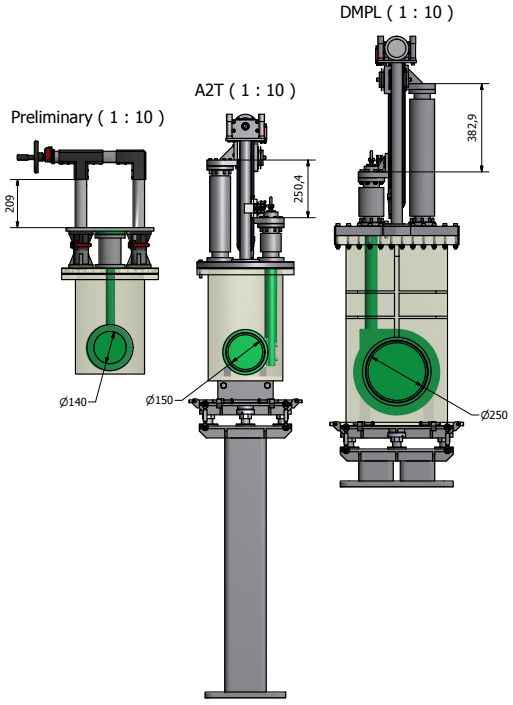
The budgeting for the gamma blockers was done under the assumption of building two identical units with beam pipe flanges of 160mm diameter and manual actuation of the mechanism. The Dump Line unit will need to be bigger, due to the size of the beam pipe in that section (250mm), driving an increase in the size of the vacuum chamber, GB core, and linear actuator length. Additionally, the remote actuation of these units is necesary for fulfilling the PSS requirements, so stepper motors have been added to the design.

Cost impact for projects	+24.600 euros
Safety Impact	Changes improve the safety of maintenance personnel
Risks for projects	Reduced risk of not gaining SSM approval for operation

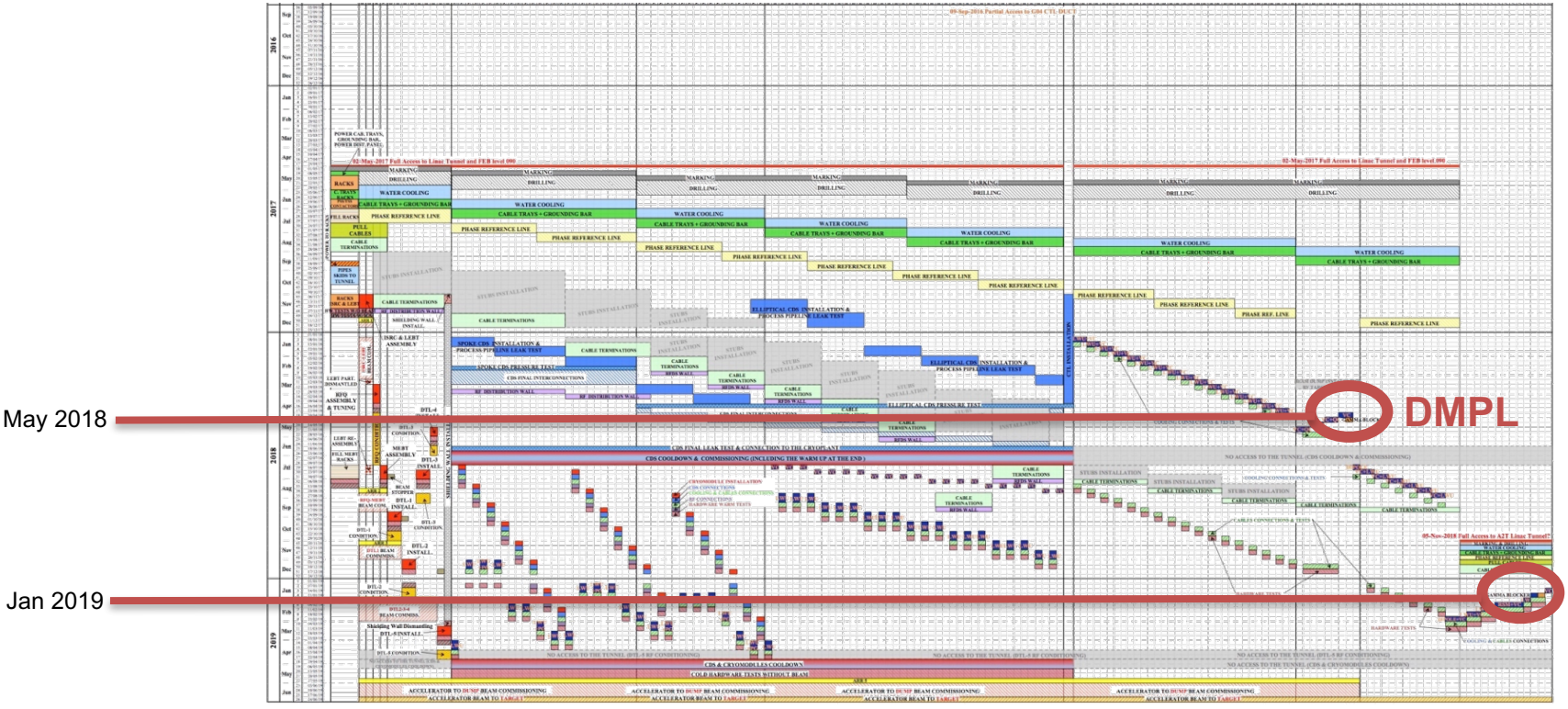
NARODOWE CENTRUM BADAŃ JĄDROWYCH ŚWIERK

Mechanical Model

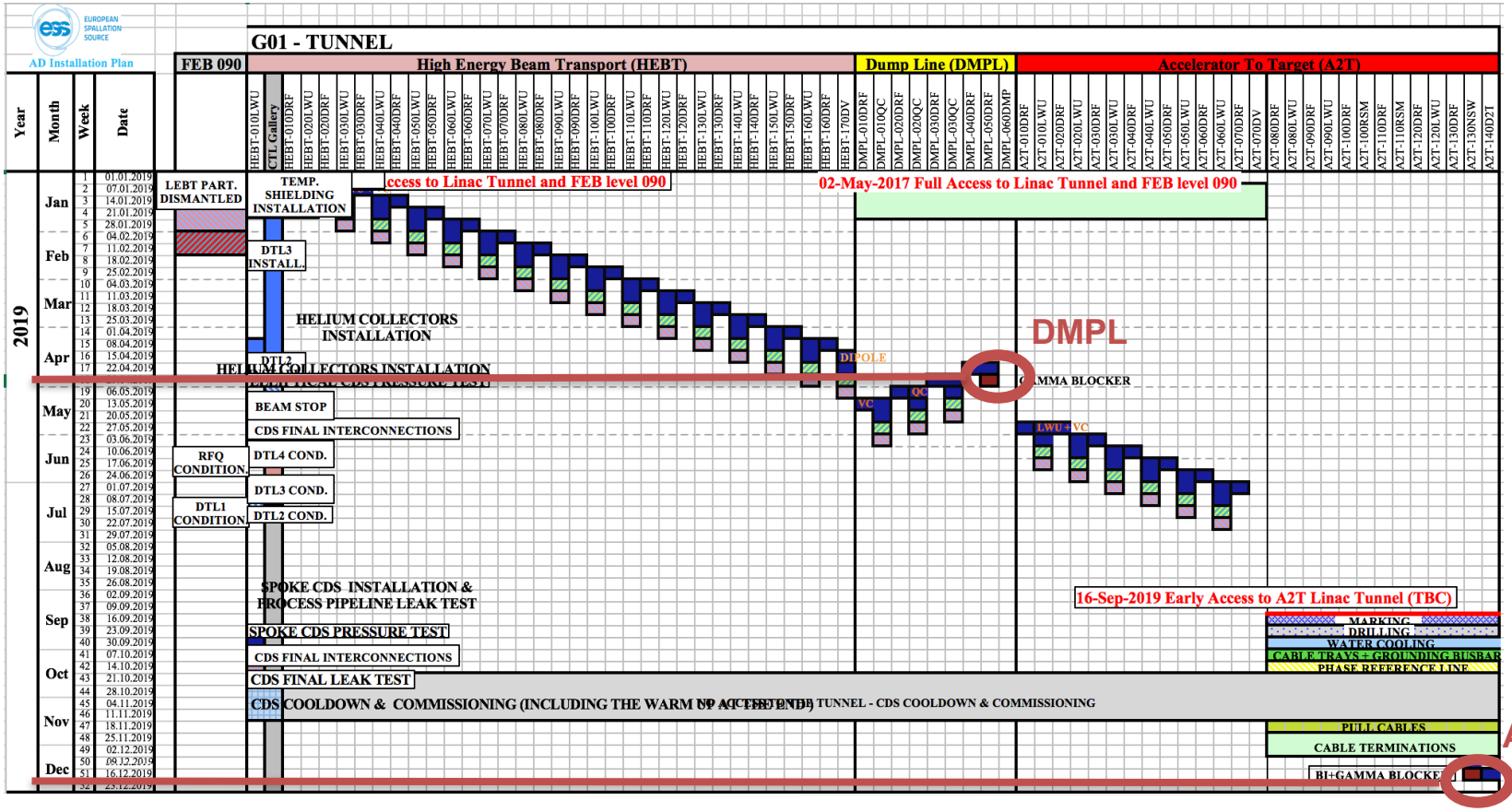




Installation Schedule Overview



Installation Schedule Overview NEW



Time line

	2016		2017												2018										
TASK	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
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Detailed Design Report																									
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Critical Design Report
2017.11

Procurement
2017.12

1 month

Production & deliveries
2018.03

3 months

Final assembly & tests
2018.05

2 months

Transport to Lund
2018.06

1 month

Time line

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ESS-0060388 - IKC Agreement Schedule - AIK 6.1 - Gamma Blockers - 2016.09.14 NCBJ_only final clean_EM QA_2016.09.14 clean.docx

	2016		2017												2018										
TASK	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
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Critical Design Report 2017.11

Procurement 2017.12 — 1 month

Production & deliveries 2018.03 — 3 months

Final assembly & tests 2018.05 — 2 months

Transport to Lund 2018.06 — 1 month