

# Budker Project Management Office (BINP PMO)

Katja PETROWA  
on behalf of the BINP team

# List of Collaboration Contracts between BINP and FAIR

N	Contract N BRIEF	Contract N FULL	Sub-Project Leader (SPL)/ Work Package Leader (WPL)	Description
1	CC2.3.2-2	FAIR Contract No. CC2.3.2-2 (Magnets for HEBT System)	Ivan MOROZOV	Design, production, delivery, installation of magnets with resistive "warm" (nonsuperconducting) coils for the FAIR High Energy Beam Transport (HEBT) System (Batch 2 and 3)
2	no	FAIR Contract The design, production, delivery, assembly and testing of the Superconducting Solenoid Magnet of the PANDA Detector As Work Package PSP 1.4.1.15 dated 10.03.2017	Eugeny PYATA	Design, production, delivery, assembly and testing of the Superconducting Solenoid Magnet of the PANDA Detector
3	AFAA1 to CC 2.4.2.1.1.2 for 2.4.7.1.12.1	Annex for additional Assignment (AFAA) To the Collaboration Contract CC 2.4.2.1.1.2 Hereinafter referred to as "the Main Contract"	Alexander KRASNOV	Vacuum chambers and supports for beam diagnostics at the focal planes of Super-FRS; Diagnostic chamber Support (different sizes)
4	CC 2.3.7.1.2.3.2 as AFAA2 to CC 2.4.2.1.1.2	Annex for additional Assignment (AFAA) To the Collaboration Contract CC 2.4.2.1.1.2 Hereinafter referred to as "the Main Contract"	Alexander KRASNOV	Vacuum chambers for the FAIR High Energy Beam Transport (HEBT) System (HEBT Batch 2-3 Vacuum chambers)
5	CC 2.5.2.1	FAIR Contract No. CC 2.5.2.1 (Dipole magnets)	Alexander STAROSTENKO	Design, production and delivery of Dipole Magnets for the FAIR Collector Ring (CR) System
6	no	Addendum 1 to the Collaboration Contract dated 12.12.2016 As part of the Work Package PSP 1.1.1.7 For the CBM experiment	Nikolay MEZENTSEV	Design, prototyping, production, delivery, assembly and testing of the Dipole Magnet As part of the Work Package PSP 1.1.1.7 For the CBM experiment
7	no	Co-operation agreement, Implementing Agreement Addendum No 1 to the CO-OPERATION Agreement	Eugeny ANTOKHIN	Technological design of dipole magnet for HESR-PANDA
8	CC 2.4.2.1.1.2	FAIR Contract No. CC 2.4.2.1.1.2 on the in-kind Contribution (IKC) 2.4.2.1.1.2 Dipole 1 for Super-FRS	Konstantin ZOLOTAREV	Dipole 1 for Super-FRS
9	no	Accelerator co-operation agreement, Accelerator Implementing Agreement No. 1 to the ACCELERATOR CO-OPERATION Agreement	Konstantin ZOLOTAREV	Technological design of radiation-resistant multipole magnets for Super-FRS
10	CC CR.HOAI	FAIR Contract No. CC CR.HOAI	Dmitry SHWARTZ	Technical Coordination of the Construction of the Collector Ring to the Construction of the FAIR Facility
11	CC 2.5.2.2.1	FAIR Contract No. CC 2.5.2.2.1 (CR Rest)	Ivan KOOP, Dmitry SHWARTZ	Design, production and delivery of Magnets, Power Supplies, Injection/Extraction, Beam Diagnostics, Vacuum for the FAIR Collector Ring (CR) System; installation; operation of CR as a whole without beam
12	CC 2.4.7.1.2.2.1 as AFAA3 to CC 2.4.2.1.1.2	Annex for additional Assignment (AFAA) To the Collaboration Contract CC 2.4.2.1.1.2 Hereinafter referred to as "the Main Contract"	Alexander KRASNOV	Vacuum chambers inside SC dipoles (SFRS)
13	CC 2.3.7.1.2.1 as AFAA4 to CC 2.4.2.1.1.2	Annex for additional Assignment (AFAA) To the Collaboration Contract CC 2.4.2.1.1.2 Hereinafter referred to as "the Main Contract"	Alexander KRASNOV	Vacuum chambers HEBT Batch 4
14	no	Collaboration Contract for design, production and delivery of vacuum chambers for dipole magnets for Work Package PSP 2.3.7.1.2.2 for the FAIR High Energy Beam Transport (HEBT) System dated 23.01.2013	Alexander KRASNOV	design, production and delivery of vacuum chambers for dipole magnets for Work Package PSP 2.3.7.1.2.2 for the FAIR High Energy Beam Transport (HEBT) System
15	AFFA 5	SFRS vacuum components	Alexander KRASNOV	Beam pipes and chambers (SFRS vacuum components), Not signed
16	CC 2.9.2.2.1.1.1 as AFAA6 to CC 2.4.2.1.1.2	Annex for additional Assignment (AFAA) To the Collaboration Contract CC 2.4.2.1.1.2 Hereinafter referred to as "the Main Contract"	Petr SHATUNOV, Dmitry SHWARTZ	2.9.2.2.1.1.1 p-Bar Quadrupoles, CR-type, NC, wide apert. 2.9.3.2.1.1.1 p-Bar Power Part, Cabinet, Construction (pulsed op) 2.9.7.1.2.3.1.1 p-Bar Quad Chamber wide 2.9.3.2.4 Modification of original CR Power Part, Cabinet 2.9.7.1.2.3.4 Modification of original CR Vacuum Chamber
17	no	SFRS branching chambers inside SC dipoles	Alexander KRASNOV	SFRS branching chambers inside SC dipoles, Not signed

Eugene Levichev

“FAIR is one of the greatest and important BINP collaborator in the history.”

- BINP PMO is created to work on BINP-FAIR Contracts
- BINP PMO Primary goal is to facilitate technical and organizational interaction under the BINP and FAIR
- The first working meeting of the FAIR PMO specialists and BINP PMO staff was hold during 3rd BINP-FAIR Collaboration Coordination Workshop, November 2019

# FAIR-group-oriented contents

- BINP PMO information
- Info for FAIR Product Life Cycle Management (PLM) group
- Info for FAIR Project Planning (PPL) group
- Info for FAIR Quality Management (QUA) group
- Info for FAIR Risk Management (ROM) group
- Info for FAIR Site & Buildings group
- Info for FAIR Safety group



# BINP PMO Functions

- Synchronization of close contracts;
- Planning;
- Document workflow;
- Reporting under the contracts;
- Be aware of Quality Assurance measures and requirements (procedures) of the Contractor, implement in contract work;
- Be aware of Safety measures and requirements (procedures) of the Contractor, implement in contract work

# BINP PMO People



Ekaterina  
PETROVA



Anna  
BELOVA



Eugene  
SHTARKLEV



Michail  
KOROBEYNIKOV

N	Name	BINP Department	Contact Email
1	Ekaterina PETROVA	Project Management Office	<a href="mailto:kathrinpetrova@mail.ru">kathrinpetrova@mail.ru</a>
2	Anna BELOVA	Project Management Office	<a href="mailto:A.I.Belova@inp.nsk.su">A.I.Belova@inp.nsk.su</a>
3	Michail KOROBEYNIKOV	Project Management Office	<a href="mailto:M.V.Korobeynikov@inp.nsk.su">M.V.Korobeynikov@inp.nsk.su</a>
4	Eugene SHTARKLEV	Project Management Office	<a href="mailto:shtarklev@gmail.com">shtarklev@gmail.com</a>

# Distribution of responsibilities within the BINP PMO

N	Contract N BRIEF	Contract N FULL	Sub-Project Leader (SPL)/ Work Package Leader (WPL)	Description	Responsible person from BINP PMO	Contact Email
1	CC2.3.2-2	FAIR Contract No. CC2.3.2-2 (Magnets for HEBT System)	Ivan MOROZOV	Design, production, delivery, installation of magnets with resistive "warm" (nonsuperconducting) coils for the FAIR High Energy Beam Transport (HEBT) System (Batch 2 and 3)	Eugene SHTARKLEV	<a href="mailto:shtarklev@gmail.com">shtarklev@gmail.com</a>
2	no	FAIR Contract The design, production, delivery, assembly and testing of the Superconducting Solenoid Magnet of the PANDA Detector As Work Package PSP 1.4.1.15 dated 10.03.2017	Eugeny PYATA	Design, production, delivery, assembly and testing of the Superconducting Solenoid Magnet of the PANDA Detector	Michail KOROBENNIKOV	<a href="mailto:M.V.Korobeynikov@inp.nsk.su">M.V.Korobeynikov@inp.nsk.su</a>
3	AFAA1 to CC 2.4.2.1.1.2 for 2.4.7.1.12.1	Annex for additional Assignment (AFAA) To the Collaboration Contract CC 2.4.2.1.1.2 Hereinafter referred to as "the Main Contract"	Alexander KRASNOV	Vacuum chambers and supports for beam diagnostics at the focal planes of Super-FRS; Diagnostic chamber Support (different sizes)	Anna BELOVA	<a href="mailto:A.I.Belova@inp.nsk.su">A.I.Belova@inp.nsk.su</a>
4	CC 2.3.7.1.2.3.2 as AFAA2 to CC 2.4.2.1.1.2	Annex for additional Assignment (AFAA) To the Collaboration Contract CC 2.4.2.1.1.2 Hereinafter referred to as "the Main Contract"	Alexander KRASNOV	Vacuum chambers for the FAIR High Energy Beam Transport (HEBT) System (HEBT Batch 2-3 Vacuum chambers)	Anna BELOVA	<a href="mailto:A.I.Belova@inp.nsk.su">A.I.Belova@inp.nsk.su</a>
5	CC 2.5.2.1	FAIR Contract No. CC 2.5.2.1 (Dipole magnets)	Alexander STAROSTENKO	Design, production and delivery of Dipole Magnets for the FAIR Collector Ring (CR) System	Ekaterina PETROVA	<a href="mailto:kathrinpetrova@mail.ru">kathrinpetrova@mail.ru</a>
6	no	Addendum 1 to the Collaboration Contract dated 12.12.2016 As part of the Work Package PSP 1.1.1.7 For the CBM experiment	Nikolay MEZENTSEV	Design, prototyping, production, delivery, assembly and testing of the Dipole Magnet As part of the Work Package PSP 1.1.1.7 For the CBM experiment	Ekaterina PETROVA	<a href="mailto:kathrinpetrova@mail.ru">kathrinpetrova@mail.ru</a>
7	no	Co-operation agreement, Implementing Agreement Addendum No 1 to the CO-OPERATION Agreement	Eugeny ANTOKHIN	Technological design of dipole magnet for HESR-PANDA	Ekaterina PETROVA	<a href="mailto:kathrinpetrova@mail.ru">kathrinpetrova@mail.ru</a>
8	CC 2.4.2.1.1.2	FAIR Contract No. CC 2.4.2.1.1.2 on the in-kind Contribution (IKC) 2.4.2.1.1.2 Dipole 1 for Super-FRS	Konstantin ZOLOTAREV	Dipole 1 for Super-FRS	Ekaterina PETROVA	<a href="mailto:kathrinpetrova@mail.ru">kathrinpetrova@mail.ru</a>
9	no	Accelerator co-operation agreement, Accelerator Implementing Agreement No. 1 to the ACCELERATOR CO-OPERATION Agreement	Konstantin ZOLOTAREV	Technological design of radiation-resistant multipole magnets for Super-FRS	Ekaterina PETROVA	<a href="mailto:kathrinpetrova@mail.ru">kathrinpetrova@mail.ru</a>
10	CC CR.HOAI	FAIR Contract No. CC CR.HOAI	Dmitry SHWARTZ	Technical Coordination of the Construction of the Collector Ring to the Construction of the FAIR Facility	Ekaterina PETROVA	<a href="mailto:kathrinpetrova@mail.ru">kathrinpetrova@mail.ru</a>
11	CC 2.5.2.2.1	FAIR Contract No. CC 2.5.2.2.1 (CR Rest)	Ivan KOOP, Dmitry SHWARTZ	Design, production and delivery of Magnets, Power Supplies, Injection/Extraction, Beam Diagnostics, Vacuum for the FAIR Collector Ring (CR) System; installation; operation of CR as a whole without beam	Ekaterina PETROVA	<a href="mailto:kathrinpetrova@mail.ru">kathrinpetrova@mail.ru</a>
12	CC 2.4.7.1.2.2.1 as AFAA3 to CC 2.4.2.1.1.2	Annex for additional Assignment (AFAA) To the Collaboration Contract CC 2.4.2.1.1.2 Hereinafter referred to as "the Main Contract"	Alexander KRASNOV	Vacuum chambers inside SC dipoles (SFRS)	Anna BELOVA	<a href="mailto:A.I.Belova@inp.nsk.su">A.I.Belova@inp.nsk.su</a>
13	CC 2.3.7.1.2.1 as AFAA4 to CC 2.4.2.1.1.2	Annex for additional Assignment (AFAA) To the Collaboration Contract CC 2.4.2.1.1.2 Hereinafter referred to as "the Main Contract"	Alexander KRASNOV	Vacuum chambers HEBT Batch 4	Anna BELOVA	<a href="mailto:A.I.Belova@inp.nsk.su">A.I.Belova@inp.nsk.su</a>
14	no	Collaboration Contract for design, production and delivery of vacuum chambers for dipole magnets for Work Package PSP 2.3.7.1.2.2 for the FAIR High Energy Beam Transport (HEBT) System dated 23.01.2013	Alexander KRASNOV	design, production and delivery of vacuum chambers for dipole magnets for Work Package PSP 2.3.7.1.2.2 for the FAIR High Energy Beam Transport (HEBT) System	Anna BELOVA	<a href="mailto:A.I.Belova@inp.nsk.su">A.I.Belova@inp.nsk.su</a>
15	AFFA 5	SFRS vacuum components	Alexander KRASNOV	Beam pipes and chambers (SFRS vacuum components), Not signed	Not signed	-
16	CC 2.9.2.2.1.1.1 as AFAA6 to CC 2.4.2.1.1.2	Annex for additional Assignment (AFAA) To the Collaboration Contract CC 2.4.2.1.1.2 Hereinafter referred to as "the Main Contract"	Petr SHATUNOV, Dmitry SHWARTZ	2.9.2.2.1.1.1 p-Bar Quadrupoles, CR-type, NC, wide apert. 2.9.3.2.1.1.1 p-Bar Power Part, Cabinet, Construction (pulsed op) 2.9.7.1.2.3.1.1 p-Bar Quad Chamber wide 2.9.3.2.4 Modification of original CR Power Part, Cabinet 2.9.7.1.2.3.4 Modification of original CR Vacuum Chamber	Ekaterina PETROVA	<a href="mailto:kathrinpetrova@mail.ru">kathrinpetrova@mail.ru</a>
17	no	SFRS branching chambers inside SC dipoles	Alexander KRASNOV	SFRS branching chambers inside SC dipoles, Not signed	Not signed	-

# Working in close cooperation and/or in some questions on behalf of a few BINP Departments

- Quality Management Service (Head of the Dep Andrey SHOSHIN)
- Commercial Management Department (Head of the Dep Anna AGALAKOVA)
- Scientific Departments
- Design Department (Head of the Dep Sergey SHIYANKOV)
- Environment, Safety and Health Department (Head of the Dep Tatyana BRYKINA)

# Starting with...

BINP Responsible persons for the Collaboration Contracts:				
FAIR Contract No. CC 2.5.2.2.1. (CR Rest), FAIR Contract No. CC 2.5.2.2.1. (Dipole magnets)				
Name	Position	Responsible for	Email	EDMS access rights
RAS Academician Dr. Pavel LOGACHEV	BINP Director	Quality of products and services provided by BINP to FAIR	<a href="mailto:P.V.Logatchov@inp.nsk.su">P.V.Logatchov@inp.nsk.su</a>	
Project Coordinators				
Dr. Eugene LEVICHEV	BINP Deputy Director for science (accelerator physics)	<ul style="list-style-type: none"> <li>Ensuring good communication between BINP and FAIR;</li> <li>Coordination of the work with different departments at BINP</li> </ul>	<a href="mailto:E.B.Levichev@inp.nsk.su">E.B.Levichev@inp.nsk.su</a>	Read
Dr. Dmitriy BERKAEV	BINP Deputy Director	Coordination of the work with different departments at BINP	<a href="mailto:D.E.Berkaev@inp.nsk.su">D.E.Berkaev@inp.nsk.su</a>	Read
Dr. Andrey STESHOV	BINP Deputy Director for production	Coordination of production process at BINP Experimental Workshop-1	<a href="mailto:A.G.Steshov@inp.nsk.su">A.G.Steshov@inp.nsk.su</a>	Read
Natalia FOURNIER	BINP Deputy Director for economics and finance	Economic and commercial issues	<a href="mailto:N.A.Tikhonova@inp.nsk.su">N.A.Tikhonova@inp.nsk.su</a>	Read
Sub-Project Leaders (SPL)				
Dr. Ivan KOOP	SPL	Technical Coordination	<a href="mailto:I.A.Koop@inp.nsk.su">I.A.Koop@inp.nsk.su</a>	Read/Write/Release
Dr. Dmitry SHWARTZ	SPL Deputy	Technical Coordination	<a href="mailto:D.B.Shwartz@inp.nsk.su">D.B.Shwartz@inp.nsk.su</a>	Read/Write/Release
Work Package Leaders (WPL)				
Alexandr STAROSTENKO	WPL (Magnets)	Design, production and delivery of magnets	<a href="mailto:A.A.Starostenko@inp.nsk.su">A.A.Starostenko@inp.nsk.su</a>	Read/Write (WP)
Alexander KRASNOV	WPL (Vacuum)	Design, production and delivery of vacuum system	<a href="mailto:A.A.Krasnov@inp.nsk.su">A.A.Krasnov@inp.nsk.su</a>	Read/Write (WP)
Yury ROGOVSKY	WPL (Beam Diagnostics)	Design, production and delivery of beam diagnostics	<a href="mailto:Yu.A.Rogovsky@inp.nsk.su">Yu.A.Rogovsky@inp.nsk.su</a>	Read/Write (WP)
Dmitry SENKOV	WPL (Power Supply)	Design, production and delivery of power suppliers	<a href="mailto:D.V.Senkov@inp.nsk.su">D.V.Senkov@inp.nsk.su</a>	Read/Write (WP)
Petr SHATUNOV	WPL (Injection/Extraction)	Design, production and delivery of injection/extraction equipment	<a href="mailto:P.Yu.Shatunov@inp.nsk.su">P.Yu.Shatunov@inp.nsk.su</a>	Read/Write (WP)
QMS Service Group				
Andrey SHOSHIN	Head of BINP QMS Service	<ul style="list-style-type: none"> <li>Coordination of the work of BINP QMS Service;</li> <li>Internal Quality Audits;</li> <li>Quality assurance and control over proper execution of deliverables in compliance with the BINP Quality Plan</li> </ul>	<a href="mailto:A.A.Shoshin@inp.nsk.su">A.A.Shoshin@inp.nsk.su</a>	Read
Ekaterina PETROVA	QM Engineer	<ul style="list-style-type: none"> <li>Control of the CDR/FDR documentation to be uploaded to EDMS;</li> <li>Safety issues during installation of the equipment on the FAIR site</li> </ul>	<a href="mailto:E.V.Petrova@inp.nsk.su">E.V.Petrova@inp.nsk.su</a> <a href="mailto:kathrinpetrova@mail.ru">kathrinpetrova@mail.ru</a>	Read/Write
Design Group				
Sergey SHIYANKOV	Head of BINP Design Department	Project design	<a href="mailto:S.V.Shiyankov@inp.nsk.su">S.V.Shiyankov@inp.nsk.su</a>	Read
Andrey SUKHANOV	Head of BINP Design Subdepartment	Project design	<a href="mailto:A.V.Sukhanov@inp.nsk.su">A.V.Sukhanov@inp.nsk.su</a>	Read/Write
Vladimir KORCHAGIN	Magnets, Principal Design Engineer	Magnets design (3D-models, production drawings)	<a href="mailto:V.Ya.Korchagin@inp.nsk.su">V.Ya.Korchagin@inp.nsk.su</a>	Read

# Lists of responsibilities for CR contract...

Magnets Group Anatoliy UTKIN	Research Scientist	<ul style="list-style-type: none"> <li>• Magnet design (development, simulation);</li> <li>• Magnetic field calculation;</li> <li>• Magnetic measurements;</li> <li>• Factory Acceptance Test (FAT), Site Acceptance Test (SAT)</li> </ul>	<a href="mailto:A.V.Utkin@inp.nsk.su">A.V.Utkin@inp.nsk.su</a>	Read
Denis GUROV	Research Scientist	<ul style="list-style-type: none"> <li>• Magnet design (development, simulation);</li> <li>• Magnetic field calculation;</li> <li>• Magnetic measurements;</li> <li>• Factory Acceptance Test (FAT), Site Acceptance Test (SAT)</li> </ul>	<a href="mailto:D.S.Gurov@inp.nsk.su">D.S.Gurov@inp.nsk.su</a>	Read
Tatyana RYBITSKAYA	Research Scientist	<ul style="list-style-type: none"> <li>• Dipole magnet design (development, simulation);</li> <li>• Magnetic field calculation</li> </ul>	<a href="mailto:T.V.Rybitskaya@inp.nsk.su">T.V.Rybitskaya@inp.nsk.su</a>	Read
Alexander TSYGANOV	Research Scientist	<ul style="list-style-type: none"> <li>• Magnetic measurements;</li> <li>• Factory Acceptance Test (FAT), Site Acceptance Test (SAT)</li> </ul>	<a href="mailto:A.S.Tsygunov@inp.nsk.su">A.S.Tsygunov@inp.nsk.su</a>	Read
Vacuum Group Alexey SEMENOV	Research Scientist	Vacuum system	<a href="mailto:A.M.Semenov@inp.nsk.su">A.M.Semenov@inp.nsk.su</a>	Read/Write
Beam Diagnostics Group Oleg MESHKOV	Head of BINP Subdepartment № 1-31	Scrapers	<a href="mailto:O.I.Meshkov@inp.nsk.su">O.I.Meshkov@inp.nsk.su</a>	Read
Vitalii BALAKIN	Junior Research Assistant	Scintillating screens	<a href="mailto:Vit.V.Balakin@inp.nsk.su">Vit.V.Balakin@inp.nsk.su</a>	Read
Vladislav BORIN	Junior Research Assistant	Beam stopper	<a href="mailto:V.M.Borin@inp.nsk.su">V.M.Borin@inp.nsk.su</a>	Read
Maksim BRYZGUNOV	Senior Research Scientist	Residual Gas Monitor	<a href="mailto:M.I.Bryzgunov@inp.nsk.su">M.I.Bryzgunov@inp.nsk.su</a>	Read
Power Supply Group Valentin DOKUTOVICH	Research Scientist	Power Suppliers	<a href="mailto:V.A.Dokutovich@inp.nsk.su">V.A.Dokutovich@inp.nsk.su</a>	Read
Injection/Extraction Group Aleksey KASAEV	Research Scientist	Kickers	<a href="mailto:A.S.Kasaev@inp.nsk.su">A.S.Kasaev@inp.nsk.su</a>	Read
Control System Group Alexandr SENCHENKO	Research Scientist	Interaction with FAIR Control System group	<a href="mailto:A.I.Senchenko@inp.nsk.su">A.I.Senchenko@inp.nsk.su</a>	Read
Production Group Pavel BURDIN	Production Manager of BINP Experimental Workshop-1	Organization of production process	<a href="mailto:P.N.Burdin@inp.nsk.su">P.N.Burdin@inp.nsk.su</a>	
Egor RUVINSKY	Deputy Production Manager	Acceptance of technological procedures, organization of production process	<a href="mailto:E.S.Ruvinsky@inp.nsk.su">E.S.Ruvinsky@inp.nsk.su</a>	
Denis FADEEV	Head of the Bureau of testing and control	<ul style="list-style-type: none"> <li>• Input tests of procured materials, half-finished products and components;</li> <li>• Metrological control;</li> <li>• Mechanical testing, hydraulic testing, electrical testing</li> </ul>	<a href="mailto:D.I.Fadeev@inp.nsk.su">D.I.Fadeev@inp.nsk.su</a>	
Infrastructure, Installation, Alignment Group Albert RAKHIMOV	Head of Electrical Design Subdepartment	Infrastructure for the equipment installation in the tunnel	<a href="mailto:A.R.Rahimov@inp.nsk.su">A.R.Rahimov@inp.nsk.su</a>	Read
Vasily PROSVETOV	Lead Electronics Engineer	<ul style="list-style-type: none"> <li>• Transportation, delivery of the equipment to the FAIR site;</li> <li>• Installation;</li> <li>• Safety issues during installation of the equipment on the FAIR site</li> </ul>	<a href="mailto:V.P.Prosvetov@inp.nsk.su">V.P.Prosvetov@inp.nsk.su</a>	Read

# Established cooperation with FAIR Departments

- Product Life Cycle Management (PLM) group
- Project Planning (PPL) group
- Quality Management (QUA) group
- Risk Management (ROM) group
- Site & Buildings group
- *excepting* Safety group

# Established cooperation

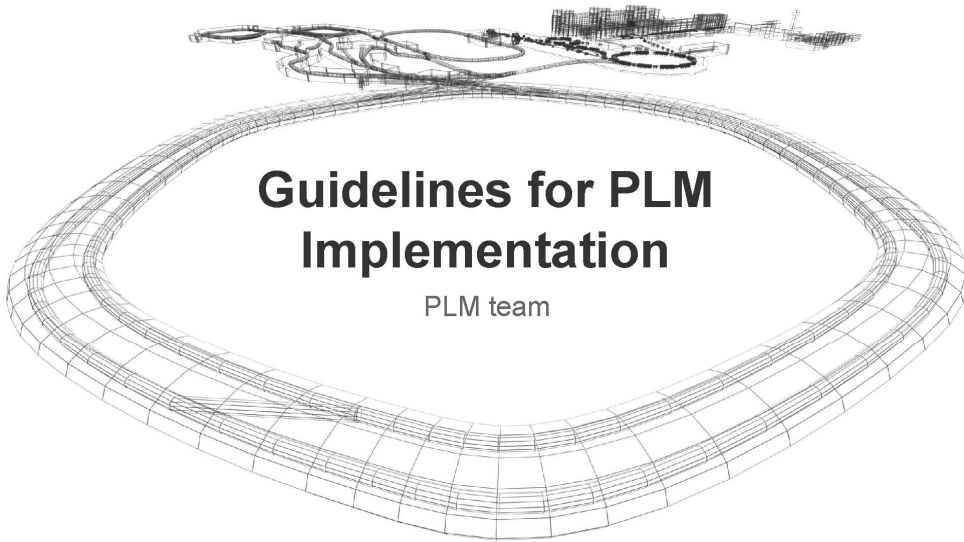
## Product Life Cycle Management (PLM) group

- *Klaus Hoehne*
- *Konstantin Istomin*
- PLM
- EDMS
- Logistics



# PLM Training, 2019

# CR PLM



Power Converters-PCX									
Dipole Magnets PC									
CID	AID	SID	Nomenclature	PSP code	Description	Equipment code	FoS/Series	Link to QR Code	
CID-03000060012	AID-0002667	1	CR01MH1.GN	2.5.3.1.1	CR Dipole Magnets PC (All dipole PS are connected in row)	FAIRCPCX	FoS	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
Quadrupole Magnets PC									
CID	AID	SID	Nomenclature	PSP code	Description	Equipment code	FoS/Series	Link to QR Code	
CID-03000060029	AID-0002668	1	CR01QS05.GN	2.5.3.2.1.1	CR Quadrupole Magnets PC Type 1	FAIRCPCX	FoS	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
CID-03000060036	AID-0002668	2	CR01QS06.GN	2.5.3.2.1.1		FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
CID-03000060043	AID-0002668	3	CR01QS07.GN	2.5.3.2.1.1		FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
CID-03000060050	AID-0002668	4	CR01QS08.GN	2.5.3.2.1.1		FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
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CID-18000080137	AID-0002502								
Sextupole Magnets PC									
CID	AID	SID	Nomenclature	PSP code	Description	Equipment code	FoS/Series	Link to QR Code	
CID-18000080144	AID-0002502				CR Sextupole Magnets PC	FAIRCPCX	FoS	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
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CID-18000080168	AID-0002503	4	CR01KS4.GN	2.5.3.3.1.1		FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
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Combined Steering Magnets									
Octupole coils PC									
CID	AID	SID	Nomenclature	PSP code	Description	Equipment code	FoS/Series	Link to QR Code	
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		4	CR02K03.GN	2.5.3.4.1.1	CR Sextupole Magnets	FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
		5	CR02K02.GN	2.5.3.4.1.1		FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
		6	CR02K01.GN	2.5.3.4.1.1		FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
		7	CR03K01.GN	2.5.3.4.1.1		FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
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CID-18000082063	AID-0002518					FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
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CID-18000082087	AID-0002518					FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
Injection/Extraction Septa PC									
CID	AID	SID	Nomenclature	PSP code	Description	Equipment code	FoS/Series	Link to QR Code	
CID-18000082094	AID-0002518				CR Injection Septa PC	FAIRCPCX	FoS	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
CID-18000082109	AID-0002518	1	CR01MP1.GN	2.5.3.5.1.1		FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
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CID-18000082131	AID-0002518	4	CR01MP1E.GN	2.5.3.5.1.1	CR Extraction Septa PC	FAIRCPCX	FoS	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
CID-18000082148	AID-0002518					FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
CID-18000082155	AID-0002518					FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
CID-18000082162	AID-0002518	16	CR03K54	2.5.2.3.1		FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>	
CID-18000082179	AID-0002518	17	CR03K45	2.5.2.3.1	FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>		
CID-18000082186	AID-0002518	18	CR03K56	2.5.2.3.1	FAIRCPCX	Series	<a href="https://chart.googleapis.com/chart?cht=q&amp;chs=1">https://chart.googleapis.com/chart?cht=q&amp;chs=1</a>		
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- To be clarified:
- Do you need the participation of BINP PMO in PLM-process for other BINP contracts (excepting CR)?

# EDMS

1. All the documents for the CDR/FDR milestones are uploaded in the CDR/FDR minutes container.
2. After revision the status of CDR/FDR minutes container is changed to “Cancelled” and than the option “Clone document” is used.

- *To be clarified:*
- Do BINP correctly operates during the Preliminary check of CDR/FDR documentation at EDMS?

## Documentation for the FAIR Project in EDMS Information for Authors

Klaus Höhne

December 4, 2019

### Abstract

This document describes the use of EDMS by authors. Authors create the documentation for FAIR articles and components and upload the files into the respective EDMS document.

The coordination of the reviewing process by the work package leader (WPL) is described in Documentation for the FAIR Project in EDMS - Information for Work Package Leaders [1].

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# Established cooperation Project Planning (PPL) group

- *Natalya Winters*
- *Nico Oepen*

## Summary & Open points



1. Dashboards created so far
  - HEBT: Magnets & Vacuum Chambers. **Well working procedures** established with A. Krasnov and I. Morozov
  - Super-FRS: NC Magnets (dipoles) **new**
2. Must be done. **Support from BINP Project Office is required**
  - CR: one template for all
  - Super-FRS: diagnostic chambers, sc dipole chambers,
  - pbar: will follow after contract signature
3. No contract → report not yet necessary
4. **Contact persons at BINP Project office?**
5. Contact person at FAIR/GSI is Nico Oepen: [n.oepen@gsi.de](mailto:n.oepen@gsi.de)

Provider tracking status			
Subproject	PSP-Code	Work Package	Status
<b>CR</b>	<b>2.5</b>		
CR	2.5.2.1	CR/TCR1 Dipole Magnets	output pending
CR	2.5.2.2.1	CR/TCR1 wide Quadrupoles Magnets	output pending
CR	2.5.2.2.2	CR/TCR1 Narrow Quadrupoles Magnets	output pending
CR	2.5.2.3.1	CR/TCR1 Sextupole Magnets	output pending
CR	2.5.2.6	CR/TCR1 Steerer Magnets	output pending
CR	2.5.3.1.1	CR/TCR1 Dipole Power Converter	output pending
CR	2.5.3.2	CR/TCR1 wide Quadrupole Power Converter	output pending
CR	2.9.3.3.1.2	CR/TCR1 Sextupole Power Converter	output pending
CR	2.5.5.6.2.1	CR/TCR1 Steerer Power Converters	output pending
CR	2.5.6.2.1.1.1	CR/TCR1 Beam Position Monitor	output pending
CR	2.5.7.1.2.2	CR/TCR1 Dip Vacuum Chambers	output pending
CR	2.5.7.1.2.3	CR/TCR1 wide Quad-sext chamber	output pending
CR	2.5.7.1.2.3.1	CR/TCR1 Quad Vacuum Chambers	output pending
<b>pbar</b>	<b>2.9</b>		
pLinac/pbar	2.9.2.2.1.1	Magnets	no contract
pLinac/pbar	2.9.7.1	Vacuum Chambers	no contract
pLinac/pbar	2.9.7.1	Pumps/Valves/Roughing Stations/Support Frames	no contract
pLinac/pbar	2.9.3.1	Power Converter	no contract
pLinac/pbar	2.9.11.4	Collimators	no contract
<b>Super FRS</b>	<b>2.4</b>		
Super FRS	2.4.2.1.1.2	NC Dipoles	in use
Super FRS	2.4.2.2.1.2	NC Multipoles	no contract
Super FRS	2.4.7.1.2.1	SC Standard-Dipole Chambers	output pending
Super FRS	2.4.7.1.2.1	NC Vacuum Chambers	no contract
Super FRS	2.4.7.1.12.1	Diagnostic Chambers	output pending
Super FRS	2.4.7.1.11	Beam pipes/bellows/pumping chambers	no contract
<b>Commons</b>	<b>2.14</b>		
HEBT	2.3.2.1.9	Magnets Batch 28.3	in use
HEBT	2.3.7.1.2.3.2	Vacuum Batch 28.3	in use
HEBT	2.3.7.1.2.1.1	Vacuum Batch 4	Specs not final





# Established cooperation Quality Management (QUA) group

QA Training, 2019

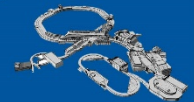
- *Herbert Schwarz*
- *Olga Ritscher*
- *Ron Maendl*
- *Florian Gressier*

Добро пожаловать на  
семинар по  
обеспечению качества!



2nd joint BINP FAIR meeting

Quality Assurance Training:  
Agenda for May 21, 2019



FAIR



# Workflow CDR/FDR Milestones, 2019

## CDR

- Release of an proper 3d-model or an functional structure of the object to built with its required documents according our VA „*Design reviews*“ and documents mentioned therein.
- Needed documents:
  - » concept
  - » finalized risk assessment
  - » draft of production plan
  - » draft of test and inspection plan
  - » calculations and/or simulation for its dimensioning
  - » ...

The Template „Required Documents“ may help to identify the required documentation:

- *Q-FO-QA-0013\_Required\_Documents*

- *To be clarified:*  
Quality plan in set of documents

## FDR

- Release of all needed drawings to manufacture the object and the complete final documentation
- Needed finalized documents:
  - » production plan
  - » test and inspection plan
  - » work and test instructions
  - » set of production drawings and parts list
  - » complete documentation (user manual, ...)
  - » ...

The Template „Required Documents“ may help to finalize the required documentation:

- *Q-FO-QA-0013\_Required\_Documents*

# Workflow CDR, FDR, 2016 Technical Guideline 10.1e

GSI FAIR	Technical Guideline	Number	10.1e
ENMA	Documentation of Magnets	Status	2016-07-05

**1. Codes and Standards**  
The assembly and operation manual has to be supplied by the Contractor in German at least (cf. 2006/42/EG). Bilingual manuals (German and English) are welcome – then, the German text is the leading text.

**2. List of Documents**  
D: Draft version  
X: Final version (prerequisite for payment)

No	Type	PDR / CDR	FDR	FAT <sup>1</sup>	immediately <sup>4</sup>
<b>Manuals / Instructions</b>					
1	Operation manual (including safety instructions in German and English)	D	X		
2	Installation manual (including disposal instructions)	D	X		
3	Risk analysis	D	X		
4	Quality Inspection Plan (including magnetic measurement plan)	D	X		
5	Production plan (including assembly plan)	D	X		
<b>Drawings, Model</b>					
6	Digital 3D Model of the magnet	X <sup>2</sup>			
7	Complete and approved set of drawings of components (PDF/A)		X <sup>2</sup>	X <sup>3</sup>	
8	Complete and approved set of drawings of tools and units (PDF/A)		X		
<b>Certificates</b>					
9	Specification of magnetic materials, s analysis			X	
10	Information on type of glue for lamination and its insulation quality			X	
11	Certification of approval for Cu conductor material			X	
12	3l certificates of all materials being used for load pickup (crane eyes, setting areas ...)			X	
13	Welding certificates and welding instructions			X	
<b>Measurement protocols</b>					
14	Protocol of the dimensions of the prototype lamella, to be sent again after remanufacturing of stamping tools				X

Prepared by:	Peter Rottländer	Doc. Name:	F-TG-S-10.1e_Documentation_of_magnets_20160616.docx
Date:	2016-07-05	Version:	1.1

Page 1 of 2



# General Specification 01.e, 2014

## Quality Plan

Quality Management	Kind of Document:	Document Number:	Date: 13.03.2014
EDMS ID 1365092 v.1	<b>General Specification</b>	F-GS-F-01e Template Number: Q-FO-QM-0001	Page 17 of 17

- 14. Verordnung zum Produktsicherheitsgesetz (14. ProdSV) – German ordinance based on Directive 97/23/EC on the approximation of the laws of the Member States concerning pressure equipment [Pressure Equipment Directive (PED)]
- Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln (EMVG) – German act based on Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC [EMC Directive]
- Strahlenschutzverordnung (StrlSchV) – German radiation protection ordinance based on Directives 96/29/EURATOM, 97/43/EURATOM, and 89/618/EURATOM
- Röntgenverordnung (RöV) – German X-ray protection ordinance based on the Directives 96/29/EURATOM and 97/43/EURATOM
- Arbeitsschutzgesetz (ArbSchG) – German act on the introduction of measures to encourage improvements in the safety and health of workers at work based on the Directives 89/391/EEC and 91/383/EEC
- Betriebssicherheitsverordnung (BtSichV) – German ordinance based on Directives 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work and 2009/104/EC concerning the minimum safety and health requirements for the use of work equipment by workers at work
- Arbeitsstättenverordnung (ArbStättV) – German ordinance based on Directives 89/654/EEC concerning the minimum safety and health requirements for the workplace and 92/58/EEC of 24 June 1992 on the minimum requirements for the provision of safety and/or health signs at work

### II. Regulations of German Statutory Accident Insurance

In particular but not exclusive following documents have to be considered

- BGV A1 Grundsätze der Prävention (Principles of Prevention)
- BGV A3 Elektrische Anlagen und Betriebsmittel (Electrical systems and equipment)
- BGV D6 Krane (Cranes)
- BGV D8 Winden, Hub- und Zuggeräte (Jacks, Lifting and Pulling Equipment)
- BGI 545 Gabelstapler (Forklifter)

A complete set of regulations and information on safety and health of workers at work can be found in

<http://www.arbeitsicherheit.de/de/html/library/overview> (in German)

### III. Quality Plan

1. The Contractor shall prepare a comprehensive Quality Plan (Q-Plan) based on ISO 9001 for its deliveries and submit it to the Company for approval. The Q-Plan shall cover the contents given hereafter as a guideline:

Quality Management	Kind of Document:	Document Number:	Date: 13.03.2014
EDMS ID 1365092 v.1	<b>General Specification</b>	F-GS-F-01e Template Number: Q-FO-QM-0001	Page 18 of 18

- 1.1. **Scope and goals of the Quality Plan**
  - a. Reference to input documents
  - b. Quality objectives (Specification of quality levels of deliverables)
- 1.2. **Responsibilities**
  - a. Definition and distribution of responsibilities
  - b. Project management structure
- 1.3. **Specification and drawings**
  - a. Review of contractual specifications
  - b. Requirements for production drawings
- 1.4. **Resource Management**
  - a. Personnel
  - b. Infrastructure
  - c. Machines and equipment
- 1.5. **Communication with Company**
  - a. Progress reports
  - b. Meetings
  - c. Project reviews
- 1.6. **Production and Realization**
  - a. Purchase and procurement process
  - b. Control of subcontractors
  - c. Manufacturing process maps
  - d. Identification and traceability
  - e. Tools, techniques, equipment and methods
- 1.7. **Monitoring and Measurements**
  - a. List and description of quality control steps
  - b. List of characteristics to be measured with tolerance range
  - c. Validation and verification tests
  - d. Process and criteria for final acceptance
  - e. Control of measurement tools
- 1.8. **Preservation of Products**
  - a. Handling and storage specifications
  - b. Packaging and transport specifications
- 1.9. **Control of Document, Data and Records**
  - a. List of documents and records
  - b. Approval procedure
  - c. Schedule of transmission to the Company
  - d. Ways of preservation of records
- 1.10. **Control of Non-Conformity of Products**
  - a. Immediate actions on defective products or product not suitable for its final functionality
  - b. Corrective actions to eliminate the cause of the problem
  - c. Preventive actions

Quality Management	Kind of Document:	Document Number:	Date: 13.03.2014
EDMS ID 1365092 v.1	<b>General Specification</b>	F-GS-F-01e Template Number: Q-FO-QM-0001	Page 19 of 19

- 1.11. **Professional Quality and Certification of Personnel**
- 1.12. **Assistance: Technical Support to the Company**
- 1.13. **Quality Audits**
2. The Contractor shall ensure the complete and correct execution of all measures specified in the Quality Plan.
3. The Contractor shall inform the Company in due time of the detection of a non-conformance by issuing a non-conformance report sent to the Technical Coordinator of the Company.

### IV. Abbreviations

A	Activity
ACA	Accelerator Construction Agreement
ACC	Accelerator
ACC AAB OB	All Accelerator Board – Operating Board
ArbSchG	Arbeitsschutzgesetz, German act on safety and health of workers at work
ArbStättV	Arbeitsstättenverordnung, German ordinance on safety and health of workers at work
ATEX	Atmosphères Explosives (explosive atmospheres)
AutoCAD®	2D/3D CAD software developed by Autodesk
BGI	Berufsgenossenschaftliche Informationen, information on measures for safety and health of workers at work
BGV	Berufsgenossenschaftliche Vorschriften, German regulations on measures for safety and health of workers at work
BtSichV	Betriebssicherheitsverordnung, German ordinance on safety and health of workers at work
CATIA®	3D CAD software developed by Dassault Systems
CC	Collaboration Contract
CD 0	Critical Decision 0
CDR	Conceptual Design Review
CE	Conformité Européenne (European conformity)
CERN	Conseil Européen pour la Recherche Nucléaire (European Organization for Nuclear Research)
CF-Flange	Conflat Flange
CID	Component-ID
CR	Collector Ring
CS	Common Specification
DARL	Datenaustauschrichtlinie (Data Exchange Guideline)
DDP	Delivered Duty Paid
DIN	Deutsches Institut für Normung (German Institute for Standardization)
DS	Detailed Specification
EC	European Commission
EDMS	CERN Engineering Data Management System
EEC	European Economic Community

# Quality Inspection and Production Plan

- *To be clarified:*
- Correct filling, updating, uploading to EDMS?

*Template 3*

Fertigungs- und Prüffolgeplan / Quality Inspection and Production Plan		
FPP-Nr.:	Arbeitspaket / workpackage z.B. / e.g.	Firmenname / name of company
QIPP-No.:	<b>Montage / Assembly Quadrupol Magnet FoS</b>	

Projekt/project:	Sprache / Language Deutsch / Englisch	Kunde / c
------------------	---------------------------------------	-----------

Fertigungs- und Prüffolgeplan / Quality Inspection and Production Plan		
FPP-Nr.:	Arbeitspaket / workpackage z.B. / e.g.	Firmenname / name of company
QIPP-No.:	<b>Montage / Assembly Quadrupol Magnet FoS</b>	
		Seite / page 2 von / of 3

Freigabe Dokument / Approval of document				
Rev.	Erstellt / prepared Name u. Unterschrift name and signature	Datum / date	Änderungsgrund / reason for changes	Geprüft / checked Name u. Unterschrift name and signature

Zeichenerklärung / Legend			
Berichtstyp (BT) / Type of control report (TC)	Art der Benachrichtigung / Type of notification		
P Herstellvorgang / Productionstep	N	Meldepunkt.	
R Bericht / Report	H	Haltepunkt /	
A Prüfzertifikat / Test Certificate			
B Herkunftsnachweis / Certificate of Origin	X	Unterschrift / Signature fo	
C Konformitätserklärung / Certificat of Conformity			

Fertigungs- und Prüffolgeplan / Quality Inspection and Production Plan		
FPP-Nr.:	Arbeitspaket / workpackage z.B. / e.g.	Firmenname / name of company
QIPP-No.:	<b>Montage / Assembly Quadrupol Magnet FoS</b>	
		Seite / page 3 von / of 3

Freigabe nach Abarbeitung des Dokumentes / Approval after processing the document		
Name, Datum, Unterschrift / Name, Date, Signature		
Verantwortlicher Fachbereich / Responsible department	Montage / Assembly	QM / QA

Schritt / step	Beschreibung / description	Zugehörige Dokumente / related documents	BT / TC	Abnahme Inspection				Bestätigung / Confirmation Datum / Unterschrift Date / signature				Ergebnis / Result Report No.	Bemerkungen / Remarks
				F	TO	QA	CL	F	TO	QA	CL		
1	Wareneingangskontrolle / Incoming inspection	Anweisungsnr. / Instruction-No. ?											

Dateiname / file name

Dateiname / file name

Dateiname / file name

# FAIR QA questions

1. What strategy do you use for the approval of your documents of CR-project at the corresponding milestone (for example M6, M7 and so on)?
2. Do you have any checklists (criterion) for your documents to the milestones (for example M3, ...M6, M7, and so on)?
3. How are the documents presented by the responsible WPL?
4. How do the responsible WPL present the documents?
5. How is the participation of the specialist departments ensured?
6. How is the correct versioning and control of the documents ensured?
7. Is EDMS also used internally at Budker as a document management system?

# Established cooperation Risk Management (ROM) group

- ROM Training, 2018
- *Stephanie Deveaux*

FAIR GSI



Risk &  
PMO Opportunity  
Management

- *To be clarified:*
- Declaration of conformity



DECLARATION OF CONFORMITY  
with the Low Voltage Directive 2014/35/EU

Herewith we, the manufacturer,                      BUDKER INSTITUTE OF NUCLEAR PHYSICS  
of Siberian Branch Russian Academy of Sciences  
Lavrentiev av. 11, Novosibirsk  
630090, Russia

Declare that the construction, manufacturing and testing of the Power Converter for FAIR CR  
Quadrupole magnets is in conformance with the directive 2014/35/EU.

<b><i>Description of the pressure equipment:</i></b>	
Power Converter for FAIR CR Quadrupole magnets Serial No: Nominal output current: 1450A Nominal output voltage: 200 V Year built: Proof test date:	
<b><i>Reference harmonized standards used:</i></b>	
Machinery Safety EN ISO 12100: 2013, EN ISO 13849-1 Low voltage switchgear and controlgear assemblies IEC 61439-1: 2015, IEC 61439-2: 2015 Safety of machinery - Electrical equipment of machines EN 60204-1: 2016	
<b><i>Reference of other technical standards, specifications and European Directives used:</i></b>	
Low Voltage Directive 2014/35/EU, Machinery directive 2006/42/EC, EMC Directive 2014/30/EU, Directive 2011/65/EU RoHS II on the use of hazardous substances, F-DS-CR-2.5.3-Quadrupole_PC_v2.4_2016_07_12.pdf	
<b><i>Authorised Person for the Manufacturer:</i></b>	
Name: Pavel V. Logachev Title: Director Signature:	Date:

# Established cooperation

## Site & Buildings group

- *To be clarified:*  
Work instruction

- Site Management –  
Resource Planning

- Harald Hagelskamp
- H. Reich-Sprenger

	Document title: Opening and closing of NC magnets	Date: 18.07.2019
	<b>Work instruction 2</b>	Page 1 of 7

Scope and purpose:	Work steps for <b>Opening and closing of NC magnets</b>
Organisation unit:	TRI, NCM, MIN
Application area:	GSI/FAIR
Code number:	

#### Table of contents:

1.0 Objective .....	2
2.0 Scope .....	2
3.0 Responsibilities.....	2
4.0 Requirements .....	2
5.0 Content of the work instruction .....	2
5.1 Required tools .....	2
5.2 Work flow .....	3
6.0 Applicable documents.....	7


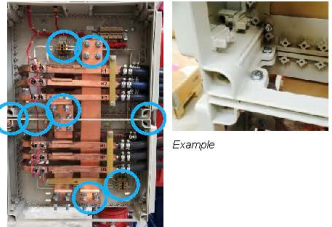
#### Dokumentenhistorie:

Version	Issued, date	Checked, date	Release date	Reason for change
V.0.1	Will, C., 10.01.2018			Erstversion
V.0.2	Dubel, J., 10.09.2018			Überarbeitung
V.0.3	Dubel, J., 11.03.2019	N. Dausend, 11.03.2019		Durchsicht mit Arbeitsschutz/ Sifa
V.0.4	Dubel, J., 01.04.2019			Anpassung nach Montagewerkshop
V.1.0	Dubel, J., 17.06.2019	M. Eibach, 18.07.2019		Freigabe, Einarbeitung Feedback QUA

	Document title: Opening and closing of NC magnets	Date: 18.07.2019
	<b>Work instruction 2</b>	Page 3 of 7


#### 5.2 Work flow

Tabelle 3 Work steps

<p>1.1 <b>Junction box</b></p> <p>① <i>Before opening the magnet, untighten connections in or at the junction box</i></p> <p>Open the junction box by untightening the lock (large slotted screw-driver) and remove the protective cover.</p>	
<p>1.2 <b>General information about the junction box</b></p> <p>Always loosen all screw and cable connections between the box halves, see point ③.</p> <p>① <i>Before starting the work, document the cable slots, e.g. mark them with adhesive tape</i></p> <p>Example</p> <p>In the case of a three-part junction box, the connections / coils that cross over the magnet halves must be loosened. This also applies to the holder on the back of the junction box.</p> <p>① <i>When the current jumpers are first installed, the WPL must determine the polarity and position of the latter.</i></p>	 <p>Position of the current jumpers to be approved by WPL</p>




# CR WQ magnet Installation and Operation manual

	BINP SB RAS	Kind of Document: <b>Installation and Operation manual</b>	Document Number: <b>FCRM_WQ_Installation_Operation_manual_v1.4</b>	Date: 10.04.2020
	FAIR Contract No. CC2.5.2.2.1.			Page 1 of 23

Title:	<b>Installation and Operation manual</b>
Description:	Installation and Operation manual (including installation, operation, troubleshooting, maintenance, storage, recycling and safety instructions) for the WQ quadrupole magnets for the Collector Ring (CR) and the Transport Channel for Collector Ring (TCR1) of the FAIR Accelerator Project
Organization:	Budker Institute of Nuclear Physics SB RAS
Valid for:	FAIR Contract No. <i>CC2.5.2.2.1.</i> ; Work Packages: PSP 2.5.2.2.1.1 CR WQ magnet, PSP 2.9.2.2.1.2 TCR1 WQ magnet

## Document History

Version	Date	Description	Author	Comment
V1.0	02.04.2019	Initial release	Anatoliy Utkin, Denis Gurov	
V1.1	02.04.2019	CDR Reviewing/Correction	Alexandr Starostenko	
V1.2	02.04.2019	CDR Reviewing/Correction	Andrey Shoshin	
V1.3	02.04.2019	CDR Reviewing/Correction	Dr. Ivan Koop	
V1.4	10.04.2020	FDR Reviewing/Correction	Anatoliy Utkin, Denis Gurov	

	BINP SB RAS	Kind of Document: <b>Installation and Operation manual</b>	Document Number: <b>FCRM_WQ_Installation_Operation_manual_v1.4</b>	Date: 10.04.2020
	FAIR Contract No. CC2.5.2.2.1.			Page 16 of 23

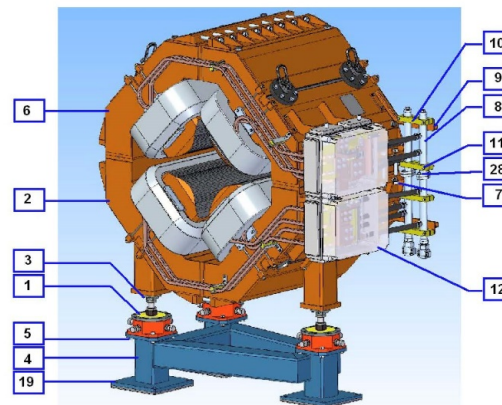


Fig. 4 WQ quadrupole magnet on individual stand

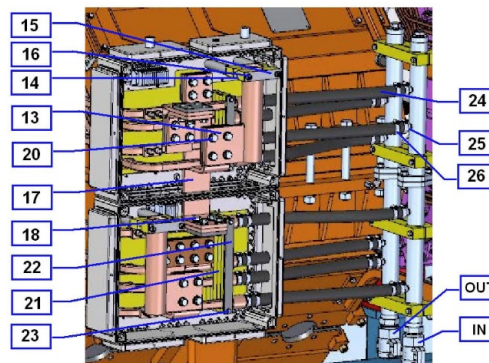



Fig. 5 Commutation area of WQ quadrupole magnet

	BINP SB RAS	Kind of Document: <b>Installation and Operation manual</b>	Document Number: <b>FCRM_WQ_Installation_Operation_manual_v1.4</b>	Date: 10.04.2020
	FAIR Contract No. CC2.5.2.2.1.			Page 14 of 23

## Mounting of the WQ quadrupole magnet in the tunnel

The proposed transportation method is adapted to movements on the flat floor, but does not apply to movements on roads and for loading into vehicles.

1. Attach hydraulic jacks GKS V10 (Fig. 9) to the rectangular cutouts 40 in the supports (2 or 3 pcs. depending on the type of the stand (see Fig. 6,7,8));
2. Attach hydraulic jacks to the edges of the horizontal bridges 41 (0 or 2 pcs. depending on the type of the stand (see Fig. 6,7,8));
3. Lift the stand by hydraulic jacks (approximately 130 mm. altitude);
4. Place rotating trolleys GSK RL8 (Fig. 10) under the mounting plates of the supports 42 (3 or 4 pcs. depending on the type of the stand (see Fig. 6,7,8));
5. Remove hydraulic jacks;
6. Transport the stand to the installation place in the tunnel;
7. Attach hydraulic jacks to the rectangular cutouts 40 in the supports and to the edges of the horizontal bridges 41;
8. Lift the stand by hydraulic jacks (approximately 130 mm. altitude);
9. Remove rotating trolleys;
10. Put down the stand with the magnet(s);
11. Remove hydraulic jacks;
12. Fasten the stand with the magnet(s) to the tunnel floor with anchor bolts (BINP anchoring concept <https://edms.cern.ch/document/2302721/1/>);
13. Connect the magnet(s) to ground, power supply and water cooling circuit (ground points, correct polarity, water inlet & outlet are marked on the drawings).

# LCM-Process Flow of Pre-Assembly and Installation in Tunnel CR

Workshop LCM-Process Flow of Pre-Assembly CR  
Process Analysis (BINP in-kind)



Template 4

Work steps pre-assembly and testing of CR Dipoles (proposal for Target Hall)																	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
Compile Work Instructions	Delivery of magnet in parts to TH	Unpack	Attached as example work instruction for assembly of a HEFT dipole	Assembly parts of the magnet	Sporadic magnetic measurement	Integration VC	Fiducialisation	Inspection of pre-assembly by WPL	Filling VC with N2	Transport to temp. storage hall GSI campus							
		Assembly an feet and frame	Testing connection box						Leak testing	Preparation of the transport							
	Delivery frame	Unpack	Refer to attached example (in German)														
	Delivery Vacuum Chamber	Unpack, Inspection	Refer to attached example (in German)	Cleaning if necessary (length?)													

**Legend**

- Party responsible for installation**
- GSI/ BINP, technical group
  - External company
  - Responsibility to be clarified

- VC Vacuum Chamber
- RFI Ready for Installation
- TH Target Hall
- TES Testing Hall

- Work instruction available (doc. number, german version)
- Similar Work instruction available (doc. number, german version)
- No work instruction available
- Work instruction given by Manufacturer
- No Work instruction needed





# Necessary training of the Company personal

## Site Management – Resource Planning



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Tunnel installation HEBT Magnets & Vacuum Chambers

Provider Obligation

- For Batch 2&3
  - Preparation for installation on Company's site (including vacuum chamber installation into magnets).
  - Provision of personnel for the transport and approximate placement into the tunnel.
  - Necessary training of the Company personnel.
  
- For Batch 4:
  - Installation of the complete system at the FAIR company site.



# Foreign Visits and Assignments BINP Experience

For the purposes of Foreign Visits and Assignments, a *Cover Letter* is processed by Budker Environment, Safety and Health Department. The Cover Letter indicates qualification, authorization, medical certificate, visit time & duration for every Budker worker.

Also Budker people pass the *Specific Safety Trainings* depending on the assigned work, hazards, complexities, and job coordination levels.

Safety Trainings are provided both at Budker Training Office and/or on-line at the workplace. The results are recorded in Safety Training Book. The periodicity of retraining is in accordance with the requirements.

## **At the Contractor Site the following information is presented on a regular basis:**

- List of visitors, qualification, authorization, medical certificate, visit time & duration
- Safety Trainings Records (Contractor Safety Trainings)
- Budker Team daily work plan (on the Contractor site)

# Cover letter

**BUDKER INSTITUTE OF NUCLEAR PHYSICS**  
Siberian Branch of  
Russian Academy of Sciences  
**(BINP SB RAS)**  
Lavrentiev av. 11, Novosibirsk  
630090, Russia



Dr. Ferdinand Willeke  
Photon Sciences Division Director  
Accelerator Systems Division

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Phone: +7 (383) 330-47-60  
Fax: +7 (383) 330-71-63  
Telegrams: Novosibirsk-90 ATOM

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## Cover letter

Zhuravlev Andrey being the employee of Budker Institute of Nuclear Physics is assigned by BINP to perform work at BNL for 22 days («19» August - «09» September, 2012).

Zhuravlev Andrey has a BINP medical certificate, safety permits, the 5<sup>th</sup>-level electrical safety permits, and has passed the required BNL training prior to performing work on-site.

Zhuravlev Andrey will work in the group «Booster Injection-Extraction Systems» as the Group leader.

Deputy Director-Chief Engineer

Igor CHURKIN

Environment, Safety and Health Department  
(383) 329-48-54  
(383) 329-47-75

# Training procedure

Life Number -D7629 Name - PETROVA, EKATERINA  
2/23/2012

### (GE-42 )Computing Positions

Course No.	Requirements for this JTA	Date Completed	Date Expires
GE-CYBERSEC	Cyber Security Training	Incomplete	NA

### (GE-53R )Administrative Contractor

Course No.	Requirements for this JTA	Date Completed	Date Expires
TQ-GSO	Site Orientation for Guests	Incomplete	NA

### (PS-01 )Photon Sciences Employees and Building Occupants

Course No.	Requirements for this JTA	Date Completed	Date Expires
GE-CYBERSEC	Cyber Security Training	Incomplete	NA
TQ-SAFEAWARE	Reducing Injuries and Accidents in the Workplace	Incomplete	NA

### (PS-01A )PS Bldg 740/747 - General Site Access

Course No.	Requirements for this JTA	Date Completed	Date Expires
HP-V-001	General Employee Training	Incomplete	NA
PS-ESH-TOUR-740-R3	PhoSci ESH Tour Bldg 740-747 NSLS-II Rev 3	2/16/2012	NA
PS-ESH-TOUR-740-R4	PhoSci ESH Tour Bldg 740-747 NSLS-II Rev 4	2/16/2012	NA
PS-ESH-TOUR-740-R5	PhoSci ESH Tour Bldg 740-747 NSLS-II Rev 5	2/16/2012	NA

### (PS-02T )PS Bldg 902/905 Access

Course No.	Requirements for this JTA	Date Completed	Date Expires
LS-ESH-BRIEF-0	PhoSci Environment, Safety, Health Briefing	Incomplete	NA
LT-ESH-TOUR-902	PhoSci ESH Tour of Bldg 902/905	Incomplete	NA

- Assign trainings

Budker (BINP) Workers

Training Requirements

3/16/2012

Budker (BINP) Workers							GE-42	GE-53C	GE-59	GE-61A	GE-68A	GE-69A	GE-69B	GE-70A	GE-73	GE-81A	GE-97	GE-90 & PS-01	PS-01A	PS-02T	WCC		
No.	Arrival Date	Last Name	First Name	Guest No.	GR Number	Appt Status	Dept Holds Appt	LabSec	EVO	ComGas	SLBT	LCFO A/E	Basic Elect	ElectSail	HotCont	BackSafe	Ladder	Hand Tools	Safety Awareness	NSLS II	PS ESH 902	Tasks	
1	TBD	Akimov	Alexandr	A8910		3/16		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Responsible for kicker modulator. (Modulator assembling and testing in BNL pulsed lab. Training the same from previous visit + work in booster tunnel.)
2	TBD	Anchugov	Oleg					Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Responsible for kickers. (Kicker assembling and testing in BNL pulsed lab.)
3	TBD	Bekhtenev	Evgeny					Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Responsible for beam diagnostic: overall supervision; checking of the cabling and wiring, including cabling in the Booster tunnel; measuring with multimeters and oscilloscopes (if BNL engineers will be available then BINP engineer will only supervise); working with PSI and computer
4		Belikov	Oleg					Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Responsible for correctors and sextupoles PSs. overall supervision; checking of the cabling and wiring, including cabling in the Booster tunnel; tuning the power supplies (low voltage electronic part, voltage below 50V); measuring with multimeters and oscilloscopes (if BNL engineers will be available then BINP engineer will only supervise); testing PSs with the load; working with PSI and computer
5	TBD	Burenkov	Denis					Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Survey group. Girder assembly alignment. Work with laser tracker. Work with hand and power tool.

- Safety Training Book

# BINP Team activities on site

BINP Brookhaven Booster Contract

#	Assign date	Action item	Agreed decision or action	Target close date	Actual close date	Responsible person	Comments
<b>Administration (Training, Documentation, Accommodations, etc.)</b>							
1	2.13.12	Office to BINP team	Bldg. 902, Room 79A, 3L	2.13.12	2.13.12	Wahl	
2	2.13.12	Second computer to BINP team	purchased	2.28.12	2.28.12	Wahl	
3	2.13.12	Second monitor to Sergey Ruvinskiy	ordered			Wahl	
4	2.13.12	Cell phone, Walkie-Talkie	purchased	3.2.12	3.2.12	Rakhimov, Smalyuk	
5	2.13.12	Personal Protective Equipment	purchased: helmets - 10 pieces, glasses - 10 pieces, shoes for Albert Rakhimov ordered: shoes for Ekaterina Petrova	3.13.12	3.13.12	Wahl	
6	2.13.12	Safety trainings /1st team/	completed	3.6.12	3.6.12	Petrova, Rakhimov, Ruvinskiy	
7	2.13.12	BNL guide book for BINP team	all information in English is presented	3.20.12		Petrova	
8	2.13.12	BNL safety trainings information for BINP team		3.16.12		Petrova	
9	2.13.12	BINP team		3.12.12		Petrova, Gurov	
9,1	2.13.12	Name, Guest ID	verified			Petrova, Gurov	
9,2	2.13.12	PHA items, Performed work, Visit dates	to be verified			Petrova, Gurov	
10	2.13.12	BINP Visitor Schedule	to be updated in accordance with Booster activities progress	3.16.12		Petrova, Gurov	
<b>Design Activities</b>							
1	2.13.12	Survey alignments (for inspections in booster tunnel); Drawing with up-to-date survey alignments	completed	3.20.12	3.2.12	Wahl, Johanson, Ruvinskiy	
2	2.13.12	Input data for labeling in booster tunnel (points of power cables descent in straights )		3.20.12		Ruvinskiy	маркировка мест кабельных спусков для питания элементов бустера
3	2.13.12	Checking of up-to-date data of inserts and labels in booster tunnel (DIW, CA, cables)		3.20.12		Ruvinskiy	проверка разметки в бустере (точек подключения воды, кабелей, воздуха)
3,1	2.13.12	DIW inserts	up-to-date DIW inserts data are checked/marked on drawing	3.20.12	3.9.12	Ruvinskiy	See Booster Tunnel, 2
3,2	2.13.12	CA inserts		3.20.12		Ruvinskiy	
3,3	2.13.12	points of power cables descent in arcs		3.20.12		Ruvinskiy	
4	2.13.12	Input data for drilling holes in booster floor for girders in straights	drawings, tables with required data are made; data are checking by Michael Johanson	3.20.12	3.8.12	Ruvinskiy, Johanson	
5	2.13.12	Input data for modulation of Booster optical structure	в процессе	3.20.12		Ruvinskiy	
6	2.13.12	Pdf drawings for vacuum chambers	completed (was discussed with Dick)	3.20.12	2.29.12	Ruvinskiy	
7	2.13.12	Dwg drawings for straights	CS was discussed with Dick	3.20.12		Ruvinskiy	
8	2.13.12	Booster elements mounting:		3.20.12		Ruvinskiy	
8,1	2.13.12	requirements for lift for mounting modulator (kicker pulser unit)	drawing with lift critical parameters is made (was discussed with Singh Boyzie)	3.20.12		Ruvinskiy, Singh	
9	2.13.12	Correction of booster model in accordance with up-to-date improvements; supporting in required design documentation		3.20.12		Ruvinskiy	

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# Spoiler alert...

## Sets of documents to be uploaded soon...

- CR Wide Quadrupole Magnets(SWQ, EWQ)
- CR Narrow Quadrupole Magnets
- CR Octupole Magnets
- TCR1 Narrow Septum Quadrupole Magnet
- CR Injection/Extraction Kicker Magnets
- CR Adaptors
- Below assembly
- Rouging Chambers for CR and TCR1
- CR Scintillating Screen
- CR Beam Scraper