Engineering Run Plan

S. Reimann, Status: 06.11.2018

- This plan will be subject to changes, daily adjustments will be made during the daily noon-meeting
- If not explicitly stated differently, all tests will be driven by operations team with support of various expert-groups
- All test will be carried out in the given order under the consideration of the time constraints

	#	Time constraints	goal	prerequisites	settings	support	remarks	Day preferred, Late+Night possible
KW 45	1	- 05.11.	NE5 cleaned and HEST closed			Zentrale Dienste		D
	2	- 05.11.	SIS18 closed	GAF finished				D
	3	- 11.11.	Dryrun HEST ready for beam (HHD, HADES, HTC, HTD, HTA, HTM) – final issues identified, technical groups informed	#1, #2 flexible SIS18 & HEST Patterns possible	1 Pattern per cave (HHD, HADES, HTC, HTD, HTA, HTM)	Hardware Groups (BI, EPS, VAC), Controls		D
	4	Parallel to #3	SIS18 ready for beam (RF commissioned, Kicker+Septa commissioned)	flexible SIS18 & HEST Patterns possible		Hardware Groups (BI, EPS, VAC, Ring RF, Ring HV), Controls		D
	5	Parallel to #3	Controls and App-Software ready for operation			Controls		D
	A	parallel	Cryring-Operation				By Cryring-Group	D
KW 46	6	12.11. - 18.11.	HSI, Poststripper +TK commissioned without beam, UNILAC ready for beam	UNILAC closed TK closed Controls ready	1 virt. Acc HSI to TK	UNILAC Controls, Hardware Groups (BI, EPS, VAC, LRF)	Parallel to RF conditioning	N
	7	- 18.11.	SIS18 dipole issue solved	#4 , #5	2 different SIS-Patterns	EPS, General Electric		D
	8	12.11. – 18.11.	stable beam operation for cw-LINAC at HLI		Virt Acc, Ar 9+ HLI to UCW	CW-Experts	Carried out by CW-Group	D
	B	Parallel	Cryring-Operation				By Cryring-Group	D
KW 47	9	19.11. – 20.11.	Preparation Ar-Beam from HSI for RFQ-Test + finishing RFQ-Tests	#6		UNILAC-Experts	Carried out by UNILAC-Group	D
	10	following #9	Test with pulsed Gas-Stripper	Gas stripper ready		UNILAC-Experts	Carried out by UNILAC-Group	D
	11	Start 19.11.	Preparation Ar-Beam from HLI	#8 finished	1 virt. Acc HLI to TK with Argon-Beam 11.4 MeV/u	UNILAC-Experts		N
	12	following #11	Beam Setup Post-Stripper (HLI-Beam)		1 virt. Acc HLI to TK with Argon-Beam 11.4 MeV/u	UNILAC-Experts		N
	13	following #12	Injection Optimization TK-SIS18, taking reference measurements at grids		- 1 virt. Acc HLI to TK with Argon-Beam 11.4 MeV/u - 1 Pattern TK-SIS-HHD, Argon 200 MeV/u, Optics: SIS18_HHD_STANDARD	TK-Injection Expert from SIS18 Group, SIS-Experts, LSA-Experts (SYS), Controls (LSA, Apps, timing, FE, … all)		D
	14	following #13	SIS18-Setup (fast, slow and KO extraction for 2 energies 200MeV/u + max. Rigidity) Beam setup to HHD, taking reference measurements at screens and grids		- 2 x 3 Pattern (fast, slow and KO extraction for 2 energies 200MeV/u + max. Rigidity)	TK-Injection Expert from SIS18 Group, SIS-Experts, LSA-Experts (SYS), Controls (LSA, Apps, timing, FE, … all), HEST-Experts		D

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	15	following #14	Measurement and optimization of extraction efficiency, for fast extraction and both types of slow extraction (quad-driven and KO). Needed: BCT in SIS and PDCs in HHD. For fast extraction use only SEM.		-"- + BI	-"- + BI		N
	16	Following #15	Beam setup to HADES using standard optics. Observe and save BioRem and BLM signals		2 Patterns TK-SIS-HADES (200MeV/u + max. rigidity), Argon from HLI Slow Extraction (quad), 10s (minimize loss rate) Optics: SIS18_HADES_STANDARD	HADES-contact, Controls (LSA, App, timing, FE, … all), LSA-Experts (SYS) Radiation Protection	HHT must be in Beam Mode	D
	17	Following #16	Test loading historical HADES beamline settings to Paramodi	#16 finished	-"-	HADES-contact	HHT must be in Beam Mode	N
	18		Commission BLMs, Halo Monitors and new SEMs on HADES Line		-"-	HADES-contact , BI-BLM Experts and SEM-Experts	In parallel if possible (low priority): Implementation of beam transfer to ESR	D
	19		recommission all PDCs on the HADES beamline		-"-	HADES-contact, BI-PDC-Expert	-"-	D
	20		measure extraction efficiency for both modes (slow & KO)		4 Patterns TK-SIS-HADES (200MeV/u + max. rigidity x slow.ext. + KO.ext),	HADES-contact	-"-	N
	21		measure and optimize losses as seen in BioRem and BLM		-"-	HADES-contact	-"-	N
	22		measure beam transmission, compare with losses seen by BLMs		-"-	HADES-contact	-"-	N
	23		when beamline optimized: measure beam sized at screens S06DFV, TE1DF and grid – try to calculate SIS18 extraction twiss parameters		-"-	HADES-contact	-"-	N
	24		test target focusing knob		-"-	HADES-contact	-"-	N
	25		validation of optics models		-"-	HADES-contact	-"-	N
KW 48	26		trajectory response matrix (at least upstream part of the beam line) for standard optics	#25 finished	Beam patterns: SIS18_HADES_STANDARD and two new versions of optics	HADES-contact		D
	27	Following #26	beam loss patterns for the two alternative optics		-"-	HADES-contact		N
	28	Following #27	HADES extraction optimization, Spill structure as a function of extraction type and sextupole setting influence		SIS18_HADES_STANDARD, Argon, (max. rigidity), Extraction: slow, 10s (quad and KO)	HADES-contact, SIS-Experts	Driven by SIS18-team	D
	29	29.11. – 30.11. parallel SIS/HEST-operation	TASCA Target bakeout		Argon beam from HLI to X8?	TASCA-contact, UNILAC-Expert		-
	30	Following #28	HTC/HTD: bring beam to the last PDC and screens in the experimental caves, measure transmission through various segments		patterns: SIS18_TH_HTC_STANDARD, SIS18_TH_HTD_STANDARD, Argon, 1.4 GeV/u, Extraction: slow, 10s (quad or KO, to be decided in function of results)	HTC + HTD (CBM)-contact	In parallel if possible (low priority): Implementation of beam transfer to ESR	D
	31	Following #30	Provide mini-CBM with one hour stable beam.	#30 finished	-"-	-"-		N
	32	Following #31	HTA/HTM: bring beam to the last PDC and screens in the experimental caves, measure transmission, validation of optics models, Test of HTM scanning system, Test of Spillabbruch	#31 finished	patterns: SIS18_TH_HTA_STANDARD, SIS18_TH_HTM_STANDARD, Argon, Rigidity ca. 8 Tm, Extraction: slow, 10s (quad or KO, to be decided in function of results)	HTA + HTM - contact	In parallel if possible (low priority): Implementation of beam transfer to ESR	D

KW 49	33	03.12. + 04.12.	Establish cooled beam in SIS18 at injection energy (Ar für den ESR)		patterns: SIS18_TE_ESR_STANDARD, Argon, 200 MeV/u, Extraction: fast SIS18 - E-Cooler on	ESR-team, Controls (LSA, App, timing, FE, … all), LSA-Experts (SYS), Beam-Cooling Experts		D
	34	Starts 03.12.	ESR direct injection of Argon beam, synchrotron mode	#33 finished	patterns: SIS18_TE_ESR_STANDARD, Argon, 200 MeV/u, Extraction: fast SIS18 - E-Cooler on	ESR-team, Controls (LSA, App, timing, FE, … all), LSA-Experts (SYS),		D
	35	Starts 03.12.	HSI to HADES: preparation and optimization Silver beam at HSI HADES, test of naked stripped silver for SIS18 injection		Patterns: SIS18_HADES_STANDARD, Silver, 1.4 GeV/u Extraction: slow (KO or quad, 10s)	UNILAC-experts, HADES-contact	ESR beam has priority on Dec. 3rd and 5th	DN
	36	Following #35	HADES: measurement (and optimization) of beam losses (BLMs and BioRems)	#35 finished	Patterns: SIS18_HADES_STANDARD, Silver, 1.4 GeV/u Extraction: slow (KO or quad, 10s)	HADES-contact	ERS-beam parallel if possible, but HADES has priority	N
	37	Following #35	HADES: optimization of beam quality on target		-"-	HADES-contact	ERS-beam parallel if possible, but HADES has priority	D
	38	08.12. + 09.12.	Beam instrumentation test		HLI-Ar to X2	parallel		DN
KW 50	39	- Dec 13th	parallel operation test and contingency time test stability and beam quality on target in various scenarios of parallel operation time for measurements planned but not done before additional measurements: aperture in TE1 (and downstream), beam response matrix for HTA (important next year)	All previous tests successfully finished	Beam patterns: SIS18_HADES_STANDARD, SIS18_TH_HTA_STANDARD, SIS18_TE_ESR_STANDARD, SIS18_HHD_STANDARD, SIS18_TH_HTD_STANDARD Beam: Silver, 1.4 GeV/u Extraction: slow (10s) and fast			DN
	40	Parallel to 38	stable beam operation for cw-LINAC at HLI		Virt Acc, Ar 9+ HLI to UCW	CW-Experts	Carried out by CW-Group	D
	41	14.12. – 16.12.	Operator Training					DN