

FY 2020 Machine Studies Breakdown

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2019-3.1	Downtime	DIN#107088	9/24/2019 12:02	9/29/2019 20:13	128.18			SJS1 magnet failed (AES-MOM)
2019-3.1	Training		9/30/2019 3:40	9/30/2019 5:19			1.65	PAR operator training
2019-3.1	Training		9/30/2019 23:37	10/1/2019 1:37			2.00	PAR operator training
TOTAL					128.18		0.00	3.65

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2019-3.2	Training		10/7/2019 9:27	10/7/2019 10:46			1.32	PAR operator console testing
2019-3.2	Training		10/7/2019 10:46	10/7/2019 11:16			0.50	Booster operator requalification
2019-3.2	Downtime	DIN#107090	10/7/2019 18:12	10/8/2019 8:00	13.80			SJS1 2 nd magnet failed (AES-MOM)
TOTAL					13.80		0.00	1.82

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2019-3.3	Machine Intervention		10/14/2019 10:22	10/14/2019 12:49		2.45		Access SR Zone F for blower replacement
2019-3.3	Training		10/14/2019 20:10	10/14/2019 21:50			1.67	SR operator console testing
2019-3.3	Training		10/15/2019 4:53	10/15/2019 6:37			1.73	Booster operator training
TOTAL					0.00	2.45	3.40	

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2019-3.4	Machine Intervention		10/21/2019 9:20	10/21/2019 11:00		1.67		Access SR Zone F for blower replacement
2019-3.4	Downtime	DIN#107096	10/21/2019 11:00	10/21/2019 14:16	3.27			Removing 14ID-DS undulator (ASD-MD)
2019-3.4	Training		10/21/2019 9:36	10/21/2019 11:23			1.78	Booster operator training
2019-3.4	Training		10/21/2019 19:30	10/21/2019 20:54			1.40	Linac operator training
TOTAL					3.27	1.67	3.18	

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2019-3.5	Machine Intervention		10/28/2019 9:40	10/28/2019 14:32		4.87		Maintenance activities and access SR zone B for undulator work
2019-3.5	Training		10/28/2019 11:00	10/28/2019 12:51			1.85	Booster operator training
2019-3.5	Training		10/28/2019 15:00	10/28/2019 15:15			0.25	Booster operator training
TOTAL					0.00	4.87	2.10	

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2019-3.6	Machine Intervention		11/4/2019 9:10	11/4/2019 11:36		2.43		Maintenance activities
2019-3.6	Training		11/4/2019 10:00	11/4/2019 11:25			1.42	Linac/PAR operator training
2019-3.6	Downtime	DIN#107098	11/6/2019 4:52	11/6/2019 8:00	3.13			10W RF amplifier caused BESOCM trips (RF)
TOTAL					3.13	2.43	1.42	

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2019-3.7	Training		11/11/2019 9:18	11/11/2019 10:18			1.00	Linac operator console test
2019-3.7	Training		11/11/2019 22:00	11/11/2019 22:53			0.88	Booster operator training
TOTAL					0.00	0.00	1.88	

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2019-3.8	Machine Intervention		11/18/2019 9:10	11/18/2019 13:58		4.80		Maintenance activities, access SR zone D and Linac/PAR
2019-3.8	Training		11/18/2019 13:31	11/18/2019 14:40			1.15	SR operator training
TOTAL					0.00	4.80	1.15	

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2019-3.9	Machine Intervention		11/27/2019 8:43	11/27/2019 13:40		4.95		Maintenance activities, access SR zone F
2019-3.9	Training		11/27/2019 11:58	11/27/2019 13:58			2.00	Injector operator training
2019-3.9	Training		11/27/2019 20:50	11/27/2019 22:00			1.17	Linac operator training
2019-3.9	Training		11/28/2019 7:18	11/28/2019 9:02			1.73	Booster operator training
2019-3.9	Training		11/28/2019 22:20	11/28/2019 22:56			0.60	Booster operator training
TOTAL					0.00	4.95	5.50	

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2019-3.10	Machine Intervention		12/9/2019 8:48	12/9/2019 15:00		6.20		Maintenance activities, access SR zone D and Linac/PAR
2019-3.10	Training		12/9/2019 13:10	12/9/2019 14:47			1.62	PAR operator training
2019-3.10	Training		12/10/2019 5:00	12/10/2019 6:50			1.83	Booster and SR operator training
TOTAL					0.00	6.20	3.45	

Studies Period for 2019-3.11			Start Time	Stop Time	Downtime	Machine Intervention	Training	
TOTAL					0.00	0.00	0.00	

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.1	Machine Intervention		1/27/2020 8:31	1/28/2020 14:35		30.07		Scheduled scraper removal at S37
2020-1.1	Training		1/27/2020 19:30	1/27/2020 21:17			1.78	Booster operator training
2020-1.1	Machine Intervention		1/29/2020 19:15	1/29/2020 20:46		1.52		Scheduled access in SR zone D
2020-1.1	Downtime	DIN#107119	1/29/2020 20:46	1/29/2020 22:31	1.75			S24:25:R4 raw power supply issue (PS)
2020-1.1	Training		1/30/2020 3:01	1/30/2020 4:00			0.98	Booster operator training
2020-1.1	Machine Intervention		1/30/2020 10:00	1/30/2020 10:42		0.70		Scheduled access in SR zone F
TOTAL					1.75	32.28	2.77	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.2	Machine Intervention	2/3/2020 8:47	2/3/2020 13:13		4.43		Maintenance activities, Blower replaced in S36 (Zone F access)
2020-1.2	Training	2/3/2020 13:20	2/3/2020 14:38			1.28	Booster operator training
2020-1.2	Training	2/4/2020 2:33	2/4/2020 4:25			1.87	Booster operator training
TOTAL				0.00	4.43	3.15	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.3	Machine Intervention	2/10/2020 9:21	2/10/2020 15:15		5.90		Maintenance activities, access Linac/PAR and Zone F
2020-1.3	Training	2/10/2020 17:30	2/10/2020 19:30			2.00	Linac operator training
TOTAL				0.00	5.90	2.00	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.4	Machine Intervention	2/17/2020 8:47	2/17/2020 13:10		4.38		Maintenance activities, access Zone D
2020-1.4	Training	2/17/2020 1:00	2/17/2020 3:02			2.03	Linac operator training
TOTAL				0.00	4.38	2.03	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.5	Machine Intervention	2/24/2020 8:54	2/24/2020 13:40		4.77		Maintenance activities, access Zone E
2020-1.5	Training	2/24/2020 19:30	2/24/2020 21:39			2.15	Booster operator training
2020-1.5	Training	2/25/2020 6:00	2/25/2020 6:55			0.92	Booster operator training
TOTAL				0.00	4.77	3.07	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.6	Downtime DIN#107148	3/2/2020 8:47	3/2/2020 10:32	1.75			S16 water/vac MPS trip due to absorber chassis (CTL)
2020-1.6	Machine Intervention	3/2/2020 10:32	3/2/2020 11:30		0.97		Maintenance activities, access Zone D
2020-1.6	Downtime DIN#107149	3/2/2020 11:30	3/2/2020 12:38	1.13			S29A:S4 power supply trip (PS)
2020-1.6	Downtime DIN#107150	3/2/2020 12:41	3/2/2020 13:35	0.90			Procedural issue (MCR)
2020-1.6	Training	3/2/2020 16:30	3/2/2020 17:55			1.42	Booster operator training
2020-1.6	Downtime DIN#107151	3/2/2020 21:18	3/2/2020 21:58	0.67			L5 VSWR #1 trip (RF)
2020-1.6	Training	3/3/2020 0:00	3/3/2020 2:02			2.03	Booster operator training
2020-1.6	Downtime DIN#107152	3/3/2020 4:25	3/3/2020 4:38	0.22			L5 VSWR #1 trip (RF)
TOTAL				4.67	0.97	3.45	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.7	Machine Intervention	3/9/2020 8:50	3/9/2020 12:24		3.57		Maintenance activities, access Zone A & E
2020-1.7	Training	3/9/2020 12:01	3/9/2020 13:30			1.48	Booster operator training
2020-1.7	Downtime DIN#107155	3/9/2020 14:07	3/9/2020 16:35	2.45			S25 MPS water fault, cable repair, latch card validation (MOM)
TOTAL				2.45	3.57	1.48	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.8	Machine Intervention	3/16/2020 9:32	3/16/2020 15:00		5.47		Maintenance activities, access Zone E
TOTAL				0.00	5.47	0.00	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.9	Machine Intervention	3/23/2020 10:13	3/23/2020 11:14		1.02		Maintenance activities
2020-1.9	Training	3/23/2020 13:15	3/23/2020 14:40			1.42	Booster operator training
TOTAL				0.00	1.02	1.42	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.10	Training	3/30/2020 17:30	3/30/2020 19:43			2.22	SR operator training
2020-1.10	Training	3/31/2020 1:58	3/31/2020 4:33			2.58	Injector operator training
TOTAL				0.00	0.00	4.80	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.11	Machine Intervention	4/6/2020 10:02	4/6/2020 10:53		0.85		Maintenance activities
2020-1.11	Training	4/6/2020 10:53	4/6/2020 12:02			1.15	Linac operator training
2020-1.11	Training	4/6/2020 15:20	4/6/2020 16:05			0.75	Booster operator console test
	Downtime DIN#107167	4/6/2020 22:58	4/6/2020 23:52	0.90			S28A:S4 trip (PS)
2020-1.11	Training	4/7/2020 5:00	4/7/2020 6:58			1.97	SR operator training
TOTAL				0.90	0.85	3.87	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.12	Machine Intervention	4/13/2020 10:05	4/13/2020 12:16		2.18		Maintenance activities
2020-1.12	Training	4/13/2020 11:16	4/13/2020 12:27			1.18	Booster operator training
2020-1.12	Downtime DIN#107175	4/14/2020 1:14	4/14/2020 4:40	3.43			Thyratron switch failed in L4:MO1 (RF)
2020-1.12	Training	4/14/2020 3:33	4/14/2020 4:35			1.03	SR operator training
2020-1.12	Training	4/14/2020 6:24	4/14/2020 7:00			0.60	SR operator training
TOTAL				3.43	2.18	2.82	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.13	Machine Intervention	4/20/2020 9:32	4/20/2020 13:33		4.02		Maintenance activities, access Booster
2020-1.13	Training	4/20/2020 11:50	4/20/2020 13:50			2.00	SR operator training
2020-1.13	Training	4/20/2020 16:00	4/20/2020 18:22			2.37	Linac operator training
2020-1.13	Training	4/21/2020 8:07	4/21/2020 10:16			2.13	SR operator training
2020-1.13	Training	4/21/2020 20:55	4/21/2020 22:00			1.08	Linac operator training
	Downtime DIN#107177	4/22/2020 1:00	4/22/2020 1:38	0.63			SR RF trip (RF)
TOTAL				0.63	4.02	7.58	

Studies Period		Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.14	Machine Intervention	4/27/2020 10:10	4/27/2020 11:00		0.83		Maintenance activities
2020-1.14	Training	4/27/2020 11:00	4/27/2020 13:09			2.15	SR operator training

2020-1.14	Training			4/27/2020 13:10	4/27/2020 14:58			1.80	Linac ACO requalification
2020-1.14	Training			4/27/2020 15:04	4/27/2020 15:47			0.72	Booster operator console test
2020-1.14	Training			4/28/2020 6:15	4/28/2020 7:00			0.75	SR operator training
TOTAL						0.00	0.83	5.42	

Studies Period				Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.15	Machine Intervention			5/4/2020 10:00	5/4/2020 12:00			2.00	Maintenance activities, access Zone C
2020-1.15	Downtime DIN#107180			5/4/2020 12:00	5/4/2020 12:52	0.87			Work on RG1 water pump (MOM)
2020-1.15	Training			5/4/2020 17:25	5/4/2020 19:44			2.32	SR operator training
2020-1.15	Downtime DIN#107181			5/4/2020 21:59	5/5/2020 1:42	3.72			PLC for 25-ID failed, caused SR zone D trip to AA (AES-SI)
2020-1.15	Training			5/5/2020 2:48	5/5/2020 6:06			3.30	SR operator training
TOTAL						4.58		2.00	5.62

Studies Period				Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.16	Machine Intervention			5/11/2020 9:49	5/11/2020 13:20			3.53	Maintenance activities
2020-1.16	Training			5/11/2020 11:40	5/11/2020 13:20			1.68	Linac operator training
2020-1.16	Training			5/11/2020 20:36	5/11/2020 20:51			0.25	SR operator training
2020-1.16	Training			5/12/2020 4:00	5/12/2020 6:55			2.92	SR operator training
TOTAL						0.00		3.53	4.85

Studies Period				Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.17	Machine Intervention			5/18/2020 10:26	5/18/2020 13:24			2.97	Maintenance activities, access Zone B & C
2020-1.17	Training			5/18/2020 13:24	5/18/2020 14:47			1.38	SR operator training
2020-1.17	Training			5/19/2020 3:30	5/19/2020 5:30			2.00	SR operator training
TOTAL						0.00		2.97	3.38

Studies Period				Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-1.18	Training			5/25/2020 12:10	5/25/2020 14:06			1.93	SR operator training
2020-1.18	Training			5/25/2020 18:11	5/25/2020 20:39			2.47	Linac operator training
TOTAL						0.00		0.00	4.40

Studies Period for 2020-2.1				Start Time	Stop Time	Downtime	Machine Intervention	Training	
TOTAL						0.00		0.00	0.00

Studies Period				Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.2	Machine Intervention			6/15/2020 10:35	6/15/2020 12:46			2.18	Maintenance activities, access Zone F
2020-2.2	Training			6/15/2020 17:00	6/15/2020 17:55			0.92	SR operator training
2020-2.2	Downtime DIN#107192			6/15/2020 17:55	6/15/2020 21:07	3.20			IOCS39BPM issue (CTL)
2020-2.2	Training			6/16/2020 1:04	6/16/2020 3:52			2.80	SR operator training
TOTAL						3.20		2.18	3.72

Studies Period				Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.3	Machine Intervention			6/22/2020 9:42	6/22/2020 10:48			1.10	Maintenance activities
2020-2.3	Training			6/23/2020 4:00	6/23/2020 5:48			1.80	SR operator training
2020-2.3	Training			6/23/2020 9:55	6/23/2020 12:38			2.72	SR operator training
TOTAL						0.00		1.10	4.52

Studies Period				Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.4	Training			7/3/2020 9:44	7/3/2020 11:55			2.18	SR operator training
2020-2.4	Training			7/3/2020 18:59	7/3/2020 20:52			1.88	SR operator training
2020-2.4	Training			7/4/2020 3:30	7/4/2020 5:00			1.50	Linac operator training
2020-2.4	Training			7/4/2020 14:49	7/4/2020 17:38			2.82	SR operator training
2020-2.4	Training			7/5/2020 0:00	7/5/2020 2:00			2.00	Linac operator training
2020-2.4	Training			7/6/2020 5:00	7/6/2020 7:00			2.00	Linac operator training
2020-2.4	Training			7/6/2020 7:11	7/6/2020 9:11			2.00	SR operator training
2020-2.4	Machine Intervention			7/6/2020 8:30	7/6/2020 12:30		4.00		Maintenance activities, access Zone F
TOTAL						0.00	4.00	14.38	

Studies Period				Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.5	Machine Intervention			7/13/2020 8:28	7/13/2020 11:25			2.95	Maintenance activities, access Linac and Zone F
2020-2.5	Training			7/13/2020 15:28	7/13/2020 16:58			1.50	SR operator training
2020-2.5	Training			7/14/2020 5:45	7/14/2020 7:00			1.25	SR operator training
TOTAL						0.00		2.95	2.75

Studies Period				Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.6	Machine Intervention			7/20/2020 8:09	7/20/2020 9:55			1.77	Maintenance activities
2020-2.6	Training			7/20/2020 8:30	7/20/2020 9:52			1.37	Linac operator training
2020-2.6	Training			7/20/2020 14:12	7/20/2020 14:39			0.45	Linac operator training
2020-2.6	Training			7/20/2020 18:00	7/20/2020 18:34			0.57	SR operator training
2020-2.6	Training			7/21/2020 4:02	7/21/2020 5:47			1.75	SR operator training
2020-2.6	Training			7/21/2020 7:02	7/21/2020 11:10			4.13	Linac operator training
2020-2.6	Machine Intervention			7/21/2020 15:20	7/21/2020 17:53		2.55		Controlled access SR zone D
2020-2.6	Training			7/22/2020 6:21	7/22/2020 7:00			0.65	SR operator training
TOTAL						0.00	4.32	8.92	

Studies Period				Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.7	Machine Intervention			7/27/2020 9:57	7/27/2020 12:00			2.05	Maintenance activities
2020-2.7	Training			7/27/2020 12:00	7/27/2020 13:28			1.47	SR Operator Console Test

2020-2.7	Downtime DIN#107221		7/27/2020 18:20	7/27/2020 19:56	1.60			S35&36 water pump issue (MOM)
2020-2.7	Training		7/28/2020 1:00	7/28/2020 3:10			2.17	SR operator training
TOTAL					1.60		2.05	3.63

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.8	Machine Intervention		8/3/2020 8:51	8/3/2020 13:00			4.15	Maintenance activities
2020-2.8	Training		8/3/2020 13:17	8/3/2020 14:58			1.68	SR Operator Console Test
2020-2.8	Training		8/3/2020 18:00	8/3/2020 20:00			2.00	Linac operator training
TOTAL					0.00		4.15	3.68

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.9	Training		8/13/2020 5:00	8/13/2020 7:06			2.10	Linac Operator Console Test
TOTAL					0.00		0.00	2.10

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.10	Downtime DIN#107232		9/9/2020 1:22	9/9/2020 4:29	3.12			RF3 LLRF detector issue (RF)
2020-2.10	Machine Intervention		9/10/2020 11:00	9/10/2020 15:30		4.50		Maintenance activities, access SR zone F & A
2020-2.10	Downtime DIN#107233		9/10/2020 15:30	9/10/2020 17:25	1.92			Water leak at S6B:Q5 in Zone A (MOM)
2020-2.10	Downtime DIN#107234		9/11/2020 12:06	9/11/2020 15:30	3.40			Bldg. 450 process water issue (FAC)
2020-2.10	Training		9/11/2020 21:32	9/11/2020 22:51			1.32	SR operator training
2020-2.10	Downtime DIN#107235		9/12/2020 4:32	9/12/2020 13:38	9.10			Booster RF-5 repairs (RF)
2020-2.10	Training		9/12/2020 20:57	9/12/2020 22:50			1.88	SR operator training
2020-2.10	Downtime DIN#107236		9/13/2020 12:00	9/13/2020 18:46	6.77			Booster RF-5/3 switch (RF)
TOTAL					24.30		4.50	3.20

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.11	Machine Intervention		9/21/2020 8:08	9/21/2020 13:26			5.30	Maintenance activities, access Linac
2020-2.11	Downtime DIN#107243		9/21/2020 16:00	9/21/2020 18:19	2.32			New RF-5 klystron not ready to provide RF to Booster (RF)
2020-2.11	Training		9/22/2020 4:20	9/22/2020 5:55			1.58	SR operator training
TOTAL					2.32		5.30	1.58

Studies Period			Start Time	Stop Time	Downtime	Machine Intervention	Training	
2020-2.12	Machine Intervention		9/28/2020 9:48	9/28/2020 13:45			3.95	Maintenance activities, access SR zone F & D
2020-2.12	Training		9/28/2020 16:06	9/28/2020 18:00			1.90	PAR operator training
2020-2.12	Downtime DIN#107248		9/28/2020 17:30	9/28/2020 23:17	5.78			Par RF switch issue (CTL)
2020-2.12	Machine Intervention		9/29/2020 8:47	9/29/2020 12:50		4.05		Maintenance activities, access PAR
2020-2.12	Downtime DIN#107249		9/29/2020 13:00	9/29/2020 14:22	1.37			S3A:S3:PS trip (PS)
2020-2.12	Downtime DIN#107250		9/29/2020 14:42	9/29/2020 15:02	0.33			RF-5 trip (RF)
2020-2.12	Training		9/29/2020 16:12	9/29/2020 18:00			1.80	PAR operator training
2020-2.12	Training		9/30/2020 20:00	9/30/2020 21:57			1.95	PAR operator training
TOTAL					7.48		8.00	5.65