# N

## *2007*

| Date & Time | Type | Description of event |
|---|---|---|
| **03/12/2007 13:23:12** | *refrigerator* | Finished empty target cell measurements. Pumping out helium from mixing chamber. --Jaakko |
| **27/11/2007 13:01:04** | *refrigerator* | Filling mixing chamber with helium-4. --Jaakko |
| **26/11/2007 18:18:20** | *refrigerator* | Unload empty target holder, warm up to room temperature, put caps on and reload into mixing chamber. Start to circulate helium. --Jaakko et al |
| **25/11/2007 08:44:36** | *general ...* | 25th 08h30, Start Removing 4He. by Nori |
| **21/11/2007 17:50:47** | *refrigerator* | Filling mixing chamber with helium-4. --Jaakko |
| **20/11/2007 17:43:54** | *general ...* | Unload ammonia NH3 13:30 - 17:00. Reload empty target cells into mixing chamber. Restart circulating helium. --Jaakko et al |
| **19/11/2007 10:32:31** | *refrigerator* | Pumping out 4He liquid from mixing chamber. --Jaakko et al |
| **13/11/2007 16:41:06** | *refrigerator* | Mixing chamber filled with 4He. Now at 1.5 K. --Jaakko |
| **12/11/2007 20:29:15** | *refrigerator* | Removing 3He/4He mixture. --Jaakko |
| **12/11/2007 09:01:03** | *polarization* | Back to 2.5 T 08:30 after Drell-Yann data taking in 1.0 T. Polarizations -86.2 %, +78.3 % and -79.8 %. --Jaakko |
| **31/10/2007 08:46:53** | *general ...* | Air conditioning failure in pump room last night around 02:00. Door kept open until morning. Now TCR called. --Jaakko |
| **30/10/2007 09:48:29** | *polarization* | This morning 9:00 polarizations -89.2 %, +81.3 % and -85.2 %. Stop microwaves. At 9:41 in 1.0 T field (+258 A). --Jaakko |
| **29/10/2007 18:23:50** | *magnet* | Back to 2.5 T with polarizations -87.2 %, +80.8 % and -83.7 %. Restart polarization. --Jaakko |
| **29/10/2007 16:44:11** | *magnet* | Stop microwaves and NMR. Go from 2.5 T solenoid to 0.63 T dipole for veto intervention at upstream of the target. --Jaakko |

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|---|---|---|
| **28/10/2007 08:02:57** | *polarization* | 7:30 back in solenoid field 2.5 T from 0.63 T dipole. Polarizations -71.4 %, +76.0 % and -71.5 %. Restart polarizing. --Jaakko |
| **26/10/2007 11:05:04** | *polarization* | After the incident, we started polarizing in the configuration (-+-) at 15:15 on Thu 25/10, thereby advancing the microwave reversal which was forseen for next Sunday. At 10:00 on 26/10 we stopped polarizing after having reached -72.3% (up), 77.5% (mid), and -73.2% (dwn). Since 10:46 of today the target is in transverse mode for data taking.~~~Guenter |
| **25/10/2007 12:47:03** | *refrigerator* | Roots #13 heat exchanger thermal switch failure at 10:55. Polarization lost. Bridged one of the two switches. Restart roots. --Jaakko et al |
| **24/10/2007 11:14:46** | *polarization* | On Wed. 24/10 at 08:30 we went to 2.5 T longitudinal field after 135 hrs. in transverse mode. We measure +89.2% up, -78.3% mid, +82.4% down, corresponding to relaxation times of 5300 hrs. up, 3370 hrs. mid, 2715 hrs. down. During the SPS ION MD of 24 hrs. we will repolarize to top up the values. On Sat. 20/10 the target was for 2 hrs. in longitudinal mode during the alignment runs taken around midday. - Guenter |
| **18/10/2007 19:00:15** | *polarization* | We had a MD from 16th october 8:00 to 18th october 16:00. Before to come back to the 2.5T longitudinal field we stayed 111h30' at 0.6T in transverse mode. The relaxation times for this periode are 4268h (upstream cell), 4234h (central cell) and 2405h (Downstream cell). During the MD we built up the polarization in the opposite configuration (+-+) and stopped today at 15:30 reaching +91.5% (upstream), -81.5% (central) and +86.6% (downstream). Since 16:00 we are in the transverse mode. - Fabrice |
| **11/10/2007 18:14:29** | *polarization* | 10/10 8h00: we go to 2.5T solenoid to repolarise 10/10 8h36: -82.24 up; +77.14 mid; -77.45 down 11/10 17h04: -89.23 up; +80.84 mid; -83.89 down 11/10 18h00: back to transvers mode |
| **04/10/2007 23:15:30** | *polarization* | After 131.3 hours we measured polarization.Upstream 92.2%(relax 5980h),Central -80.3%(relax 4314h),Downstream 85.7%(relax 3216h) And then we started to polarize from 9:40 on 3 to 21:45 on 4 of Octorber. Upstream -84.7% Central 79.6% Downstream -81.5%.We went to transverse mode at 22:30.-Takuma |
| **04/10/2007 23:05:30** | *NMR* | The tube for Q-meter cooling was blocked because of impurity on 2nd of Octorber.So the tube was disconnected and cleaned next day.Finally,it started to work well. Takuma |
| **28/09/2007 09:54:33** | *polarization* | From 25.09 8:00 to 27.9 18:00 we had MD. After 101h at 1T we measured Upstream 92.1% (relax 7205h), Central -79.84% (relax 4738h) and Downstream 85.37% (relax 4340 h). We restarted polarization from 25.09 |

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| | | at 10:30 to 27.07 at 20:00 and improved the degree of polar by 2.15% (Upstream), 3.27% (Central) and 4.36% (Downstream). Since 22:00 we are in transverse mode ( 0.6T). - Yuri & Fabrice |
| **20/09/2007 11:53:33** | *polarization* | From yesterday 8:00 we had a MD for 24 hours. We went to +2.5T and we measured polarization values: UP(+91.26%, relax 5365 h), Central(-78.89%, relax 7907 h) and DWN(+83.14%, relax 28108 h (?)). We restarted to polarize at 9:30 and better equilibrated the MW power between the upstream and downstream cells. Polarization stopped today at 8:35 with a gain of 2.2% (UP), 2.6% (Central) and 4.17% (DWN). We went to +1T at 9:15. - Fabrice |
| **20/09/2007 10:52:32** | *general ...* | The CPU unit of the PLC system was replaced yesterday by a new one because the previous one was regularly failing which could weaken the safety of the operation of the dilution refrigerator. - Fabrice |
| **17/09/2007 08:55:08** | *general ...* | Field rotations at 1.0 T Saturday, Sunday and Monday mornings. The online polarizations about +83 %, -88 % and +84 % with -260 A solenoid current. With +260 A the polarizations about +95 %, -87 % and +92 %. --Jaakko |
| **04/09/2007 10:40:18** | *polarization* | Today 4/9/07 MD from 8:00 to 16:00. At 8:20, rotation from -1T to +1T. At 9:00 ramping up of the solenoid to 2.5 T and measurement of the polarization: Up_cell +92.33% (relax time: 11034h) - Central_cell -80.74% (relax time: 6042h) - Down_cell +85.01% (relax time: 5378h). We will stay at 2.5T until end of MD, ~~Jacques |
| **03/09/2007 09:45:36** | *general ...* | Smooth operation of the target during the week-end. Rotations were resumed on Sunday 2/9 at 8:45 and Monday 3/9 at 8:10. We are presently in reverse polarity on solenoid. ~~Jacques |
| **01/09/2007 10:46:18** | *general ...* | Field rotation from +1T to -1T at 10:16 am this morning. Jacques |
| **31/08/2007 13:46:27** | *general ...* | 30th of August 16h00: target went to the frozen mode with polariztions of 94.5% -81.8% 85.0% by new calibration values. After taht the field rotation from -2.5T to +2.5T was done. 31th of August 12h30: went to +1.0T. by Nori |
| **28/08/2007 23:44:26** | *polarization* | August 27: started polarizing at 10h30 with +--+ configuration. August 28: The polarization is +91%/-79%/+80% at 23h00. By Nori |
| **22/08/2007 09:55:29** | *polarization* | 22/08/07 Stefan Goertz 9:00 Solenoid field rised to 2.5T. Polarizations after 353 hours of frozen spin at 1T: (up/middle/down) -91.3%/+85.0%/-79.8%. This corresponds to relaxation times of 8600h/8700h/5300h. 10:00 Microwaves started to repolarize. |

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| **17/08/2007 11:02:10** | *general ...* | the turbopump used to keep vacuum in the helium distribution box on top of the helium dewar died recently (we do not know when exactly). A new group was installed this morning at a larger distance of the magnet to avoid to expose this new pump to the fringe field of the solenoid, which is very probably the reason why this turbo died. - Fabrice |
| **16/08/2007 20:07:44** | *refrigerator* | The level of oxygen at the exhaust of the helium pumps dropped below 20 ppm this morning and looked stable. Normal recovery procedure reactivated. - Fabrice |
| **15/08/2007 12:14:49** | *refrigerator* | Since Monday afternoon the level of oxygen in the recovery line exceeds 100 ppm. The online purifier was regenerating every 45 minutes. This morning a manual bypass for the refrigerator recovery was installed on the line to allow to send the polluted gas to the balloon and then cleaned later on the meyrin lab. Actually the "normal" recovery line receives only helium gas from the magnet with a level of oxygen around 2-3 ppm. - Fabrice |
| **09/08/2007 17:56:35** | *magnet* | Now at 1.0 T with solenoid current -260 A. --Jaakko |
| **09/08/2007 16:34:12** | *polarization* | Polarizations -95.2 %, +88.6 % and -85.7 %. Go to frozen spin mode. --Jaakko |
| **07/08/2007 15:39:53** | *refrigerator* | PLC CPU system failure 15:15. Restart RUN-P -> MRES -> RUN-P. Restart stopped vacuum diffusion pump system. Other pumps ok. --Jaakko |
| **06/08/2007 13:10:16** | *general ...* | Longitudinal mode with solenoid 2.5 T (+650 A) at 12:12. Polarizations -81.3 %, +80.1 % and -71.9 %. --Jaakko |
| **02/08/2007 14:04:33** | *general ...* | In transverse mode with polarizations -83.2 %, +81.9 % and -75.0 %. --Jaakko |
| **01/08/2007 11:34:16** | *polarization* | Polarizing to -\|+\|-. --Jaakko |
| **01/08/2007 08:40:06** | *general ...* | Back to longitudinal field. Polarizations +85.8 %, -81.9% and +78.3 %. --Jaakko |
| **28/07/2007 10:39:36** | *refrigerator* | Mixing chamber now at 46 mK (TTH5) and 61 mK (TTH4). --Jaakko |
| **28/07/2007 08:29:36** | *polarization* | First polarization test to +35 %, -19 % and +19 % last night. --Jaakko |
| **27/07/2007 12:10:41** | *refrigerator* | Condensing 3He/4He mixture. --Jaakko |

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| **23/07/2007 09:52:38** | *refrigerator* | Friday 20/07: pinch hole in He3 line (inlet to N2 trap) induced a blocking at the level of DR heat exchangers. Cause of hole not indentified. Heating up N2 trap shows a lot of pollution. He3 has been sent back immediately to tanks, and there is no apparent loss of He3. Saturday, first attempt to empty evaporator and backflow warm He4 to clean up the He3 line. At 23h, the evaporator was not yet empty, so we did stop and left the system refilling slowly during the night. Sunday, second attempt successfull (at 2h on Monday, thanks to Nori) It took about 20h to empty the evaporator. Monday 23/07 morning: successfull circulation of He4 with N2 trap full, no blocking any more. We heat N2 trap to clean left impurities, and are in process of pumping out He4 before restart He3 condensation. |
| **13/07/2007 09:35:26** | *general ...* | End of polarization yesterday at 20:15 with +89.3% \| -85.5% \| +84.4%. Go to transverse to take a refence booky then back to longitudinal for an alignment data taking. Again problems to switch ON / OFF SM1, solved at 1:10. Then target magnet switched to Transverse at 2:00. - Fabrice |
| **11/07/2007 13:24:30** | *polarization* | Today we have machine development for 32 hours. Polarization measured at 8:40 is -81.34% \| +78.19% \| -76.21% corresponding to a relax. time of 5090h \| 4600h \| 2500h. After cancelling this polarization we build up the opposite configuration (+\|-\|+) starting at 10:30 with low microwave power. - Fabrice |
| **08/07/2007 23:34:28** | *refrigerator* | The PLC system got stuck this afternoon from 12:15 to 15:30. This produced activation of interlocks on the diffusion pump (then stopped), on the still heater (also stopped) and stopped the transfer of nitrogen to the trap. Several tentatives were needed to restart the PLC system. No obvious reason found to explain the problem. Unfortunately the person on shift did not pay attention enough to the parameters of the fridge which were obviously a bit abnormal... But situation recovered soon after. - Fabrice |
| **06/07/2007 13:59:30** | *general ...* | Back to transverse mode since 12h50. ~~Jacques |
| **06/07/2007 09:44:57** | *general ...* | To re-do an alignement run we have to go back to longitudinal mode. Started at 9:35. ~~~Jacques |
| **05/07/2007 22:32:52** | *polarization* | At 21:20 we went to Transverse mode. Polarizations reached are : -83.63 \| 80.62 \| -80.20 ~~Jacques |
| **05/07/2007 11:03:09** | *polarization* | We managed to handle the slow discharge going to transverse field and then back to longitudinal at 2,5 T without losing polarization, at 2:15 AM we resumed polarization building up, still on now. ~~Jacques |

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| **04/07/2007 21:18:55** | *magnet* | 20:35 while polarising, magnet PSU went to Slow Discharge mode due to water pressure failure. Current is ramping down slowly, we will try to switch to Dipole when it is possible and go back to 2.5T on the solenoid afterwards. ~~~Jacques |
| **04/07/2007 11:38:32** | *polarization* | MD. polarization measured at 9 am: +81.98 \| -80.21 \| +73.28 Relax times respectively : 5500 h \| 3500 h \| 2800 h After anihilating the polarization, repolarization starts at 11:40 am in - \| + \| - configuration ~~~Jacques |
| **03/07/2007 15:54:56** | *general ...* | From July 2nd at 10:30 AM up to 10:40 PM the oxygen pollution level detected at the outlet of the pumping system was releasing 100 ppm constantly in the 4He recovery line, leading to complaints from the Liquifier staff. Eventually at 10:40 PM, the level decreased to about 10 ppm, but regular checking of the 4He Roots blowers must not be forgotten.~~~~~ Jacques |
| **28/06/2007 10:39:02** | *general ...* | Now in transverse mode with dipole field. --Jaakko |
| **28/06/2007 09:31:50** | *polarization* | Polarizations +84.17 %, -83.56 % and +77.17 % reached. Microwaves stopped. --Jaakko |
| **27/06/2007 11:48:07** | *polarization* | Start to repolarize to +\|-\|+ configuration. Using Yuris correction factors for the online values. --Jaakko |
| **27/06/2007 08:47:58** | *general ...* | From dipole field to +646 A (2.5 T) solenoid. Polarizations -60.42 %, 60.13 % and -61.36 %. Now go to zero field. --Jaakko |
| **23/06/2007 17:33:37** | *polarization* | Transverse data taking was started on Monday June 18 with polarizations -62.8 %, +62.2 % and -65.8 %. --Jaakko |
| **11/06/2007 20:11:50** | *magnet* | Two cycles of complete field rotation tested at high polarization: +2.5T -> -2.5T and -2.5T -> +2.5T. No loss of polarization ... - Fabrice |
| **11/06/2007 20:07:46** | *polarization* | Magnetic field driven from transverse to longitudinal (+2.5T). Polarization measured: +59.9% / -61.7% / 60.8% after 39.5 hours at 0.6T. - Fabrice |
| **09/06/2007 22:26:15** | *polarization* | Polarization stopped at 5:00 PM to go to transverse mode. Level obtained after 26h of continuous polarization: +60.4% / -62.4% / 61.6% - Fabrice |
| **08/06/2007 22:19:48** | *magnet* | Two cycles of magnet field rotation were performed in deuteron mode (trims OFF during ramp up/down of the solenoid field) to confirm that now the transition from -2.5T to Transverse is now robust. In the same time no loss of polarization by super-radiance was found. The deuteron mode seems to be efficient enough to keep the polarization when ramping the solenoid field. - Fabrice |

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|---|---|---|
| **08/06/2007 14:02:01** | *polarization* | Polarizing +\|-\|+. --Jaakko |
| **08/06/2007 09:48:07** | *refrigerator* | 9:05 3He roots stopped. Restart. 9:26 vacuum diffusion pump stopped. Restart. --Jaakko |
| **08/06/2007 09:18:09** | *polarization* | Back to longitudinal mode -61.8 %, +61.4 % and -62.5 %. --Jaakko |
| **04/06/2007 21:20:52** | *general ...* | The polarization of -62.8%, +62.4% and -64.8% were obtained for 55 hours. And it went to transverse position at 18h. ---Nori |
| **04/06/2007 01:06:45** | *polarization* | We restarted polarizing on Saturday morning with -+- configuration. The polarizations are -60%, +61%, -62% on the online. --4th of June 1:00, Nori |
| **02/06/2007 10:06:01** | *magnet* | In the evening of 31st of May, several full cycles of field rotations were successfully tested at several values of solenoid current. All in the "deuteron mode". Part of the procedure L- -> T now OK. - Fabrice |
| **02/06/2007 10:01:06** | *magnet* | After the correction on the dipole's cables, a fast discharge occured during a field rotation test (L- -> T part of the procedure). An overcurrent was detected from the DCCT. The DCCT has been moved inside the solenoid PSU during the refilling of the magnet cryostat. This action should get us rid of the perturbation producing this "overcurrent". - Fabrice |
| **02/06/2007 09:54:28** | *magnet* | Dipole field wrongly orientated for physics. Field must point UP. Power cables connections inverted in the dipole PSU on 31th of May. - Fabrice |
| **31/05/2007 12:16:34** | *magnet* | Magnet quench at 1 T during field rotation at 11:10. Polarization lost. Refilling magnet with liquid helium. --Jaakko |
| **29/05/2007 16:59:55** | *polarization* | Polarization +66 %, -64 %, +69 %. Stop microwaves and go to frozen spin mode. --Jaakko |
| **27/05/2007 15:49:58** | *polarization* | +65 % upstream and +71 % downstream reached at 13:00. Center cell decayed to -59 %. Restart polarizing center cell. --Jaakko |
| **26/05/2007 08:43:14** | *polarization* | Now polarized to +61 %, -63 %, +65 %. --Jaakko |
| **25/05/2007 10:27:58** | *polarization* | Polarization in central cell measured with uncorrected TE is - 66 % in average, the minimum being -60% on coil #5 and max -74% on coil#7. The measurement of NMR shifts with polarization on these two coils is identical, meaning that they should be measuring the same polarization. The real polarization is then higher than -74%. Yuri's estimation comparing with SMC NMR shifts is of about -90%. To be confirmed. --Jacques |

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| **23/05/2007 00:26:14** | *polarization* | Polarizing middle target cell. Now -40 %. --Jaakko |
| **21/05/2007 13:47:37** | *refrigerator* | Condensing 3He/4He mixture. --Jaakko |
| **11/05/2007 18:08:40** | *refrigerator* | Removing 3He/4He mixture. --Jaakko |
| **11/05/2007 04:58:14** | *power* | Less than 1 second power failure 4:48. Restart roots. Magnet ok. --Jaakko |
| **09/05/2007 07:36:41** | *general ...* | Polarization +46%, -56% and +47% this morning. PLC main CPU system failure. Polarization dropped to +40%, -47% and +38%. --Jaakko |
| **09/05/2007 00:43:04** | *polarization* | Polarizing, now +38%, -47% and +37%. --Jaakko |
| **07/05/2007 20:52:21** | *refrigerator* | Condensing 3He/4He mixture. --Jaakko |
| **04/05/2007 17:33:06** | *refrigerator* | Pumping out helium from dilution cryostat. --Jaakko |
| **03/05/2007 12:41:51** | *general ...* | TE calibration at ~1.0K started at 11:25 today. Option added to request "manually" the baseline taking - Fabrice |
| **02/05/2007 16:18:33** | *general ...* | Start TE-calibration at 1.5 K. --Jaakko |
| **30/04/2007 09:02:17** | *refrigerator* | Filling dilution cryostat with 4He. --Jaakko |
| **27/04/2007 22:11:09** | *refrigerator* | Removing 3He/4He mixture. --Jaakko |
| **25/04/2007 08:58:48** | *polarization* | -35%, -52 % and -27% proton polarizations reached yesterday evening. Test 2.5 T -> 0.6 T dipole -> 2.5 T, no loss of polarization. --Jaakko |
| **23/04/2007 18:28:10** | *refrigerator* | Dilution cryostat now at about 60 mK (TTH5 and TTH6). --Jaakko |
| **23/04/2007 08:49:35** | *refrigerator* | Mixing chamber empty this morning at 25 K. Now precooling back to 4 K and starting to condense 3He/4He mixture. --Jaakko |
| **20/04/2007 15:21:28** | *NMR* | Start first TE-calibration at 1.1 K. --Jaakko |

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| **20/04/2007 12:59:08** | *microwave* | Polarizing NH3 with microwaves at 1.1 K. NMR signals and polarization build up seen in middle cell. --Jaakko |
| **18/04/2007 17:57:33** | *refrigerator* | Dilution cryostat filled with 4He. Now pumping out extra to have the liquid level in the 3He evaporator. --Jaakko |
| **22/03/2007 15:35:18** | *magnet* | This morning at 9:00 the helium filling has started. At 14:00 the cryostat reached its nominal filling level. Vacuum 1.3 .10-6 = OK. Magnet cryogenically ready. - Fabrice |
| **20/03/2007 12:35:22** | *magnet* | Helium cooling mode started at 12:00 for the magnet. All the parameters OK. - Fabrice |
| **20/03/2007 10:20:58** | *refrigerator* | No leak to target holder vacuum, access tube ok. Isolation vacuum less than 10^-7 mbar. NMR coils ok. Thermometers working. Mixing chamber now at 54 K. --Jaakko |
| **19/03/2007 19:19:51** | *general ...* | NH3 loaded to three target cells. Now pumping nitrogen out. --Jaakko |
| **16/03/2007 11:58:18** | *magnet* | Full range vacuum gauge did not work properly in the last days and then was replaced this moring. Situation OK now. - Fabrice |
| **13/03/2007 16:32:11** | *general ...* | Start to cool magnet with liquid nitrogen. Small flow of cold helium gas in dilution cryostat. --Jaakko |