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A proposition for Beam Control signals on the NAOS system.

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Abstract

The actual Signal Observation System (S.O.S.), used at the P.S. Booster, is going to be replaced in the near future by New Analog Observation System (N.A.O.S.). The present analog beam control is also going to be replaced by a digital beam control. These two changes made it necessary to redefine the beam control signals that need to be connected on the N.A.O.S.
This paper gives a proposal for these new signals.

The actual Signal Observation System (S.O.S.), used at the P.S. Booster, is going to be replaced during the short shut-down end May 1997 by the New Analog Observation System (N.A.O.S.).

The present analog beam control system of the P.S. Booster is going to be replaced by a digital beam control system. The preparations and possible tests for this new beam control system will be done in 1997. It is only during the 1998 shut-down period that the analog beam control system will be replaced by the digital beam control system. These two changes made it necessary to redefine the beam control signals that need to be connected to the N.A.O.S.

The proposition for this change was laid down in the note <u>PS/OP/NOTE 96-33(MIN)</u>

The recent start of testing the digital beam control system with the C02 and C04 cavities in ring 3 made it necessary to redefine some signals for the future N.A.O.S.

gives a proposal for these new signals.

Everything is given in tables grouped per function. The proposed signals for N.A.O.S. are described in the first 3 columns of each table (situation 1998). The present S.O.S. signals that need to be connected to the N.A.O.S. in the 1997 May shut-down period are given in the last 3 columns of each table in gray background.

None of the beam control GFAS output signals will be available on N.A.O.S. The GFAS signals will be acquired by samplers and made available via an application on the workstations.

Quantitative summary :

Present on S.O.S.   : **80** (analog beam control signals)

1997 on N.A.O.S.   : **32** (beam control signals from S.O.S. are marked in gray)

1998 on N.A.O.S.   : **52** (digital beam control signals)

                     : _8 (spare and MD channels)

         Total   : **60**

Pick-Up signals.					
NAOS			**SOS**		
	Name	Comment		Name	Comment
1	BA1.URL	Pick-up rad. pos. sum.	1	BA1.URL	Pick-up rad. pos. sum.
2	BA2.URL	Pick-up rad. pos. sum.	2	BA2.URL	Pick-up rad. pos. sum.
3	BA3.URL	Pick-up rad. pos. sum.	3	BA3.URL	Pick-up rad. pos. sum.
4	BA4.URL	Pick-up rad. pos. sum.	4	BA4.URL	Pick-up rad. pos. sum.
			5	BA1.URL4	Pick-up rad. pos. L4
			6	BA2.URL4	Pick-up rad. pos. L4
			7	BA3.URL4	Pick-up rad. pos. L4
			8	BA4.URL4	Pick-up rad. pos. L4
			9	BA1.URL6	Pick-up rad. pos. L6
			10	BA2.URL6	Pick-up rad. pos. L6
			11	BA3.URL6	Pick-up rad. pos. L6
			12	BA4.URL6	Pick-up rad. pos. L6
			13	BA1.URL12	Pick-up rad. pos. L12
			14	BA2.URL12	Pick-up rad. pos. L12
			15	BA3.URL12	Pick-up rad. pos. L12
			16	BA4.URL12	Pick-up rad. pos. L12
			17	BA1.URL14	Pick-up rad. pos. L14
			18	BA2.URL14	Pick-up rad. pos. L14
			19	BA3.URL14	Pick-up rad. pos. L14
			20	BA4.URL14	Pick-up rad. pos. L14
			21	BA1.USUD	Pick-up phase sum
			22	BA2.USUD	Pick-up phase sum
			23	BA3.USUD	Pick-up phase sum
			24	BA4.USUD	Pick-up phase sum

			GFA output signals :			
NAOS				**SOS**		
	Name	**Comment**			**Name**	**Comment**
			25	BA1.GFASC08VRF	Voltage progr. cav. 8 MHz.
			26	BA2.GFASC08VRF	Voltage progr. cav. 8 MHz.
			27	BA3.GFASC08VRF	Voltage progr. cav. 8 MHz.
			28	BA4.GFASC08VRF	Voltage progr. cav. 8 MHz.
			29	BA1.GFASC16VRF	Volt. progr. cav. 16 MHz.
			30	BA2.GFASC16VRF	Volt. progr. cav. 16 MHz.
			31	BA3.GFASC16VRF	Volt. progr. cav. 16 MHz.
			32	BA4.GFASC16VRF	Volt. progr. cav. 16 MHz.
			33	BA1.GFASC16PH	Phase progr. cav 16 MHz.
			34	BA2.GFASC16PH	Phase progr. cav 16 MHz.
			35	BA3.GFASC16PH	Phase progr. cav 16 MHz.
			36	BA4.GFASC16PH	Phase progr. cav 16 MHz.
			37	BA1.GFASPOFF	Phase offset progr.
			38	BA2.GFASPOFF	Phase offset progr.
			39	BA3.GFASPOFF	Phase offset progr.
			40	BA4.GFASPOFF	Phase offset progr.
			41	BA1.GFASRPO	Radial position progr.
			42	BA2.GFASRPO	Radial position progr.
			43	BA3.GFASRPO	Radial position progr.
			44	BA4.GFASRPO	Radial position progr.

			Cavities detected :			
NAOS				**SOS**		
	Name	**Comment**			**Name**	**Comment**
5	BA1.C02VRFDET	Detected gap volt. 2MHz.			
6	BA2.C02VRFDET	Detected gap volt. 2MHz.			
7	BA3.C02VRFDET	Detected gap volt. 2MHz.			
8	BA4.C02VRFDET	Detected gap volt. 2MHz.			
9	BA1.C04VRFDET	Detected gap volt. 4MHz.	45	BA1.C08VRFD	Detected gap volt. 8MHz.
10	BA2.C04VRFDET	Detected gap volt. 4MHz.	46	BA1.C08VRFD	Detected gap volt. 8MHz.
11	BA3.C04VRFDET	Detected gap volt. 4MHz.	47	BA1.C08VRFD	Detected gap volt. 8MHz.
12	BA4.C04VRFDET	Detected gap volt. 4MHz.	48	BA1.C08VRFD	Detected gap volt. 8MHz.
13	BA1.C16VRFDET	Det. gap volt. 16MHz. (blow-up)	49	BA1.C16VRFD	Detected gap volt. 16MHz.
14	BA2.C16VRFDET	Det. gap volt. 16MHz. (blow-up)	50	BA2.C16VRFD	Detected gap volt. 16MHz.
15	BA3.C16VRFDET	Det. gap volt. 16MHz. (blow-up)	51	BA3.C16VRFD	Detected gap volt. 16MHz.
16	BA4.C16VRFDET	Det. gap volt. 16MHz. (blow-up)	52	BA3.C16VRFD	Detected gap volt. 16MHz.

Low level control loop signals :

NAOS			SOS		
	Name	Comment		Name	Comment
17	BA1.C02PHBEAM	Phase error gap / beam 2MHz cav.			
18	BA2.C02PHBEAM	Phase error gap / beam 2MHz cav.			
19	BA3.C02PHBEAM	Phase error gap / beam 2MHz cav.			
20	BA4.C02PHBEAM	Phase error gap / beam 2MHz cav.			
21	BA1.C04PHBEAM	Phase error gap / beam 4MHz cav.	53	BA1.BCAPD	Phase error gap / beam
22	BA2.C04PHBEAM	Phase error gap / beam 4MHz cav.	54	BA2.BCAPD	Phase error gap / beam
23	BA3.C04PHBEAM	Phase error gap / beam 4MHz cav.	55	BA3.BCAPD	Phase error gap / beam
24	BA4.C04PHBEAM	Phase error gap / beam 4MHz cav.	56	BA4.BCAPD	Phase error gap / beam
25	BA1.C04PHC02	Phase error 4 MHz --> 2 MHz	57	BA1.C16PH	Phase error 16 MHz
26	BA2.C04PHC02	Phase error 4 MHz --> 2 MHz	58	BA2.C16PH	Phase error 16 MHz
27	BA2.C04PHC02	Phase error 4 MHz --> 2 MHz	59	BA3.C16PH	Phase error 16 MHz
28	BA2.C04PHC02	Phase error 4 MHz --> 2 MHz	60	BA4.C16PH	Phase error 16 MHz
			61	BA1.BCAPE	Phase corr. gap / beam
			62	BA2.BCAPE	Phase corr. gap / beam
			63	BA3.BCAPE	Phase corr. gap / beam
			64	BA4.BCAPE	Phase corr. gap / beam
			65	BA1.BCRE	Radial loop correction
			66	BA2.BCRE	Radial loop correction
			67	BA3.BCRE	Radial loop correction
			68	BA4.BRCE	Radial loop correction
37	BA1.BEAMPHSYREF	Phase synchro error beam --> ref	69	BA1.BCAPSD	Phase synchro error
38	BA2.BEAMPHSYREF	Phase synchro error beam --> ref	70	BA2.BCAPSD	Phase synchro error
39	BA3.BEAMPHSYREF	Phase synchro error beam --> ref	71	BA3.BCAPSD	Phase synchro error
40	BA4.BEAMPHSYREF	Phase synchro error beam --> ref	72	BA4.BCAPSD	Phase synchro error
41	BA1.FBLQERROR	Quadrupole mode loop error	73	BA1.FBLQ	Quad. mode loop corr.
42	BA2.FBLQERROR	Quadrupole mode loop error	74	BA2.FBLQ	Quad. mode loop corr.
43	BA3.FBLQERROR	Quadrupole mode loop error	75	BA3.FBLQ	Quad. mode loop corr.
44	BA4.FBLQERROR	Quadrupole mode loop error	76	BA4.FBLQ	Quad. mode loop corr.
			77	BA1.BCARSE	Sum correction signal
			78	BA2.BCARSE	Sum correction signal
			79	BA3.BCARSE	Sum correction signal
			80	BA4.BCARSE	Sum correction signal

High level control loop signals :

NAOS			SOS		
	Name	Comment		Name	Comment
37	BA1.C02PHGRID	Phase tunning loop error 2 MHz cav.			
38	BA2.C02PHGRID	Phase tunning loop error 2 MHz cav.			
39	BA3.C02PHGRID	Phase tunning loop error 2 MHz cav.			
40	BA4.C02PHGRID	Phase tunning loop error 2 MHz cav.			
41	BA1.C04PHGRID	Phase tunning loop error 4 MHz cav.			
42	BA2.C04PHGRID	Phase tunning loop error 4 MHz cav.			
43	BA3.C04PHGRID	Phase tunning loop error 4 MHz cav.			
44	BA4.C04PHGRID	Phase tunning loop error 4 MHz cav.			
45	BA1.C16PHGRID	Phase tunning loop error 16 MHz cav.			
46	BA2.C16PHGRID	Phase tunning loop error 16 MHz cav.			
47	BA3.C16PHGRID	Phase tunning loop error 16 MHz cav.			
48	BA4.C16PHGRID	Phase tunning loop error 16 MHz cav.			

Revolution frequency :

	NAOS		SOS	
	Name	**Comment**	**Name**	**Comment**
49	BA1.FREV	Rev. freq. (transv. feedback)		
50	BA2.FREV	Rev. freq. (transv. feedback)		
51	BA3.FREV	Rev. freq. (transv. feedback)		
52	BA4.FREV	Rev. freq. (transv. feedback)		

Others :

	NAOS		SOS	
	Name	**Comment**	**Name**	**Comment**
53	BA.SPARE1	Spare and transition		
54	BA.SPARE2	Spare and transition		
55	BA.SPARE3	Spare and transition		
56	BA.SPARE4	Spare and transition		
57	BA.SPARE5	Spare and transition		
58	BA.SPARE6	Spare and transition		
59	BA.SPARE7	Spare and transition		
60	BA.SPARE8	Spare and transition		

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