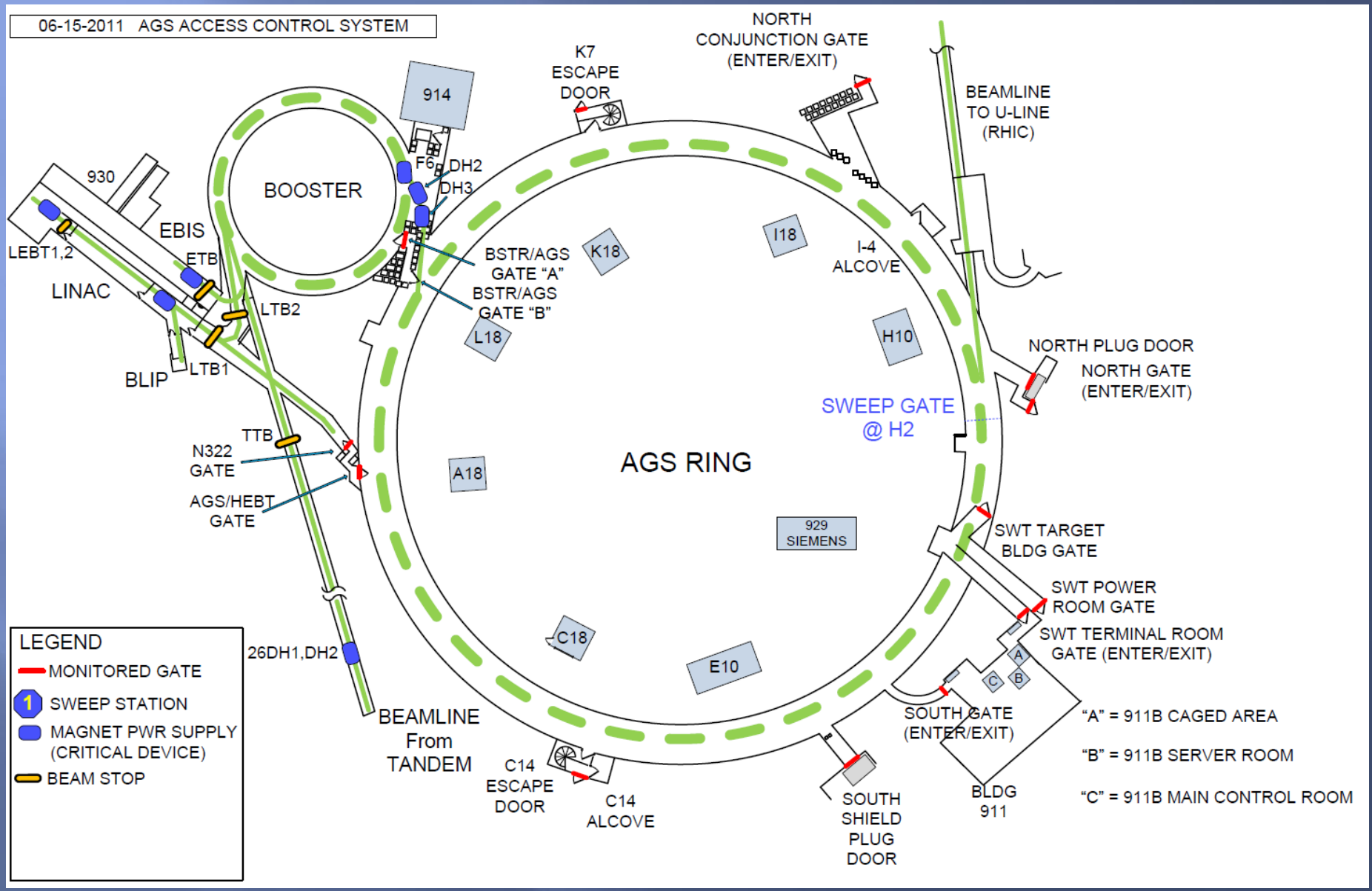
RHIC Retreat 2012

C-AD Access Controls

ACG FY12

- AGS ACS design approved by external committee and C-AD RSC
- AGS ACS upgrade near completion
- Booster and LINAC ACS upgrades have begun
- RHIC ODH 1>0 system
- BLDG 912 ODH warning system implemented
- 1004 RF landau power supply interface to ACS
- Tandem/NASA low energy exposure experiment ACS completed
- VTF ACS completed
- Performed Live Critical Device Tests at the end of Run instead of at the beginning

New AGS ACS Physical Layout



AGS UPGRADE: REMAINING TASKS

- Programming Safety PLC's and HMI's
- Critical Device interfacing
- Machine interfacing(LINAC, Booster, and Uup transport line)
- Install Locksets
- Internal Sweep Gate Installation
- VnV and Proof Testing
- Final Approvals
- System operational: 10/2012

Entrance Gate HMI

Automated and electronically documented tests and test results

Component	Push Button	Test Started	Mode	Inputs OK	Outputs Ok	Test Completed	Error?	Code
South Gate	Activate Test	●	24/NA	●	●	●	●	
N. Conj. Gate	Test Completed	●	24/NA	●	●	●	●	
N. Gate	Test Activated	●	24/NA	●	●	●	●	4002h

Open then close Gate at this point

Dual-channel Input Stop with Test (DCST)

Functional Safety Type Approved
TÜVRheinland FS

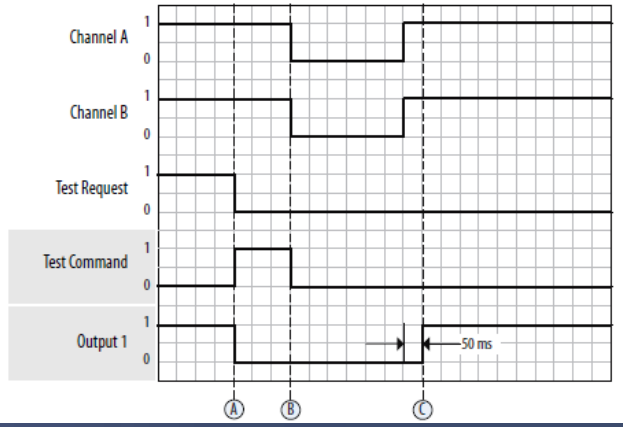
BG-PRÜFZERT
MHHW 08047
Sicherheit geprüft tested safety

DCST
Dual Channel Input Stop With Test

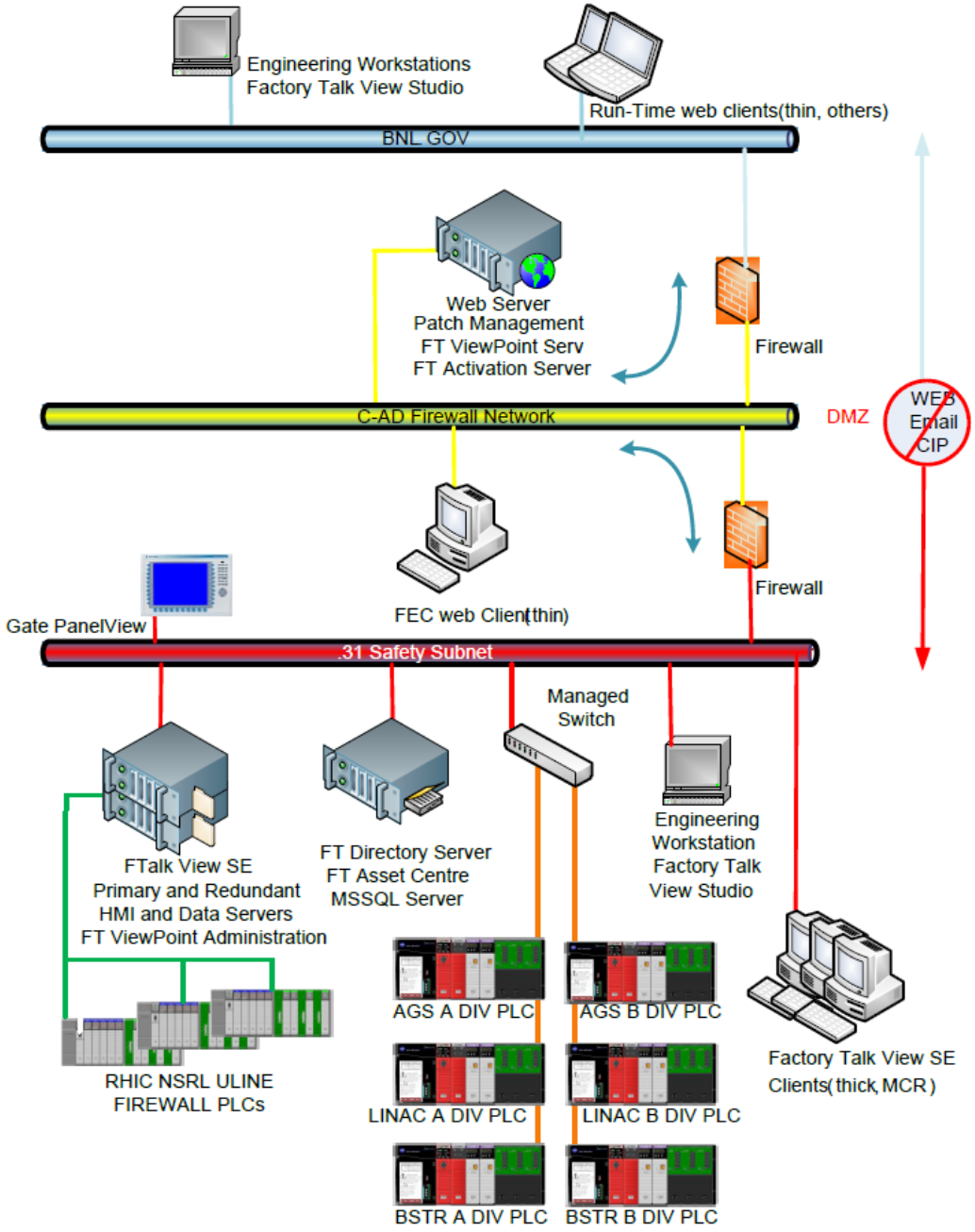
DCST	Safety_2	(O1)
Safety Function	SAFETY GATE	
Input Type	EQUIVALENT - ACTIVE HIGH	(TC)
Discrepancy Time (Msec)	10	
Restart Type	AUTOMATIC	(FP)
Cold Start Type	AUTOMATIC	
Channel A	Safety_Block_A1:I.Pt02Data	
	0	
Channel B	Safety_Block_A1:I.Pt03Data	
	0	
Test Request	Safety_Test	
	2#0000_0000	
Input Status	Safety_Block_A1:I.CombinedStatus	
	0	
Reset	Safety_Reset_PB	
	2#0000_0000	

Figure 36 illustrates a manual function test being performed with Restart Type equal to Automatic. At (A), Output 1 is de-energized because the Test Request transitions from ON (1) to OFF (0). The Test Command output is also energized at this point. At (B), the Test Command output is de-energized because the functional test is complete. At (C), Output 1 is automatically energized 50 ms after the safety inputs enter the active state because the Restart Type is Automatic.

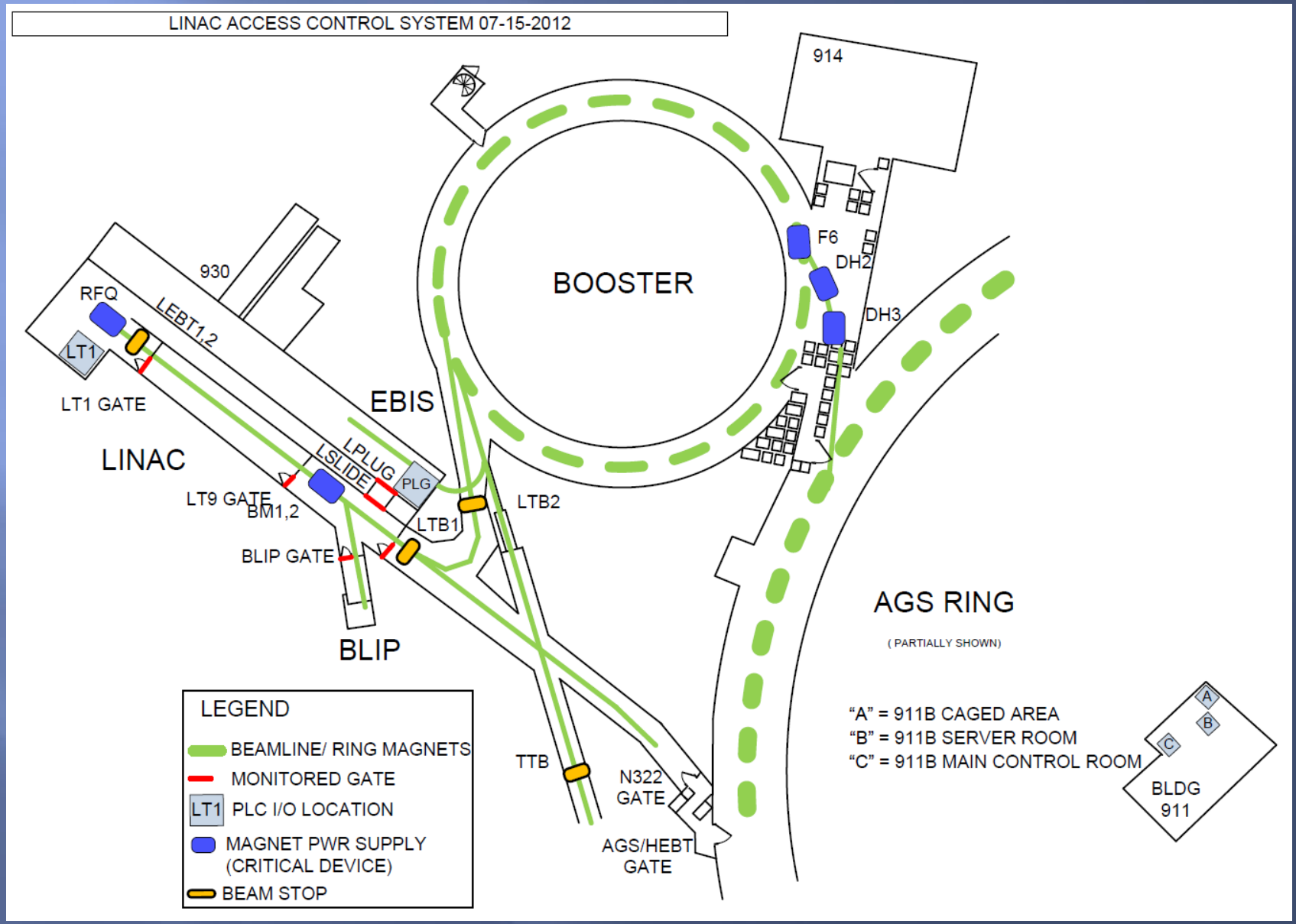
Figure 36 - Functional Test Operation (Automatic Restart) Timing Diagram



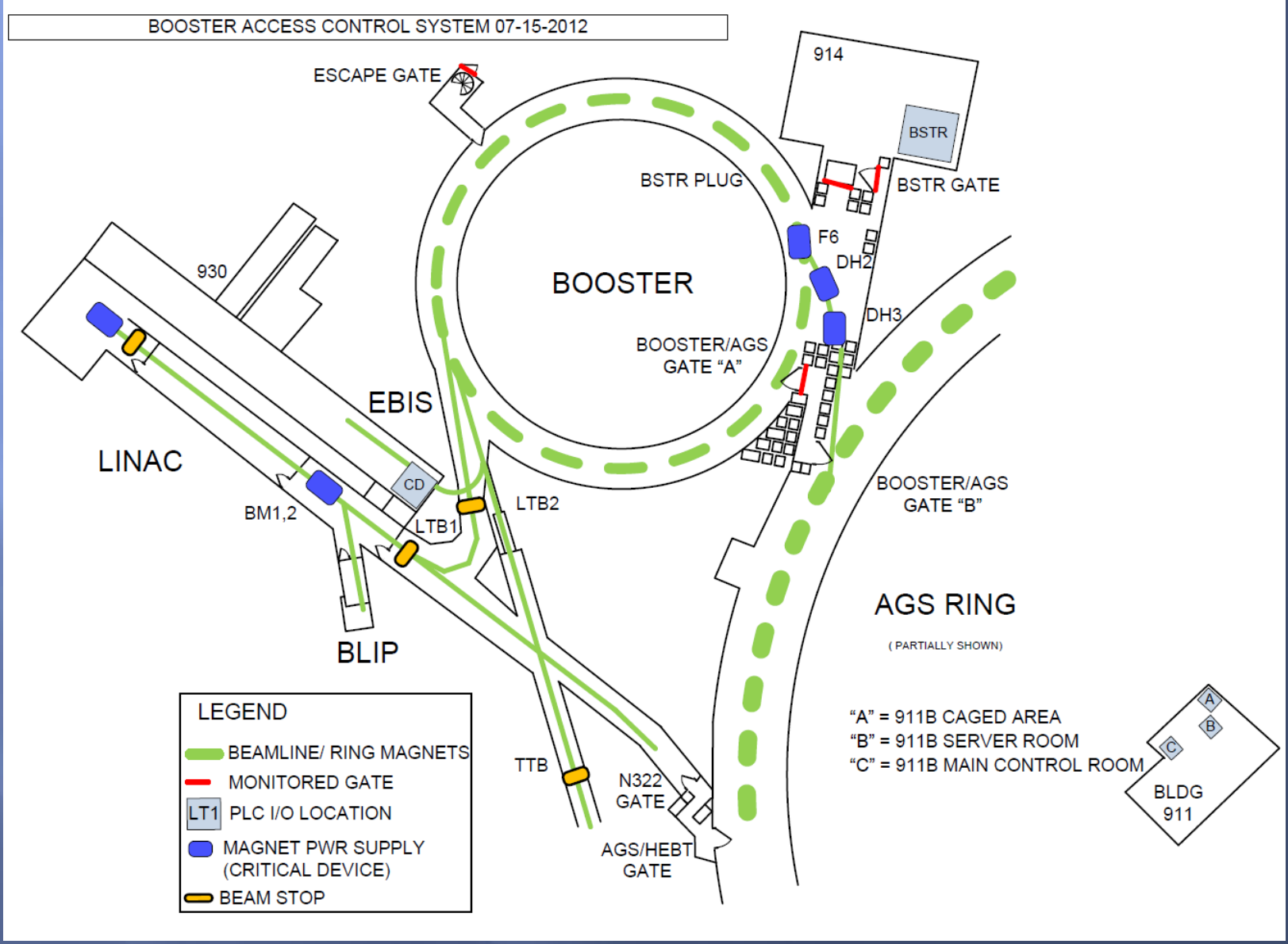
ACS Ethernet Communication & Safety Sub-Net



LINAC ACS


LINAC ACCESS CONTROL SYSTEM 07-15-2012
914
930
BOOSTER
F6
DH2
DH3
RFQ
LEBT1,2
LT1
LT1 GATE
EBIS
LINAC
LPLUG
LSLIDE
PLG
LT9 GATE
BM1,2
LTB1
LTB2
BLIP GATE
BLIP
AGS RING
(PARTIALLY SHOWN)
"A" = 911B CAGED AREA
"B" = 911B SERVER ROOM
"C" = 911B MAIN CONTROL ROOM
A
B
C
BLDG
911
TTB
N322
GATE
AGS/HEBT
GATE
LEGEND
BEAMLINE/ RING MAGNETS
MONITORED GATE
LT1 PLC I/O LOCATION
MAGNET PWR SUPPLY
(CRITICAL DEVICE)
BEAM STOP

Booster ACS


BOOSTER ACCESS CONTROL SYSTEM 07-15-2012
ESCAPE GATE
914
BSTR
BSTR PLUG
BSTR GATE
F6
DH2
DH3
BOOSTER
930
BOOSTER/AGS
GATE "A"
EBIS
LINAC
CD
BM1,2
LTB1
LTB2
BOOSTER/AGS
GATE "B"
AGS RING
(PARTIALLY SHOWN)
BLIP
TTB
N322
GATE
AGS/HEBT
GATE
LEGEND
BEAMLINE/ RING MAGNETS
MONITORED GATE
LT1 PLC I/O LOCATION
MAGNET PWR SUPPLY
(CRITICAL DEVICE)
BEAM STOP
"A" = 911B CAGED AREA
"B" = 911B SERVER ROOM
"C" = 911B MAIN CONTROL ROOM
A
B
C
BLDG
911

LINAC and Booster Upgrade: REMAINING TASKS

- Fabrication of Equipment Enclosures and associated hardware and wiring.(in progress)
- Design nearly complete
- Fiber optic and copper cable runs(this shutdown?)
- Internal Accelerator Enclosure mounting(this shutdown?)
- Next year: Complete LINAC and Booster items remaining to provide operational systems by Nov. 2013