Memo: Waldo's recommendations for interlocking gates while the AGS has beam.
Date: 31 Mar 1994
To: Bob Frankel

First I list the key bending magnet power supplies in the ATR transfer lines:

1) U-line 4 degree arc
   Name: psuarc4
   Magnets: ud1 & ud2
2) U-line 8 degree arc
   Name: psuarc8
   Magnets: ud3, ud4, ud5, & ud6
3) W-line 20 degree arc
   Name: pswarc20
   Magnets: wd1 -> wd8
4) Switch magnet
   Name: psswm
   Magnet: swm
5) X-line large arc
   Name: psxarc90
   Magnets: xd1 -> xd31 & xlamb(main bus)
6) Y-line large arc
   Name: psyarc90
   Magnets: yd1 -> yd31 & ylamb(main bus)

Here is my list of your proposed locations:

1) UGI1 stub tunnel
2) UGE1 entrance at upstream end of U-line upstream of uq6
3) UGS1 downstream of utv7
4) WED1 exit from of tunnel near old neutrino line between wd3 & wd4
   EXIT only
5) WID1 beam dump in old neutrino line, downstream of wd3
6) WGS1 gate upstream of wd7 at step in floor

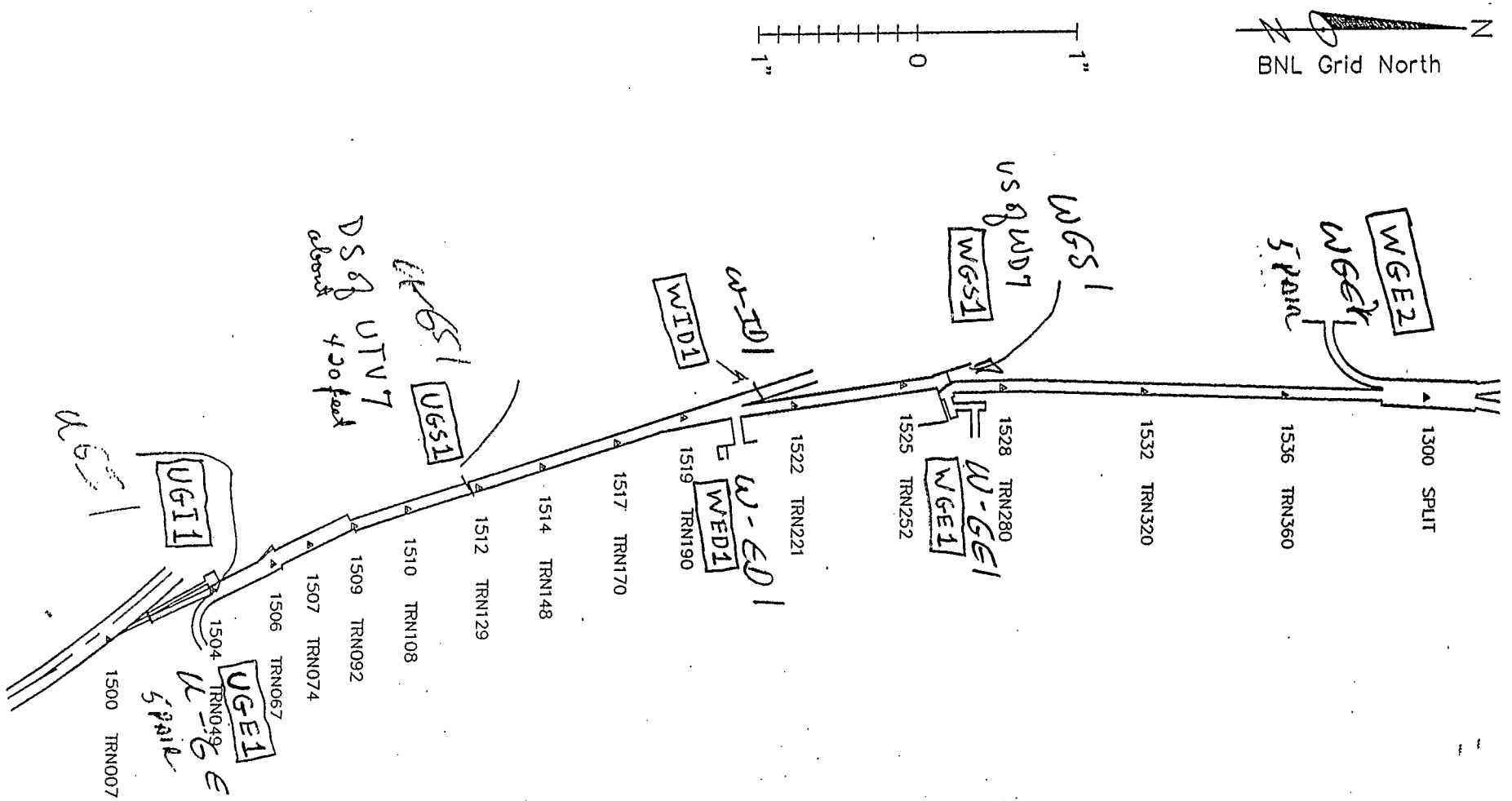
7) WGE1 entrance to tunnel at wd7
8) WGE2 entrance to tunnel upstream of wq6
9) XGI1 gate between xd2 & xd3
10) XGI2 gate between xd26 & xq1
11) YGI1 gate between yd2 & yd3
12) YGI2 gate between yd26 & yq1

From an injection point of view:

If any of 1 through 6 are violated then extraction from the AGS should be stopped and the power supplies to both the 4 degree (psuarc4) and 8 degree (psuarc8) bends should be made inactive. The extraction kicker should also be inhibited.

If any of the other interlocks are broken downstream of WGS1 then the power supplies to the 8 degree (psuarc8) bend should be disabled. The power supply to the 20 degree arc (pswarc20) could be disabled, if necessary; however the string of magnets operates at about 0.5MW, so the possibility of frequent dumping might cause some electrical damage.
Disabling psuarc8 should allow people to work downstream of WGE1, without interrupting g-2 operation, assuming, of course, that radiation levels are acceptable in this region. If the levels are too high, then access could be restricted to only the X and Y arcs.

Due to the large amount of stored energy in the W, X and Y line arcs, we would prefer not to crash the power supplies pswarc20, psxarc90 and psyarc90.



REVISIONS							
REV	ZONE	ECN NO.	DESCRIPTION	BY	DATE	CKR	APP
A			INITIAL RELEASE	FMH	8/23/93		

RHIC AGS BNL

DRAWN BY	FMH	
DESIGN APPROVAL	-	
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ENGINEER APPROVAL	-	
SUPERVISOR APPROVAL	-	
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DRAWING NAME:	CTRL_TRN.DWG	

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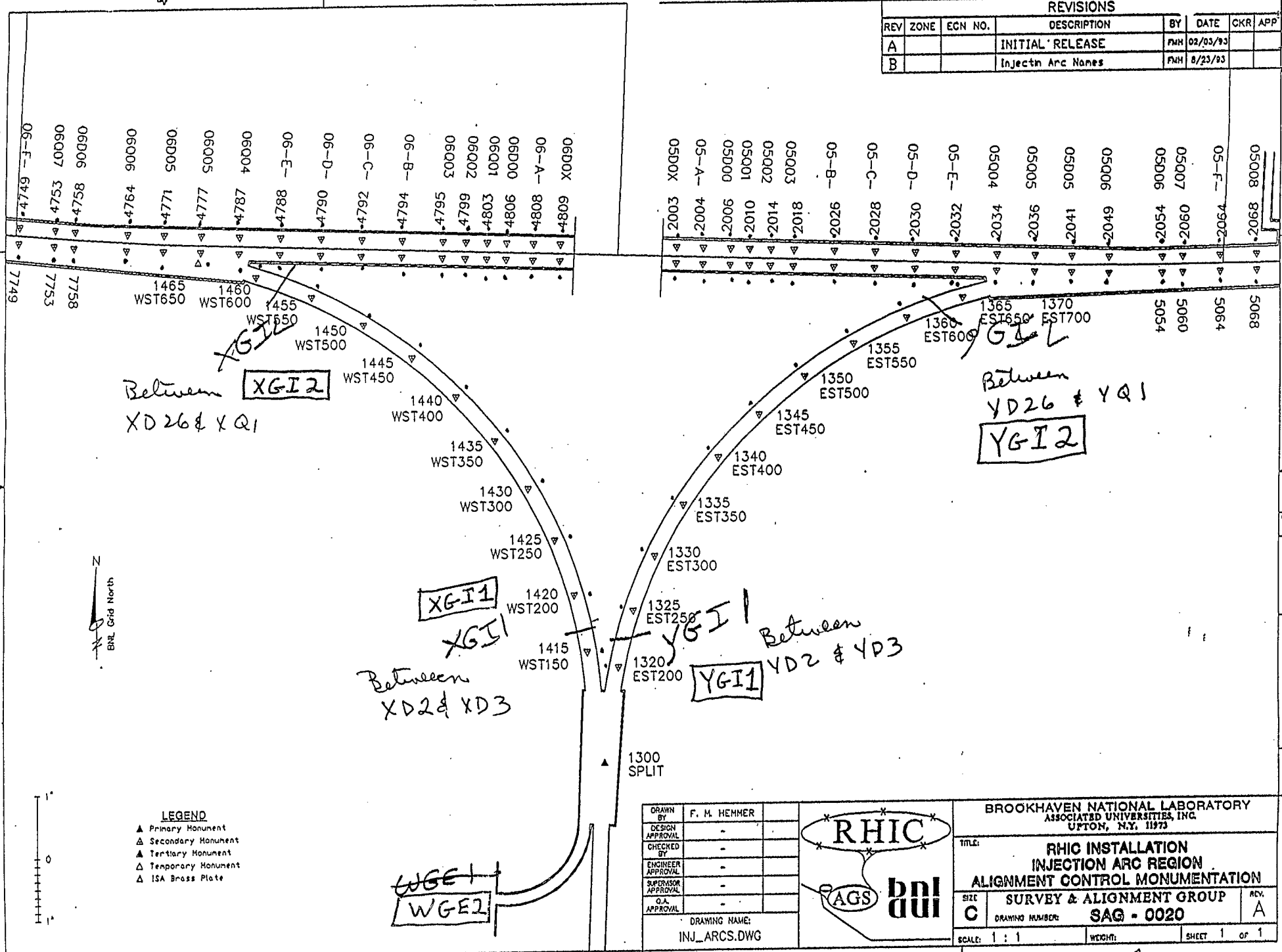
TITLE: RHIC INSTALLATION
AGS - RHIC TRANSFER LINE
ALIGNMENT CONTROL MONUMENTATION

SIZE A | SURVEY & ALIGNMENT GROUP | DRAWING NUMBER: SAG - 0044 | REV. A

SCALE: 1 : 1750 | WEIGHT: | SHEET 1 OF 1

REVISIONS							
REV	ZONE	ECN NO.	DESCRIPTION	BY	DATE	CKR	APP
A			INITIAL RELEASE	FWH	02/03/93		
B			Injectn Arc Names	FWH	8/23/93		



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DRAWING NAME: INJ_ARCS.DWG

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TITLE: RHIC INSTALLATION
INJECTION ARC REGION
ALIGNMENT CONTROL MONUMENTATION

SIZE C | SURVEY & ALIGNMENT GROUP | DRAWING NUMBER: SAG - 0020 | REV. A

SCALE: 1 : 1 | WEIGHT: | SHEET 1 OF 1

DWG NO SAG - 0020 | SHT 1 OF 1 | A