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# Report on Fiducials for RHIC Dipoles and Quadrupoles

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#### Report on Fiducials for RHIC Dipoles and Quadrupoles

This report is a reworking of an informal note dated 1/14/93. It describes the method that has been used to generate coordinates of fiducials on the cryostats of the 9.45 m dipoles and the 1.11 m quadrupoles. Fiducials for dipoles and quadrupoles of nonstandard length could be incorporated as information for their generation becomes available.

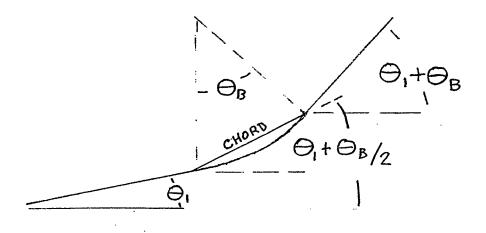
#### A. Basic Computation

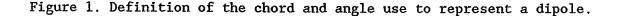
The calculation uses an adaptation of a geometry program, written by E. Courant, that automatically fits a lattice into the RHIC tunnel. The origin is at the center of the RHIC enclosure, and the meter is the unit of length. Each element is represented by a complex number corresponding to its length and bend. The length, bend angle, and element sequence are obtained from a MAD TWISS file. The X,Y coordinates associated with the downstream end of an element are the real and imaginary parts of the sum vector at that point.

Lengths  $\not L$  specified by lattice design programs indicate the distance along the central orbit. A dipole is represented by a chord of length L =  $2\rho \sin(\theta B/2) = (2 \not L/\theta B) \sin(\theta B/2)$  oriented at the angle  $(\theta 1+\theta B/2)$  where  $\theta 1$  is the total bend prior to the dipole, and  $\theta B$  is its deflection angle. See Figure 1.

#### **B.Engineering**

1. Coordinate system - Although a metric system with origin at the center of the ring enclosure is used for geometry calculations, designers use a system whose origin is at the tunnel centerline at 6:00 and has the inch as its unit of length.





2. Expansion between 4 K and 300 K - Figure 2 shows the centerline B-A-B of a dipole and the support posts #1, #2 and #3. The dipole coldmass is fixed to post #2 at point "A" and moves relative to posts #1 and #3. The expansion coefficient  $\Delta L/L = 3.1378 \times 10^{-3}$  over the interval 4 K to 300 K was measured by J. Sondericker. The change in length  $\Delta X$  dominates the transverse change  $\Delta Y$ ; the radius of curvature changes from 242.7806m at 4 K to 243.5448m at 300 K. AS the coldmass is fixed at its center, expansion does not change the angular orientation of the cryostat. The change in separation of point "A" and the center of post #2 is small (0.004") and has been ignored; hence expansion does not impact on the placement of the cryostats. The CAD program uses the coordinates of point "A", a distance of 1.195 inches from point "A" to the center of post #2, and the angle  $\theta_{1+\theta B/2}$  when it positions dipole assemblies. For quadrupoles it uses the centerpoint of a quadrupole and the local value of  $\theta_1$ .

#### C. Fiducials

1. Dipoles-A sketch of the location of the ten fiducials located on a dipole cryostat is shown in Figure 3. According to S. Norton, there is but one type of arc dipole; hence the beam in one ring enters dipoles at the end of fiducial #5, and the beam in the other ring enters dipoles at the end of fiducial #1. The locations of the fiducials relative to the center of the cryostat are listed in Table 1. Fiducials 1 to 5 are on the side of the cryostat nearest the center of the RHIC enclosure.

Coordinates of the dipole fiducials in the "Engineering" reference frame are given by the relations:

> $X(n) = XA + L(n) \cos(\theta A) - (SAG + M(n)) \sin(\theta A)$  $Y(n) = YA + L(n) \sin(\theta A) + (SAG + M(n)) \cos(\theta A)$

XA,YA are the coordinates of point "A", the magnet's center, SAG = 1.195 inches, and  $\theta A = \theta 1 + \theta B/2$  is the angular orientation of the magnet chord. The convention for naming the fiducials is:

I or O for inner or outer arc Ol to 12 for azimuthal location (face of clock) DOO to D2O for dipoles O to 20 in each hour of azimuth Ol to 10 for fiducial specification

Hence, 010D0904 specifies the 4th fiducial on dipole D90 in interval 10:00 to 11:00 of the outer ring.

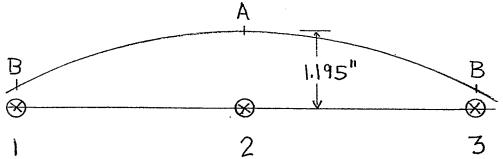


Figure 2. Layout of support posts #1,#2, and #3 and the corresponding points "B","A", and "B" along the dipole axis. The coldmass is attached to support #2 at point "A" and slides relative to posts #1 and #3 at points "B".

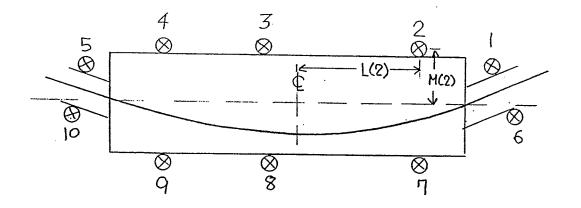


Figure 3. Fiducials for the RHIC arc dipoles. L(n) and M(n) are coordinates of the fiducials relative to the centerpoint of the coldmass.

n	L(n)	M(n)
	(inch)	(inch)
1	186.39561	5.41786
2	132.030	12.5650
3	-9.470	12.5650
4	-132.030	12.5650
5	-186.39561	5.41786
6	186.58233	-4.18032
7	132.030	-12.5650
8	-9.470	-12.5650
9	-132.030	-12.5650
10	-186.58233	-4.18032

Table 1 Coordinates of fiducials on the dipole cryostat relative to the centerpoint of the dipole coldmass.

2. Quadrupoles - A sketch of the C-Q-S cryostat is shown in Figure 4. The fiducials are located symmetrically with respect to the centerpoint of the coldmass. The centerline of the quadrupole differs from the centerline of the coldmass by 0.185 inches. S. Plate indicates plumbing considerations prohibit turning the C-Q-S assembly around to make an S-Q-C assembly; instead, the cryostat orientation will be unchanged, but the coldmass will be inserted in the opposite sense. This will cause the centerline of the quadrupole to move to the right of the coldmass centerline. As coordinates are generated relative to the centerpoint of the quadrupole, appropriate corrections must be made to compensate for the difference between the centerlines of the quadrupoles and the cryostats. Fiducial # 1 is always at the sextupole end of the C-Q-S or S-Q-C assembly, and it is always on the side nearest the center of the RHIC enclosure. The appropriate numbers are tabulated in Table 2. Attention is called to the increase of nearly 15 inches, as compared to 1/14/93, in the values of L(n) for n = 2,3,6, and 7. This increase results from rotating posts #1 and #3 to increase the distance between their fiducials ( 4/7/93).

3

The coordinates of the fiducials on the "quadrupole" cryostats are:

 $X(n) = X_A + L(n) \cos(\theta_A) - M(n) \sin(\theta_A)$  $Y(n) = Y_A + L(n) \sin(\theta_A) + M(n) \cos(\theta_A)$ 

where XA,YA are the coordinates of the centerpoint of the quadrupole, L(n) and M(n) are listed in Table 2, and  $\theta A$  is the angular orientation of the centerline of the "quadrupole" assembly. Using the same name convention, 010Q0904 specifies the 4th fiducial on quadrupole Q90 in interval 10:00 to 11:00 of the outer ring.

	C-Q-1	S units	S-Q-	C ur	nits
n	L(n)	M(n)	L(n)		M(n)
	(inch)	(inch)	(inch)		(inch)
1	54.1850	4.800	-54.1850		4.800
2	42.4350	12.565	-42.4350		12.565
3	-42.0650	12.565	42.0650		12.565
4	-53.8150	4.800	53.8150		4.800
5*	54.1850	-4.800	-54.1850		-4.800
6*	42.4350	-12.565	-42.4350		-12.565
7*	-42.0650	-12.565	42.0650		-12.565
8*	-53.8150	-4.800	53.8150		-4.800
LOCATION:		ARCS		ARC	S
1000000000000000	2:00	- 3:00	4:00	-	5:00
	6:00	- 7:00	8:00	-	9:00
	10:00	- 11:00	12:00	-	1:00

Table 2. List of fiducial coordinates relative to the centerpoint of the  $1.110 \, \text{m}$  quadrupoles. The \* denotes numbering consistent with the convention used for dipole cryostats - this differs from the convention originally used on drawings of the C-Q-S units. The arcs where C-Q-S or S-Q-C units are used is indicated by the entries under "LOCATION".

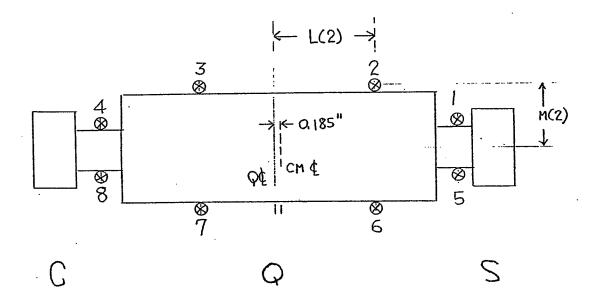


Figure 4. Layout of a C-Q-S assembly (numbering convention is the same used for dipoles). The quadrupole centerline is 0.185 inches to the left of the coldmass centerline for the C-Q-S and is 0.185 inches to the right of the coldmass centerline in the S-Q-C.

#### D. Conversion to the BNL Reference Frame

The steps in converting to the metric BNL reference frame are:

1. Convert coordinates of fiducials from inches to meters, X(m) = X(inch) 0.0254DON'T USE 1 m = 39.37 INCHES!!! Y(m) = Y(inch) 0.0254

2. Convert from system with origin at 6:00 centerline to a coordinate system whose origin is at the center of the ring enclosure.

X(m)' = X(m)Y(m)' = Y(m) - 590.3298125\*\*

3. Convert to the BNL frame\*\*

$$\begin{split} N(m) &= N_0(m) - X(m)' \sin(\theta_0) + Y(m)' \cos(\theta_0) \\ E(m) &= E_0(m) + X(m)' \cos(\theta_0) + Y(m)' \sin(\theta_0) \end{split}$$

\*\* The Y axis of the RHIC reference frame is oriented at  $\theta_0 = 1.999898^{\circ}$  east from the N axis of the BNL frame. The coordinates of the center of the RHIC enclosure were obtained from drawing C-2 of the Ammann & Whitney portfolio of July 15, 1979. These are:

 $N_o(ft) = 105,920.3314$   $E_o(ft) = 99,180.5694$   $N_o(m) = 32,284.51701$  $E_o(m) = 30,230.23755$ 

<u>E. Results</u> - Portions of an output are attached. It starts at the 6:00 crossing and runs through dipole 05D11. It then jumps to dipole 04D10 and continues through 03D08. The latter section shows the labelling convention as one passes through the 4:00 crossing at element #469. There are two types of entries:

1. Single line entries for the outer and inner rings including the element number, the name of the element, the coordinates, N(m) and E(m), of the reference orbit at the element centerline, and the angular orientation in grads (100 grads =  $90^{\circ}$ ) of the dipole chord or quadrupole axis. The names MCR, DOXO, and MQ50 denote a crossing point, dipole DXO, and the center of quadrupole Q50, respectively. N(m), E(m) are coordinates in the BNL reference frame, and the angle PHI is measured relative to the X axis of the RHIC coordinate system whose Y axis is defined by the 12:00 and 6:00. crossing points.

2). Lists of fiducials indicating element number, fiducial number, name, N(m), and E(m) for the outer and inner rings. The line for fiducial #1 also contains the distance of the vertical fiducials from the beam plane; hence TOP-BL(m) is the distance in meters from the fiducial on the top of the cryostat to the beam plane, and BOT-BL(m) denotes the distance from the fiducial on the bottom of the cryostat to the beam plane.

The format has been arranged so the outer ring is always listed in the left column. Generation of fiducials for elements having entries of only one line requires information on the location of the fiducials relative to the centerpoint of the cryostats.



## dell@owl.rhic.bnl.gov ate

CENTER OF RHIC ENCLOSURE (BNL GRID): EM0(m) =32284.517011 NM0(m) =30230.237553

RADIUS: ENCLOSURE CENTER - TUNNEL CENTERLINE @ 6:00 = 590.3298125

1300 = 1 : COORDINATES OF DIPOLES INCLUDE CORRECTION FOR EXPANSION FROM 4K TO ROOM TEMPERATURE

PHI IS MEASURED FROM THE X-AXIS

NO NAME	N(m)	E(m)	PHI(grad)	NAME	N(m)	E (m)	PHI (grad)
1 MCR	31694.2950825	30209.6276012	0.000000	MCR	31694.2950825	30209.6276012	0.000000
3 D0XO	31693.8798030	30221.2702827	-0.6003576	DOXI	31693.8972394	30221.2708915	0.6003576
6 D000	31693.3229332	30231.9071685	-0.7173218	DOOI	31693.7107990	30231.9207124	0.7173218
10 MQ10	31693.1703444	30235.6832071	-0.2339284	MQ1I	31693.5996264	30235.6981972	0.2339284
14 MQ20	31693.0096628	30239.8461072	-0.2339284	MQ2I	31693.4695422	30239.8621657	0.2339284
18 MQ30	31692.8362531	30244.3387618	-0.2339284	MQ3I	31693.3291538	30244.3559734	0.2339284
26 MQ40	31691.2753999	30284.7769527	-0.2339284	MQ4I	31692.0655232	30284.8045430	0.2339284
36 MQ50	31690.9868980	30292.2513869	-0.2339284	MQ5I	31691.8319588	30292.2808956	0.2339284

FIDUCIALS: BNL FRAME(m)

			N (m)	E (m)		N(m)	E (m)	TOP-BL(m)	BOT-BL(m)
36 36 36 36 36 36 36 36	1 2 3 4 5 6 7 8	00500501 00500502 00500503 00500504 00500505 00500506 00500506 00500508	31691.161811 31691.347384 31691.264602 31691.056006 31690.918152 31690.709557 31690.626775 31690.812348	30290.880814 30291.186649 30293.331352 30293.621973 30290.871410 30291.162030 30293.306733 30293.612568	I05Q0501 I05Q0502 I05Q0503 I05Q0504 I05Q0505 I05Q0506 I05Q0507 I05Q0508	31691.996795 31692.184610 31692.117592 31691.911138 31691.753073 31691.546619 31691.479601 31691.667416	30290.909075 30291.213538 30293.358791 30293.650937 30290.901461 30291.193607 30293.338860 30293.643323	0.121920	-0.391287
41 D050 49 MQ60		31690.74001 31690.68086			D05I MQ6I	31691.6256200 31691.5808564	30299.6759869 30307.0738208		15832 92380
				FIDUCIALS: BNL FRAM	2 (m)				
			N(m)	E (m)		N(m)	E(m)	TOP-BL(m)	BOT-BL(m)

		N(m)	E (m)		14 (14)	- ()		• •
49 49 49	 00500602	31690.806517 31691.002937 31690.997109	30305.695415 30305.994400 30308.140692	I05Q0602	31691.706513 31691.902933 31691.897105	30305.697858 30305.996842 30308.143135	0.121920	-0.391287

8			8			dell@owl.rhic.	bnl.gov				
	93/07/28			ana - Aterie Allia.			U.S.				
05000	14:21:5	L				ate					
51			00500604	31690.799068	30308.438605	10500604	31691.699064	30308.441048			
	49	4	00500605	31690.562678	30305.694753	10500605	31691.462674	30305.697196			
	49 49	5 6	00500606	31690.364637	30305.992667	10500606	31691.264633	30305.995109			
	49	7	00500607	31690.358809	30308.138959	10500607	31691.258805	30308.141401			
	49	8	00500608	31690.555229	30308.437943	10500608	31691.455225	30308.440386			
	49	Ŭ	oobgoood	•							
							04 CO1 EEC4000	30317.7253986	2.436	3203	
	54 D060	)	31690.65640	94 30317.72842	90 2.436	3202 D06I	31691.5564202	20211-1222200	21.20		
						4026 MQ7I	31691.5903165	30321.7892107	2.823	34026	
	60 MQ70	>	31690.69035	30321.79771	38. 2.823	4026 MQ/1	51091.5905105				
					41 2.823	4026 MQDA	31691.7293561	30336.5096010	2.823	34026	
	68 MQFA	7	.31690.82939	071 30336.51810	41 2.023	2020					
			24 600 04530	74 30343.93132	39 4.062	3928 D08I	31691.8451909	30343.9053036	4.06	23929	
	73 D080	)	31690.94539	14 JUJ43.JJIJA	J						
					FIDUCIALS: BN	IL FRAME (m)					
								<b>T</b> ()	TOP-BL(m)	BOT-BL(m)	
				N (m)	E(m)		N(m)	E (m)	105-99(11)	D01 D2(,	
						<b>TO CROOM</b>	31692.149928	30348.632919	0.121920	-0.391287	7
	73	1	005D0801		30348.658940	I05D0801	31692.291477	30347.247363			
	73	2	O05D0802	31691.391684	30347.273383	10500802	31692.187597	30343.654764			
	73	3	O05D0803	31691.287803	30343.680785	I05D0803	31692.097621	30340.543041			
	73	4	005D0804	31691.197827	30340.569061	I05D0804		30339.167978			
	73	5	O05D0805	31690.976454	30339.193999	105D0805	31691.876247	30348.644707			
	73	6		31691.006579	30348.670727	105D0806	31691.906373	30347.265812			
	73	7			30347.291832	I05D0807	31691.653442				
	73	8	00500808		30343.699234	10500808	31691.549561	30343.673213			
	73	9	005D0809	31690.559792	30340.587510	I05D0809	31691.459585	30340.561490			
	73	10			30339.196304	<b>I05D0810</b>	31691.632418	30339.170284			
							31692.1568883	30351.2953427	5.30	13831	
	79 MQD	A	31691.2579	418 30351.33886	5.30	13831 MQFA	31037.1200002	5055212500121			
					FIDUCIALS: B	T. PRAME (m)					
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				N (m)	E (m)		N (m)	E (m)	TOP-BL(m)	BOT-BL (m	)
				14 (111 <i>)</i>	- \/					0 20100	7
			00500001	31691.313175	30349.958276	I05Q0901	31692.212121	30349.914759	0.121920	-0.39128	1
	79	1			30350.246841	10500902	31692.423552	30350.203323			
	79	2			30352.390631	10500903	31692.527326	30352.347113			
	79	3			30352.698268		31692.344756	30352.654750			
	79	4	00500904	31691.445809		10500905	31691.968566	30349.926548			
	79	5	00500905	31691.069620	30349.970066	T020000	31691.785996	30350.234185			
	79	e		31690.887050	30350.277703			30352.377975			
	79	7	005 <u>0</u> 0907	31690.990824	30352.421493	10500907		30352.666540			
	79	8	00500908	31691.202254	30352.710058	10500908	31692.101201	20225.000740			
							31692.6763787	30361.9342730	5.68	84655	
	84 D09	0	31691.7776	969 30361.9832	574 5.68	84654 D09I	37027.0102101				
						55477 MQD	31692,9231830	30366.0808880	6.07	55478	
	92 MQF	ŗ	31692.0248	322 30366.1353	554 5.07	DRU MAD					

1 **\*** 

FIDUCIALS: BNL FRAME(m)

93/07/2 14:21:5				dell(	@owl.rhic ate	.bnl.gov	1388 <b>a</b>		
			N (m)	E (m)		N (m)	E (m)	TOP-BL(m)	BOT-BL(m)
92 92 92 92 92 92 92 92 92	1 2 4 5 6 7 8	00501001 00501002 00501003 00501004 00501005 00501006 00501007 00501008	31692.063273 31692.278197 31692.408032 31692.229217 31691.819879 31691.641064 31691.770899 31691.985823	30364.754182 30365.040154 30367.182523 30367.492358 30364.768932 30365.078767 30367.221136 30367.507108	I05Q1001 I05Q1002 I05Q1003 I05Q1004 I05Q1005 I05Q1006 I05Q1007 I05Q1008	31692.961624 31693.176547 31693.306383 31693.127567 31692.718230 31692.539414 31692.669250 31692.884174	30364.699734 30364.985707 30367.128076 30367.437910 30364.714485 30365.024319 30367.166689 30367.452661	0.121920	-0.391287
97 D100	D	31692.51921	77 30373.532961	7.3145380	D10I	31693.4165087	30373.4610278	7.31	45380
				FIDUCIALS: BNL FRAME	(m)				
			N (m)	E (m)		N (m)	E (m)	TOP-BL(m)	BOT-BL(m)
97 97 97 97 97 97 97 97 97	1 2 3 4 5 6 7 8 9 10	005D1001 005D1002 005D1003 005D1004 005D1005 005D1006 005D1007 005D1008 005D1009 005D1010	31693.064960 31693.135575 31692.848384 31692.599633 31692.308334 31692.822325 31692.499314 31692.212123 31691.963372 31692.064941	30378.238849 30376.847872 30373.265265 30370.162195 30368.800230 30378.263057 30376.898876 30373.316269 30370.213199 30368.814983	I05D1001 I05D1002 I05D1003 I05D1004 I05D1005 I05D1006 I05D1007 I05D1008 I05D1009 I05D1010	31693.962251 31694.032866 31693.745675 31693.496924 31693.205625 31693.719616 31693.396605 31693.109414 31692.860663 31692.962232	30378.166916 30376.775939 30373.193331 30370.090262 30368.728297 30378.191124 30376.826943 30373.244336 30370.141266 30368.743050	0.121920	-0.391287
105 MQD	:	31693.20960	07 30380.914875	8.5535282	MQF	31694.1051523	30380.8255104	8.55	35283
				FIDUCIALS: BNL FRAME(	m)				
			N (m)	E (m)		N (m)	E (m)	TOP-BL(m)	BOT-BL(m)
105 105 105 105 105 105 105	1 2 3 4 5 6 7 8	005 <u>0</u> 1106 005 <u>0</u> 1107	31693.194266 31693.420155 31693.633261 31693.466638 31692.951631 31692.785007 31692.998113 31693.224003	30379.533272 30379.810664 30381.946358 30382.262916 30379.557482 30379.874041 30382.009735 30382.287127	I0501105 I0501106 I0501107	31694.089817 31694.315707 31694.528813 31694.362189 31693.847182 31693.680559 31693.893665 31694.119554	30379.443907 30379.721299 30381.856993 30382.173552 30379.468118 30379.784676 30381.920370 30382.197762	0.121920	-0.391287
110 D110	) :	31693.99148	44 30388.287659	9.7925185	D11I	31694.8852966	30388.1808628	9.792	25185
				FIDUCIALS: BNL FRAME(	m)				
			N (m)	E (m)		N(m)	E (m)	TOP-BL(m)	BOT-BL(m)

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100 100 00501101 31644.715933 30352.868765 T0501101 31685.613751 30332.661349 0.121920 -0.391247   100 100 31647.756712 30341.5576765 T0501101 31685.613751 30332.661349 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.4627764 30331.46177777633 30331.46177777633 30331.461364 30341.680334 30341.680334 30441.576120 30641.27764 30331.461364 59.3521287   110 10 00501101 31634.660334 30643.713122 T0501103 31634.427764 30331.461364 59.3521287   110 10 00501101 31634.660334 30643.713122 T0601003 31634.47764 30331.461364 59.3521287   110 10 00501101 31634.660334 30643.713122 T0601003 31634.47764 30333.464136 59.3521287   110 10 00501101 31634.46031343 30643.713122 T0610103 31634.4776433	93/07/2 14:21:5				del	l@owl.rhic. ate	.bnl.gov			4
110 1 0051100 3164/73939 3031/84743 10051110 31695.1021 31695.1021 31695.1021 31695.1027 3031.16275   110 1 0051101 31694.134064 3034.16217 TOSDIL01 31695.20376 3034.16976   110 6 00551106 31644.47640 30334.06217 TOSDIL01 31644.47640 30334.69520   110 6 00551106 31644.47640 30334.06217 TOSDIL01 31644.69023 3034.08920   110 6 00551106 31634.67190 30384.08021 TOSDIL01 31634.287768 30344.085246   110 6 00551106 31634.67190 30384.08021 TOSDIL01 31634.287768 30344.085246   110 0 00551106 31633.67190 30384.08021 TOSDIL01 31634.247768 30344.085246   110 0 00551106 31633.46531 30643.715122 TO451001 31634.247768 30344.02356 0.121320 -0.391287   770 1 00401001 31333.465931 30643.715122 TO450001 31634.027111 30640.274573 1064										
110 2 00501102 31644.786772 3031.576074 10001102 1100 5100000 1100 5100000 1100 51000000000 1100 510000000000000 <	110	1	005D1101	31694.719939					0.121920	-0.391287
110 3 0051103 31094.00920 1058.01437 1058.01430 31094.00920   110 5 0051105 31093.44080 3033.457 10551105 31694.49400 3033.459520   110 5 0051105 31694.47040 3033.033.002377 10551105 31694.99300 3033.033.459530   110 6 00551106 31693.376130 3038.03061 10551106 31694.99300 3038.0837.576185   110 8 00551106 31693.376140 3038.03061 10551106 31694.99300 3038.0837.576185   110 00551106 31693.35956 30383.03092 10551101 31694.247768 30384.08306   110 00551106 31634.715122 105110 31694.247768 30384.077685 0.121920 -0.351287   FUDUCIALS: ENL FRAME(m)   N(m) 8(m) TOP-BL(m) DOT-BL(m) 0.121920 -0.351287   TODOLO 31834.680234 30642.716027 T04D1003 31835.71385 0.0431065 31637.697293 0.0451.051841 0.121920 -0.351287   TOP-BL(m)			005D1102							
110 4 00501104 31693 93084 9101104 1100 100 31083 30084 9101104 1100 100 31084 9101104 1100 1000 31084 1000110 31084 1000110 31084 1000110 31084 1000110 31004 1000110 31004 1000110 31004 1000110 31004 1000110 31004 1000110 31004 1000110 31004 1000110 31004 1000110 31004 1000110 31001 <td< td=""><td>110</td><td>3</td><td>O05D1103</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	110	3	O05D1103							
110 5 00551105 31693.556590 20383.666719 1001110 110110 1001110		4	005D1104	31693.940668	30384.916317					
110 6 005511106 31694.478430 30393.002377 1051110 1051120 30393.555003   110 8 00551106 31694.651799 10531120 31694.705425 30393.555003   110 8 00551106 31693.661743 30381.83002 10551109 31694.20768 30383.48136   110 9 00551106 31694.353355 30383.59092 10551109 31694.247768 30383.484136   370 D100 31834.6602334 30640.8977954 59.3521286 D101 31835.2416202 30640.1941245 59.3521287   FIDUCIALS: BNL FRAME(m)   N(m) N(m) E(m) TOP-EL(m) BOT-EL(m)   370 1 00401001 31884.711627 10401001 31885.21560 0.121920 -0.391287   370 2 00401002 31887.51265 10401003 31835.21560 0.121920 -0.391287   370 2 00401002 31835.127674 30643.71312 10401003 31835.21550 0.0537.10159   370 2 00401002 31835.127674 30567.13566		5	005D1105	31693.596590						
110 7 005D1107 31694.102576 30391.651799 10D1107 1100 31694.576738   110 9 005D1109 31693.306474 30384.932042 105D1101 31694.247768 30383.484136   110 9 005D1109 31693.306474 30384.922042 105D1110 31694.247768 30383.484136   110 005D1110 31693.353956 30384.580234 30640.6977954 59.3521286 DIOT 31635.2416202 30640.1941249 59.3521287   FIDECTALS: ENL FRAME(m)   N(m) B(m) N(m) E(m) TOP-BL(m) BOT-BL(m)   700 1 004D1001 31639.450931 30643.715027 T04D1001 31639.077318 30643.015451 0.121920 -0.391287   370 3 004D1003 31834.71071 30640.474575 T04D1001 31831.68092 30643.015451 0.121920 -0.391287   370 3 004D1003 31834.71071 30640.474575 T04D1001 31831.68094 30643.213656 30643.213656 30643.2136561 30643.2136561 30643.2136561 30643.213666		6	005D1106	31694.478430				-		
110 8 0055D1108 31639.476190 30388.081081 105D1108 31634.190022 30334.685246   110 10 0055D110 31693.476190 30384.92042 105D1108 31694.20026 30334.685246   370 D100 31694.6602334 30640.6977954 59.3521286 D101 31635.2416202 30640.1941246 59.3521287   FIDUCIALS: ENL FRAME(m)   N(m) B(m) N(m) F(m) TOP-BL(m) BOT-BL(m)   370 1 004D1001 31834.64591 30641.715127 T04D1001 31839.01063 30643.015451 0.121220 -0.391287   370 1 004D1001 31837.515699 3064.715757 T04D1002 31839.61265 30637.237005 30642.012356 30642.012356 30642.012356   370 1 004D1001 31837.61264 30643.11466 T04D1002 31831.64527 30657.237065 30642.02394 30643.28457   370 1 004D1005 31831.64551 T04D1005 31831.64527 30653.28453 30653.28459   370 1 004D1005 31834.31095<		7	005D1107	31694.102578						
110 9 005D1109 31693.306674 30383.59092 105D1100 31694.240766 30983.484136   270 D100 31834.6802334 30640.8977954 59.3521286 D101 31835.2416202 30640.1941248 59.3521287   FIDUCIALS: ENL FRAME(m)   N(m) B(m) N(m) B(m) 0.21320 -0.391287   370 1 004D1001 31834.485931 30643.719122 T04D1002 31839.047318 30643.01561 0.121320 -0.391287   370 2 004D1001 31837.519699 30642.716027 T04D1002 3183.6999 3063.70905 0.121320 -0.391287   370 2 004D1002 31837.715128 30643.718128 30643.718128 30643.718128 30637.10198 30637.12094   370 2 004D1003 31834.73289 10637.110198 30637.110198 30637.110198 30637.110198   370 2 004D1005 31834.31284 30643.214911 T06D1006 31834.6320994 30642.51320   370 2 004D1006 31834.31281 10640.10108 31841.64247 </td <td></td> <td>8</td> <td>005D1108</td> <td>31693.676190</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		8	005D1108	31693.676190						
110 10 005D1110 31693.353956 30383.580932 105D110 31694.247/86 30383.50030   370 D100 31834.6602334 30640.8977954 59.3521286 D101 31835.2416202 30640.1941248 59.3521287   FIDUCIALS: ENL FRAME(m)   N(m) E(m) N(m) E(m) 0.121920 -0.391287   370 1 004D1001 31838.463531 30642.715127 T04D1001 31838.071263 0.0421.013365 0.0421.013365 0.0421.013365 0.0421.013365 0.0421.013365 0.0421.013365 0.0421.013365 0.0421.013365 0.0421.0106 31831.475772 30631.53316 T04D1004 31831.4830.693.0837.1101.98 0.0421.003 31831.71577 30643.214951 T04D1005 31831.6830.937.02947 0.0421.003 31831.412645 T04D1005 31831.6830.837.1001.98 0.0421.003 31831.412645 30643.214964 30643.214964 30643.214967 30643.201994 30643.201994 30643.201994 30643.201994 30643.201994 30643.201994 30643.201994 30643.201994 30643.201994 30643.201994 30643.201994 30643.201945 30644.2696869 30644.2696869 <td></td> <td>9</td> <td></td> <td>31693.306874</td> <td>30384.992042</td> <td></td> <td></td> <td></td> <td></td> <td></td>		9		31693.306874	30384.992042					
370 D100 31834.6802334 30640.8977954 59.351288 D101 Stornment formentation   FINUCIALS: ENL FRAME(m)   N(m) E(m) N(m) E(m)   370 1 OOP-BL(m) BOT-BL(m)   370 1 OOP-BL(m) DITUE STATUSE   370 OODDIOS 31831.022 OODDIOS 31831.022 OODDIOS 31831.020 0.30643.71027   370 OODDIOS 31831.0205 OODDIOS 31831.0205 OOD   OODDIOS 31831.0205 OODDIOS 31831.0205		10	005D1110	31693.353956	30383.590932	I05D1110	31694.247768	30303.404130		
370 DIO0 31834.6802334 30640.897/954 50.351188 Diff FINDERIMET FINDERIMET   FINDERIALS: ENL FRAME(m)   N(m) E(m) N(m) E(m) TOP-BL(m) BOT-BL(m)   370 1 004D1003 31834.645331 30643.719122 T04D1001 31835.0166 30642.013356   370 2 004D1003 31834.710171 30644.74575 T04D1003 31832.33008 30637.710340   370 3 004D1005 31831.726702 30634.513146 T04D1004 31832.33008 30637.7123475   370 5 004D1005 31831.044440 30637.213461 T04D1007 31837.683011 30644.30984   370 6 004D1005 31831.2085 30643.932455 T04D1003 31831.645427 30637.423475   370 0 004D1005 31831.812085 30644.93345 50641.93364 30637.4734013 30637.4734785   370 0 004D1005 31831.812085 30644.510346 T04D1003 31841.0841852 30644.7300114 60.5911189										21 2 2 7
N(m)   E(m)   N(m)   E(m)   TOP-EL(m)   EOT-EL(m)     370   1   004D1001   31838.485931   30643.719127   104D101   31838.047318   30643.01245   30642.01235 <td< td=""><td>370 D10</td><td>00 3</td><td>31834.68023</td><td>34 30640.897795</td><td>4 59.3521286</td><td><b>D10I</b></td><td>31835.2416202</td><td>30640.1941248</td><td>59.352</td><td></td></td<>	370 D10	00 3	31834.68023	34 30640.897795	4 59.3521286	<b>D10I</b>	31835.2416202	30640.1941248	59.352	
N(m)   E(m)   Inth   Inth   Inth   Inth   Inth     370   1   004D1001   31838.485931   30643.719122   T04D1001   31839.047318   30643.015451   0.121920   -0.391287     370   2   004D1002   31834.710171   30640.474575   T04D1003   31832.080069   30637.710305   30643.012356   30643.012356   30643.012356   30637.110198     370   4   004D1005   31831.04040   30637.813866   T04D1005   31831.0840.028964   30637.31087   30637.110198     370   6   004D1005   31837.121624   30643.214951   T04D1005   31831.63426   30643.268969     370   6   004D1005   31837.121624   30643.214951   30643.268969   30637.297815     370   10   004D1005   31837.632011   T04D1006   31837.632011   30644.7300114   60.5911189     370   10   004D1010   31839.5357   60.5911189   NQD   31841.0841852   30644.7300114   60.5911189     378   1					FIDUCIALS: BNL FRAM	Œ (m)				
370 1 00401001 31838.48531 30643.719122 T0401002 31883.08106 30642.012356   370 2 00401002 31834.710171 30640.474575 T0401003 31835.271558 30633.770905   370 4 00401003 31831.084040 30637.131866 T0401004 31832.38089 30637.829475   370 5 00401005 31831.3084040 30637.131866 T0401005 31831.45427 30632.7110139   370 6 00401005 31831.3087.812055 T0401007 31837.683011 30642.01232 50638.328439   370 6 00401003 31831.4312095 30640.973540 T0401009 31831.440013 30638.328439   370 9 0040100 31830.928291 30538.001486 T0401000 31831.48978 30643.7300114 60.5911189   N(m) E(m) N(m) E(m) T0P-BL(m) 60.5911189   378 1 00401001 31839.518508 30644.510346 T0401002 31840.065990 30643.796018 0.121920 -0.391287   378 1				N (m)	E (m)		N (m)	E (m)	TOP-BL(m)	BOT-BL(m)
370 1 004D1001 31838.48931 30633.13122 T04D1002 31888.081066 30642.012356   370 2 004D1002 31833.7597 30640.474575 T04D1003 31835.271556 30637.839475   370 4 004D1003 3183.3707 30637.813866 T04D1004 31833.38099 30637.829475   370 5 004D1005 31831.36470 30643.214991 T04D1005 31831.645427 30637.829475   370 6 004D1005 3183.337597 30643.214991 T04D1005 31837.683011 30642.511320   370 6 004D1005 3183.31.478627 30643.23099 30642.511320   370 8 004D1005 3183.31.478627 30643.32095 30640.973540 T04D1009   370 9 004D1005 3183.3033333303310 T04D1009 31834.473402 30644.7300114 60.5911189   370 9 004D1010 31839.518508 30644.510346 T04D1002 31841.0841852 30643.796018 0.121920 -0.391287   378 1 004Q1001 31839.57365 30644.535357 <t< td=""><td></td><td></td><td></td><td></td><td></td><td>T04D1001</td><td>31839.047318</td><td>30643.015451</td><td>0.121920</td><td>-0.391287</td></t<>						T04D1001	31839.047318	30643.015451	0.121920	-0.391287
370 2 000101003 31834.71071 30642.7474575 1001003 31835.271558 30639.770905   370 4 0001003 31832.276702 30638.533146 1001005 31831.6844040 30637.110198   370 4 0001005 31831.084040 30637.313868 1001005 31831.684471 30643.209984   370 6 0001005 31831.084040 30637.31465 1001005 31831.3209 30643.209984   370 8 00401008 31831.4873482 30640.269869 30637.297815   370 9 00401009 31831.078627 30638.001486 10401009 31831.489678 30637.297815   370 10 00401001 31830.928291 30638.001486 10401010 31831.489678 30641.7300114 60.5911189   N(m) E(m) N(m) E(m) TOP-BL(m) BOT-BL(m)   10401001 31841.0841852 30644.7300114 60.5911189   N(m) E(m) N(m) E(m) 0.121920 -0.391287   378 1 00401001 31839.518		1								
370 3 00401004 31834.10171 30638.533146 T04D1004 31832.830089 30637.823475   370 4 004D1004 31832.276702 30638.533146 T04D1005 31831.645427 30637.823475   370 5 004D1005 31837.121624 30643.214991 T04D1005 31831.698984 30643.208984   370 6 004D1006 31831.31265 T04D1007 31837.633011 30642.511320   370 8 004D1009 31831.678627 30639.032110 T04D1009 31832.440013 30638.328439   370 10 004D1010 31831.678627 30639.032110 T04D1010 31831.489678 30637.297815   370 10 004D1010 31831.678627 30639.032110 T04D1010 31841.0841852 30644.7300114 60.5911189   N(m) E(m) N(m) E(m) N(m) E(m) 0.121920 -0.391287   378 1 00401001 31839.518508 30644.510346 T0401002 31840.422447 30645.126660 30645.126660   378 1 0040100	370	2								
370 4 00401004 31833.04004 30637.81386 Tu401005 31831.645427 30637.110198   370 5 00401005 31831.040400 30637.81386 Tu401005 31831.645427 30637.110198   370 6 00401007 31831.041007 31832.87597 30643.214991 T0401007 31832.67342 30643.208994   370 8 00401008 31834.312095 30640.973540 T0401009 31832.4973462 30640.269869   370 9 00401009 31830.928291 30638.001486 T0401009 31831.489678 30637.297815   370 10 0040101 31830.928291 30638.001486 T0401001 31841.0841852 30644.7300114 60.5911189   FTDUCIALS: ENL FRAME(m)   TOP-BL(m) BOT-BL(m)   O0401001 31839.87563 30644.510346 T0401002 31840.065990 30643.796018 0.121920 -0.391287   378 1 00401001 31839.87563 30644.535357 T0401002 31840.422427 30643.821029 30643.126600   378 <t< td=""><td></td><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>		3								
370 5 004D1005 31831.3084040 30637.3123555 T104D1007 31833.8989844 30643.209884   370 7 004D1007 31833.31297 30643.214991 T04D1007 31837.683011 30642.511320   370 8 004D1006 31834.312095 30640.973540 T04D1007 31837.683011 30642.511320   370 9 004D1009 31831.87627 30639.032110 T04D1009 31832.440013 30638.328439   370 10 004D1010 31830.928291 30638.001486 T04D1010 31831.489678 30644.7300114 60.5911189   FIDUCIALS: ENL FRAME(m)   N(m) E(m) TOP-BL(m) BOT-BL(m)   J10401003 31841.0841852 30643.796018 0.121920 -0.391287   J10401003 31840.065990 30643.796018 0.121920 -0.391287   J10401003 31842.126354 30643.1206600   J10401003 31842.126354 30643.126660   J10401003 31840.055990 30643.796018 0.121920 -0.391287										

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			FIDUCIALS: BNL FRAM	1E (m)							
		N (m)	E (m)		N (m)	E (m)	TOP-BL(m)	BOT-BL(m)			
391 1 391 2 391 3 391 4 391 5 391 6 391 6 391 7 391 8	00400902 00400903 00400904 00400905	31851.345251 31851.702386 31853.421643 31853.542645 31851.199283 31851.320285 31853.039542 31853.396677	30653.432619 30653.453288 30654.738107 30655.074754 30653.627943 30653.964589 30655.249408 30655.270078	I04Q0901 I04Q0902 I04Q0903 I04Q0904 I04Q0905 I04Q0906 I04Q0907 I04Q0908	31851.884006 31852.241141 31853.960398 31854.081399 31851.738038 31851.859040 31853.578297 31853.935432	30652.711686 30652.732356 30654.017174 30654.353821 30652.907010 30653.243657 30654.528475 30654.549145	0.121920	-0.391287			
396 D080	31858.34109	74 30658.75549	62.6042738	DOSI	31858.8658197	30658.0240735	62.604	12738			
			FIDUCIALS: BNL FRAM	Æ (m)							
		N (m)	E (m)		N (m)	E (m)	TOP-BL(m)	BOT-BL(m)			
396 1   396 2   396 3   396 4   396 5   396 6   396 7   396 8   396 9   396 10	004D0802 004D0803 004D0804 004D0805 004D0806 004D0807 004D0808 004D0808	31862.285894 31861.269702 31858.349385 31855.819957 31854.592122 31862.147636 31860.897624 31857.977307 31855.447879 31854.446157	30661.378811 30660.426362 30658.331296 30656.516658 30655.859219 30661.579665 30660.945002 30658.849936 30657.035298 30656.054544	I04D0801 I04D0802 I04D0803 I04D0804 I04D0805 I04D0806 I04D0807 I04D0808 I04D0808 I04D0809 I04D0810	31862.810616 31861.794425 31858.874107 31856.344679 31855.116845 31862.672358 31861.422347 31858.502030 31855.972601 31854.970879	30660.647391 30659.694943 30657.599877 30655.785239 30655.127799 30660.848246 30660.213583 30658.118517 30656.303879 30655.323125	0.121920	-0.391287			
402 MQFA	31864.42208	37 30662.99705	95 63.8432640	MQDA	31864.9323760	30662.2557077	63.843	32641			
410 MQ70	31876.54812	01 30671.34382	63.8432640	MQ7I	31877.0584124	30670.6024715	63.843	32641			
415 D060	31879.90273	48 30673.64747	64.2303464	D061	31880.4085189	30672.9030158	64.230	03464			
421 MQ60	31888.75152	43 30679.58651	55 64.6174287	MQ6I	31889.2527627	30678.8390126	64.617	74288			
			FIDUCIALS: BNL FRAM	ME (m)							
	`	N (m)	E (m)		N (m)	E (m)	TOP-BL(m)	BOT-BL(m)			
421 1 421 2 421 3 421 4 421 5 421 6 421 7 421 8	00400602 00400603 00400604 00400605 00400605 00400606	31887.676334 31888.034058 31889.816679 31889.954712 31887.540531 31887.678565 31889.461185 31889.818909	30678.718743 30678.721149 30679.916503 30680.246532 30678.921265 30679.251294 30680.446647 30680.449054	I04Q0601 I04Q0602 I04Q0603 I04Q0604 I04Q0605 I04Q0605 I04Q0607 I04Q0608	31888.177572 31888.535297 31890.317917 31890.455951 31888.041769 31888.179803 31889.962423 31890.320147	30677.971240 30677.973646 30679.169000 30679.499029 30678.173762 30678.503791 30679.699145 30679.701551	0.121920	-0.391287			

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428 D050	31894.9293922 306	83.6821488	65.7590119	D051	31895.4108911	30682.9386962	65.5250835	
434 MQ50	31901.2090167 306	87.6199883	66.9005950	MQ5I	31901.6570969	30686.9028940	66.4327383	
		FIDUCI	ALS: BNL FRAME (n	n)				
	N (:	m) E(r	n)		N (m)	E (m)	TOP-BL(m) BOT-BL(:	m)
434 1 434 2 434 3 434 4 434 5 434 6 434 6 434 7 434 8	004Q0502 31900. 004Q0503 31902. 004Q0504 31902. 004Q0505 31899. 004Q0506 31900. 004Q0507 31901.	103403 30686.7   460983 30686.7   285318 30687.9   435097 30688.2   974948 30686.9   124727 30687.3   949062 30688.4   306642 30688.4	780904 911571 236438 998588 323455 154121	I04Q0501 I04Q0502 I04Q0503 I04Q0504 I04Q0505 I04Q0506 I04Q0507 I04Q0508	31900.557603 31900.915250 31902.731226 31902.878614 31900.427629 31900.575016 31902.390992 31902.748639	30686.066129 30686.058335 30687.202378 30687.528338 30686.272441 30686.598400 30687.742443 30687.734650	0.121920 -0.3912	87
444 MQ40	31907.5669457 306	591.5604373	66.9005950	MQ4I	31907.9858958	30690.8899611	66.4327383	
452 MQ30	31941.9646194 307	712.8790580	66.9005950	MQ3I	31942.2259697	30712.4607953	66.4327383	
456 MQ20	31945.7861768 307	715.2475418	66.9005950	MQ2I	31946.0300179	30714.8572998	66.4327383	
460 MQ10	31949.3272373 307	717.4421822	66.9005950	MQ1I	31949.5548543	30717.0779042	66.4327383	
463 D000	31952.5430488 307	719.4272030	67.3839884	DOOI	31952.7487052	30719.0980693	65.9493449	
466 D0X0	31961.6728440 307	724.9135754	67.2670242	DOXI	31961.6820836	30724.8987757	66.0663091	
469 MCR	31971.5573017 307	731.0797590	66.6666667	MCR	31971.5573077	30731.0797627	66.6666666	
471 D0X0	31981.4325199 307	737.2607424	66.0663091	DOXI	31981.4417714	30737.2459500	67.2670242	
474 D000	31990.3658982 307	743.0614488	65.9493449	DOOI	31990.5715666	30742.7323225	67.3839884	
478 MQ10	31993.5597492 307	745.0816138	66.4327383	MQ1I	31993.7873781	30744.7173432	66.9005950	
482 MQ20	31997.0845856 307	747.3022183	66.4327383	MQ2I	31997.3284386	30746.9119837	66.9005950	
486 MQ30	32000.8886337 307	749.6987228	66.4327383	MQ3I	32001.1499959	30749.2804674	66.9005950	
494 MQ40	32035.1287076 307	771.2695570	66.4327383	MQ4I	32035.5476696	30770.5990882	66.9005950	
504 MQ50	32041.4575066 307	775.2566241	66.4327383	MQ5I	32041.9055987	30774.5395372	66.9005950	

FIDUCIALS: BNL FRAME (m)

N(m)

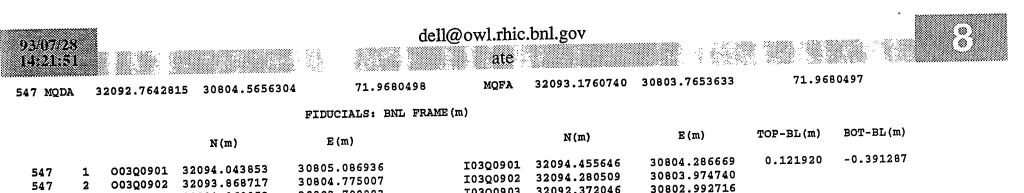
E (m)

TOP-BL(m) E(m)

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14:21:5						ate					
504	1	00300501	32042.686975	30775.8870	077	10300501	32043.139667	30775.160938	0.121920	-0.391287	
504	2	00300502	32042.539588	30775.561	118	I03Q0502	32042.989888	30774.836071			
504	3	00300503	32040.723612	30774.417	075	<b>I03Q0503</b>	32041.165554	30773.705404			
504	4	00300504	32040.365964	30774.424	868	<b>I03Q0504</b>	32040.807973	30773.715826			
504	5	00300505	32042.557001	30776.093		<b>I03Q0505</b>	32043.011213	30775.368200			
504	6	00300506	32042.199353	30776.101		10300506	32042.653632	30775.378621 30774.247955			
504	7	00300507	32040.383377	30774.957		103Q0507	32040.829297 32040.679519	30773.923087			
504	B	00300508	32040.235990	30774.631	180	10300508	32040.079519	30773.923007			
509 D050	5	32047.74963:	34 30779.1744	556 6	7.5743215	D051	32048.2067662	30778.4157774	67.808	32498	
517 MQ6	S	32054.13897	66 30782.9316	562 6	8.7159046	MQ6I	32054.5910966	30782.1534608	68.71	39046	
				FIDUCIAL	S: BNL FRAM	E (m)					
			N (m)	E (m)			N(m)	E (m)	TOP-BL(m)	BOT-BL(m)	
				00700 517	620	10300601	32055.842380	30782.739424	0.121920	-0.391287	,
517	1	00300601	32055.390260	30783.517 30783.197		10300602	32055.683400	30782.418960			
517	2	00300602	32055.231280 32053.375450	30782.118		10300603	32053.827570	30781.340766			
517	3	003 <u>0</u> 0603 003 <u>0</u> 0604	32053.018312	30782.139		10300604	32053.470432	30781.361378			
517	4	00300605	32055.267767	30783.728		10300605	32055.719887	30782.950264			
517 517	5	00300606	32054.910629	30783.749		10300606	32055.362749	30782.970877			
517	7	00300607	32053.054800	30782.670		<b>I03Q0607</b>	32053.506919	30781.892683			
517	8	00300608	32052.895819	30782.350		<b>I0300608</b>	32053.347939	30781.572218			
120	U	00000000	•••••								
522 D06	0	32063.35602	78 30788.2813	568 6	9.1029870	D06I	32063.8034155	30787.5004120	69.10	29869	
528 MQ7	0	32066.89710	58 30790.2865	994 6	9.4900693	MQ7I	32067.3397281	30789.5029630	69.49		
536 MQF	A	32079.71485	76 30797.5263	827 6	59.4900693	MQDA	32080.1574800	30796.7427462	69.49	00692	
541 D08	0	32086.19289	44 30801.1325	334 7	0.7290595	DOSI	32086.6202637	30800.3402816	70.72	90595	
				FIDUCIAL	S: BNL FRAM	fE (m)					
			N (m)	E (m)			N (m)	E (m)	TOP-BL(m)	BOT-BL(m)	)
EA1	1	003D0801	32090.439498	30803.232	2432	I03D0801	32090.866867	30802.440180	0.121920	-0.391287	7
541 541	1 2	003D0802	32089.310346	30802.417		I03D0802	32089.737715	30801.624816			
541		003D0802	32086.147124	30800.710		<b>I03D0803</b>	32086.574493	30799.918480			
541	4	003D0804	32083.407304	30799.232		I03D0804		30798.440540			
541	5	003D0805	32082.105778	30798.736	5975	I03D0805	32082.533148	30797.944723			
541	6	003D0806	32090.327929	30803.449	9250	I03D0806		30802.656998			
541	7	003D0807	32089.007305	30802.978	3847	I03D0807		30802.186595			
541	8	003D0808	32085.844083	30801.272	2511	I03D0808	32086.271453	30800.480259			
541	9	003D0809	32083.104264	30799.794		I03D0809		30799.002319			
541	10	003D0810	32081.985861	30798.949	9290	I03D0810	32082.413230	30798.157038			

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547 2 547 3 547 4 547 5 547 6 547 7 547 8	00300903 32 00300904 32 00300905 32 00300906 32 00300906 32	2091.960253 2091.604634 2093.932286 2093.576666 2093.668203	30803.792983 30803.831805 30805.303756 30805.342577 30804.360554 30804.048625	103Q0903 103Q0904 103Q0905 103Q0906 103Q0907 103Q0908	32092.372046 32092.016426 32094.344079 32093.988459 32092.079995 32091.904859	30802.992716 30803.031538 30804.503489 30804.542310 30803.560286 30803.248358	
554 D090	32102.2424771	30809.4377078	72.3551321	D09I	32102.6494031	30808.6349364	72.3551321
560 MQF	32105.9618498	30811.2997213	72.7422145	MQD	32106.3638792	30810.4945052	72.7422144

#### FIDUCIALS: BNL FRAME (m)

	N (m)	E (m)		N(m)	E (m)	TOP-BL (m)	BOT-BL(m)
560   2   003Q1002     560   3   003Q1003     560   4   003Q1004     560   5   003Q1005     560   6   003Q1006     560   7   003Q1007	32107.247666 32107.068749 32105.148485 32104.793364 32107.138744 32106.783622 32104.863358 32104.684442	30811.805429 30811.495652 30810.536909 30810.580052 30812.023589 30812.066732 30811.107988 30810.798212	I03Q1001 I03Q1002 I03Q1003 I03Q1004 I03Q1005 I03Q1006 I03Q1007 I03Q1008	32107.649696 32107.470779 32105.550515 32105.195394 32107.540773 32107.185652 32105.265388 32105.086471	30811.000212 30810.690436 30809.731692 30809.774836 30811.218373 30811.261516 30810.302772 30809.992996	0.121920	-0.391287

567 D100 32112.6155743 30814.5703838

73.9812047

D10I 32113.0019307 30813.7573424

73.9812046

FIDUCIALS: BNL FRAME (m)

			N (m)	E (m)		N (m)	E (m)	TOP-BL(m)	BOT-BL(m)
567 567 567 567 567 567 567 567 567	1 2 3 4 5 6 7 8 9 10	003D1001 003D1002 003D1003 003D1004 003D1005 003D1006 003D1007 003D1008 003D1009 003D1010	32116.963864 32115.794550 32112.548325 32109.736613 32108.411467 32116.863511 32115.520591 32112.274366 32109.462654 32108.302547	30816.450701 30815.694058 30814.151470 30812.815359 30812.386648 30816.672934 30816.270578 30814.727990 30813.391879 30812.604810	I03D1001 I03D1002 I03D1003 I03D1004 I03D1005 I03D1006 I03D1007 I03D1008 I03D1009 I03D1010	32117.350220 32116.180906 32112.934682 32110.122969 32108.797824 32117.249868 32115.906947 32112.660722 32109.849010 32108.688904	30815.637660 30814.881017 30813.338428 30812.002318 30811.573607 30815.859892 30815.457537 30813.914949 30812.578838 30811.791768	0.121920	-0.391287