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Booster survey and linear lattice parameters with program MAD

Z. Parsa

November 1987

Collider Accelerator Department

Brookhaven National Laboratory

U.S. Department of Energy

USDOE Office of Science (SC)

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BOOSTER SURVEY and LINEAR LATTICE PARAMETERS with PROGRAM MAD

AD

Booster Technical Note
No. 99

Zohreh Parsa
November 1987

ACCELERATOR DEVELOPMENT DEPARTMENT
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BOOSTER SURVEY

AND

LINEAR LATTICE PARAMETERS

WITH

PROGRAM MAD

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ABSTRACT

This note describes the coordinates of AGS Booster in the Booster centered frame of refernce, with program MAD. The results agree with and confirm our earlier calculation. The linear lattice parameters for DELTA(P)/P = -.01 to .01 in increments of .002 are also included.

TABLE OF CONTENTS

I. INTRODUCTION

This note includes the results of the Booster Survey obtained with program MAD [1] (versions [2] 4.03 and 6 produced same results).

In Table I, we present the definition of the ring elements inputed into program MAD, (with lengths in meters).

In Table II, linear lattice parameters with DELTA(P)/P =0 are summerized and in Table III, the results of the MAD program Survey (for the Booster is given. This table (III), show the coordinates of an on axis point of the downstream end of that element when viewed in clockwise direction.

Table IV, gives the lattice functions for the Booster, calculated with program MAD6, for Delta(P)/P = -.01 to +.01 in increments of .002.

II. BOOSTER SURVEY WITH MAD

Coordinates of the AGS Booster in the Booster centered reference system, was generated with program MAD. The values listed in Table III correspond to the coordinates of an on - axis point of the downstream end of that element when viewed in a clockwise direction. Assuming the magnets have sharp edges where the field becomes zero. These coordinates (given in Table III) agrees with and confirm our previous results [3], we obtained using a CDC - version of the Geometry program [4].

In the present calculation (shown in Table I) we used thick lens sextupoles of length .1 m; whereas in reference [3] thin lens sextupoles of zero length were assumed.

Figures 1 and 2 are also included showing the conventions used in progam MAD (e.g. coordinates and angles given in Table III), and in the layout of the Booster lattice (e.g relative positions of magnets and Booster superperiods) respectively.

The transformation from the Booster centered reference system to the AGS and BNL grids are discussed and tabulated in subsequent note [5].

III. COORDINATE SYSTEM CONVENTIONS

Figure 1 showes the Global reference coordinates as follows:

X (displacement of lthe local origin in the X direction),
Y (displacement of lthe local origin in the Y direction),
Z (displacement of lthe local origin in the Z direction).

Where X is the East (E) and -Z is the North (N) direction.

Θ (THETA in Table III) is the azimut angle (i.e. the rotation angle about the global Y axis, between the projection of the reference orbit onto the (Z,X) plane, and the global Z axis).

ϕ (PHI) is the elevation angle and Ψ(PSI) is the roll angle about the local s axis (see Figure 1 (c)). For more detail of MAD conventions see the MAD program manual [1].

IV. CONCLUSION

The coordinates of the Booster were generated using program MAD. The result obtained agreed with and confirms our previous calculation given in the Booster Design Manual. The transformations from the Booster centered reference system to AGS and BNL grids and the coordinates of the apex of the dipoles and centers of the quadrupoles and sextupoles are generated and given in the subsequent note [5].

V. REFERENCES

1. F. C. Iselin, CERN, Geneva, Switzerland, Principal author of program MAD (versions 4 and 6).

2. Available in BNLDAG::DUA0:[PARSA1.MAD] DIRECTORY.

3. Z. Parsa, Booster Technical Note No. 27 and Booster Desing Manual.

4. Originally was designed for ISABEL (E. Courant). Now modified for the Booster (I refer to it as) BSTGEO.FOR (VAX version), and a version we use for the RHIC coordinate calculation, (will be refered to as) GEOMETRY.FOR (also VAX version).

5. Z. Parsa, AGS Booster Geometry and Coordinates, Booster Technical Note; November 1987, (NO. 100).

6. E. Courant, Z. Parsa, Booster Lattice, Booster Technical Note No. 1; January 1986.

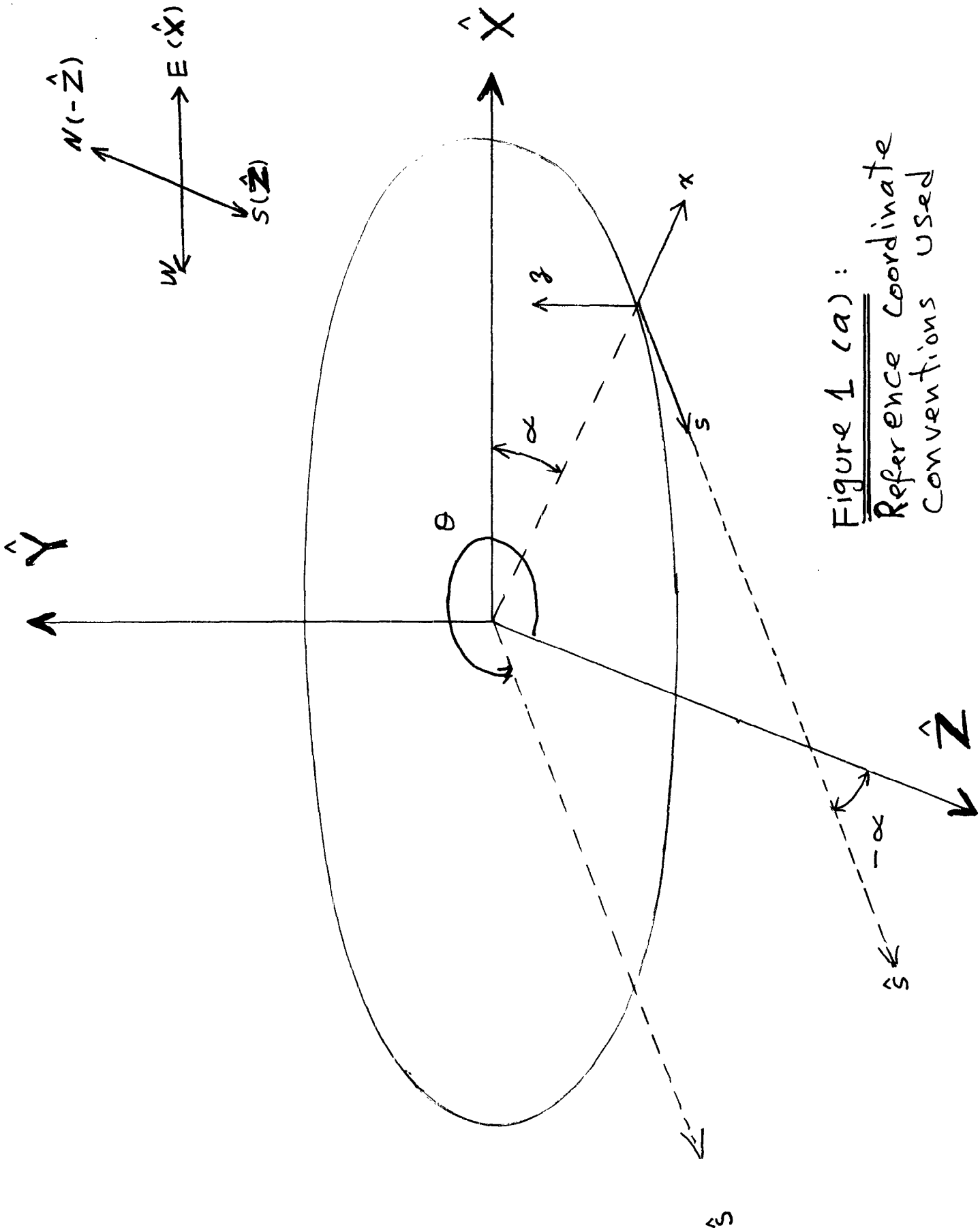

Figure 1 (a): Reference Coordinate Conventions Used

Figure 1 (b and c): Local and Global Coordinate Conventions Used.

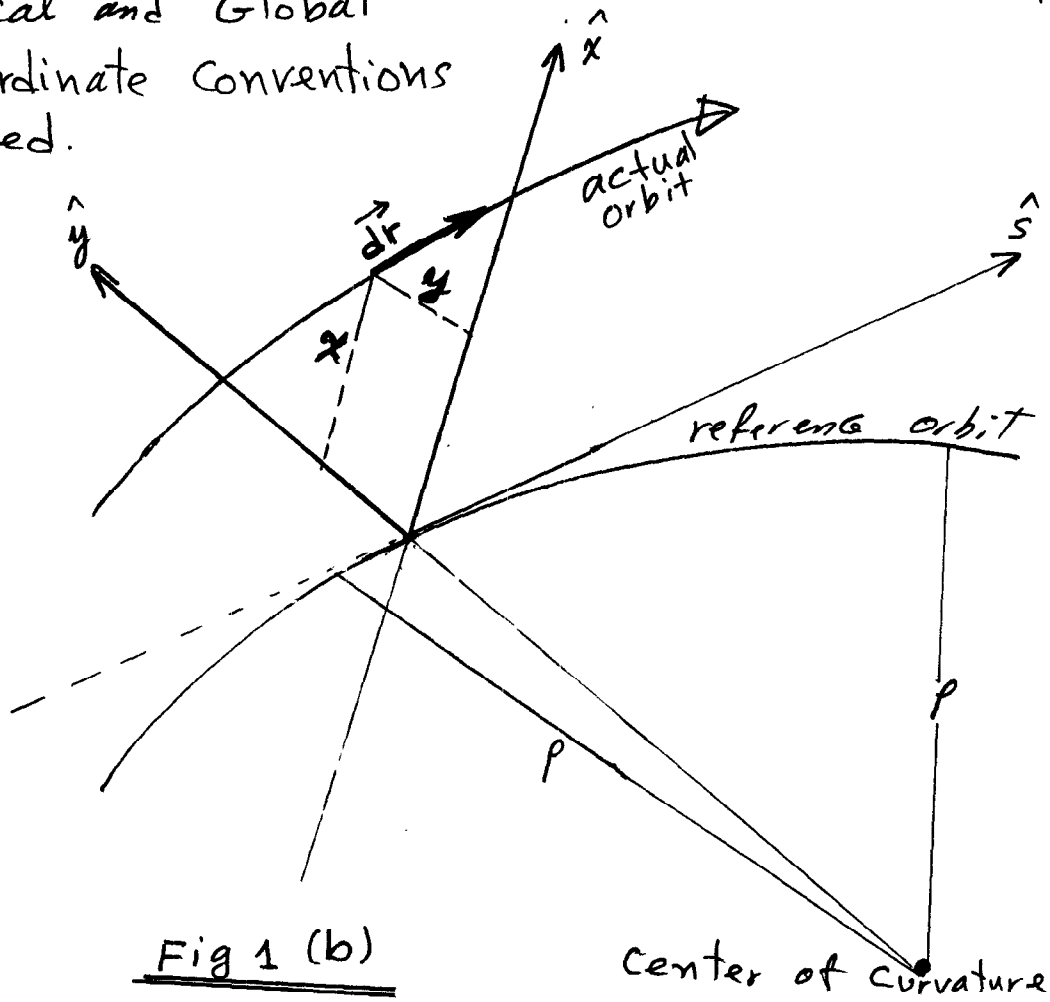

Fig 1 (b)

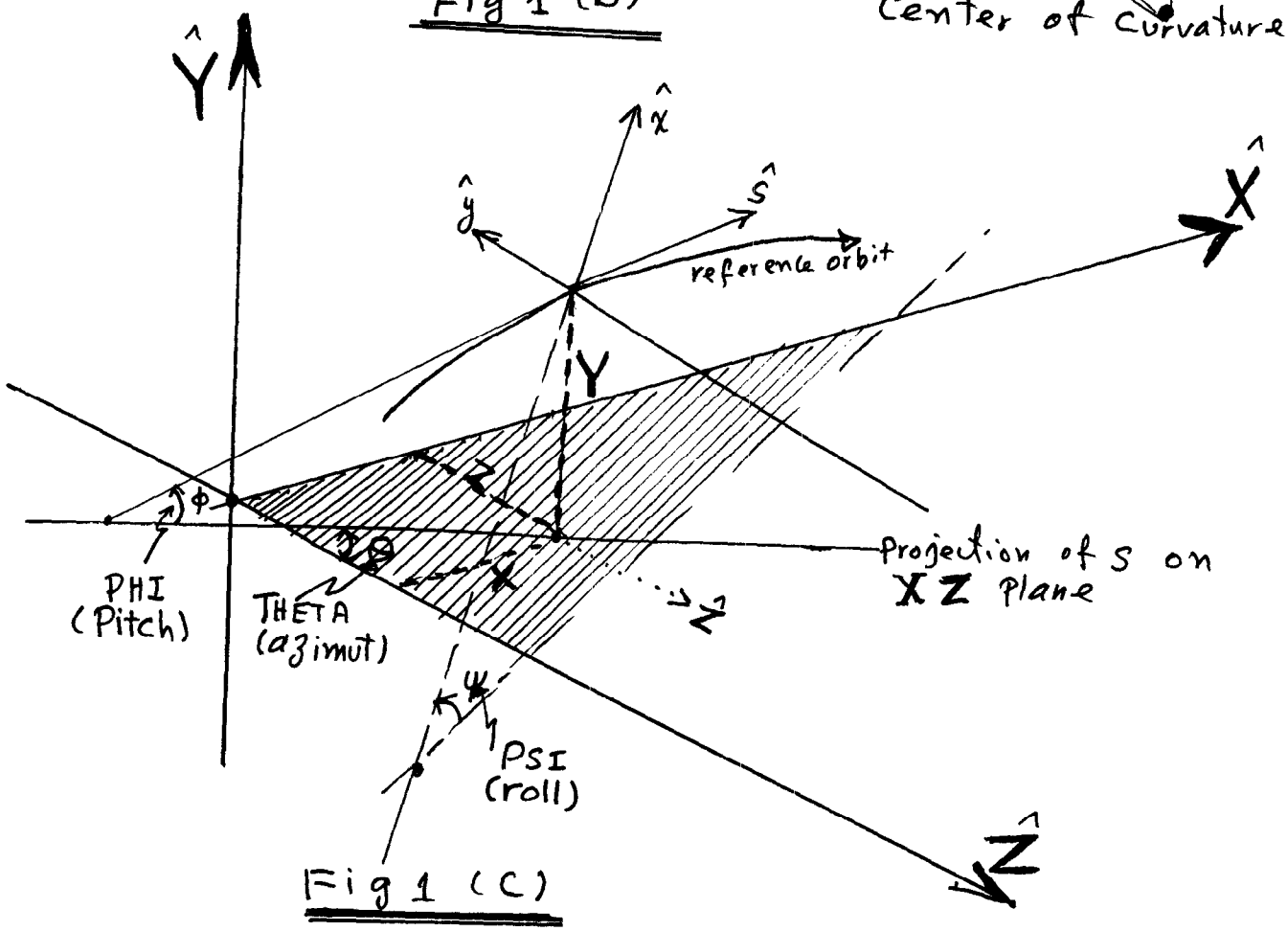

Fig 1 (c)

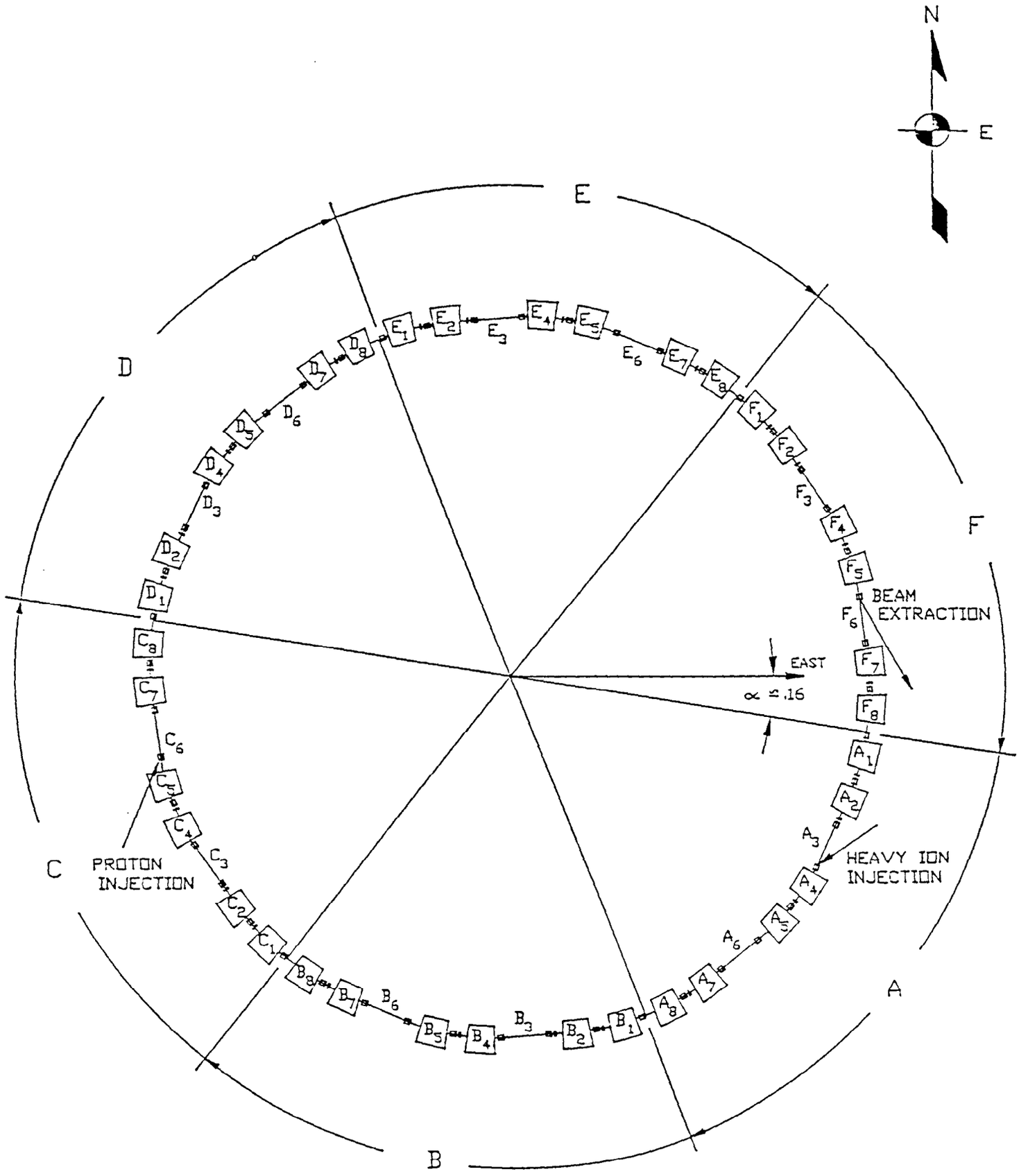

Fig.2 Layout of the AGS Booster showing the relative position of magnets (e.g. Dipole Apex locations) and labling convention of the Booster Superperiods. (A to F, with the Beam in the Clockwise direction).

TABLE I

DEFINITION AND MAGNITUDE OF THE ELEMENTS AND PARAMETERS

TABLE I

```
AGS BOOSTER LATTICE FOR SURVEY        ZOHREH PARSA      19-NOV-8  Ø8:Ø7:18
INPUT STREAM TO PROGRAM MAD (SHOWING THE DEFINITION AND MAGNITUDE OF THE ELEMENTS AND

PARAMETER DEFINITIONS

                    BR   :=  2.14962
                    TH   :=  .174532925199
                    SF   :=  1.36Ø663Ø6
                    SD   :=  -8.1Ø5988
                    SV   :=  .11164764
                    GF   :=  .558211184119
                    GD   :=  -.575416218362
                    LQ   :=  .251875
DRIFT SPACES
                    S2H : DRIFT,L=.25
                    S1 : DRIFT,L=.1
                    S3 : DRIFT,L=.3
                    S3H : DRIFT,L=.35
                    S5H : DRIFT,L=.55
                    S1Ø : DRIFT,L=1.
                    S32H : DRIFT,L=3.25
                    S37 : DRIFT,L=3.7

BENDING MAGNET WITH EDDY CURRENT SEXTUPOLES

BEND : SBEND,L=2.4,ANGLE=TH,K2=SV

QUADRUPOLES
                    QF : QUADRUPOLE,L=LQ,K1=GF
                    QD : QUADRUPOLE,L=LQ,K1=GD

SEXTUPOLES (CHROMATICITY CORRECTING AND EDDY CURRENT)

                    SXF : SEXTUPOLE,L=.1,K2=SF
                    SXD : SEXTUPOLE,L=.1,K2=SD

THE KICKERS
                    CT : DRIFT,L=.1
HALF CELLS
                    HCDF : LINE=(QD,S3,BEND,S5H,CT,SXF,S2H,QF)
                    HCFD : LINE=(QF,S3,BEND,S5H,CT,SXD,S2H,QD)
                    HCDFL : LINE=(QD,S3,BEND,S5H,CT,S3H,QF)
                    HCDFLM : LINE=(QD,S3,BEND,S1Ø,QF)
                    HCFDL : LINE=(QF,S3,BEND,S5H,CT,S3H,QD)
                    HCFDLM : LINE=(QF,S3,BEND,S1Ø,QD)
                    HCDFO : LINE=(QD,S32H,CT,S3H,QF)
                    HCFDO : LINE=(QF,S32H,CT,S3H,QD)
                    HCDFOM : LINE=(QD,S37,QF)
                    HCFDOM : LINE=(QF,S37,QD)

SUPERPERIODS
                    B4SA : LINE=(HCDF,HCFD,HCDFO,HCFD,HCDFLM,HCFDO,HCDF,HCFDL)
                    B4SC : LINE=(HCDF,HCFD,HCDFO,HCFD,HCDFLM,HCFDO,HCDF,HCFDLM)
                    B4SF : LINE=(HCDF,HCFD,HCDFOM,HCFD,HCDFL,HCFDOM,HCDF,HCFDLM)
                    B4S : LINE=(HCDF,HCFD,HCDFO,HCFD,HCDFL,HCFDO,HCDF,HCFDL)
```

Page 9

TABLE II

LATTICE PARAMETERS FOR DELTA(P)/P = 0

Page 10

TABLE II

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10:18:00
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING" ZOHREH PARSA
DELTA(P)/P = 0.000000 PAGE 1

POS. NO.	ELEMENT NAME	SEQUENCE OCC. NO.	DIST [M]	I	HORIZONTAL BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I	VERTICAL BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000		3.642	0.009	0.000	0.000	0.000	0.540	-0.015		13.644	0.000	0.000	0.000	0.000	0.000	0.000
55	QD	9	33.882		3.789	-0.602	0.814	0.000	0.000	0.546	0.064		13.157	1.912	0.808	0.000	0.000	0.000	0.000
56	S3	7	34.182		4.183	-0.710	0.826	0.000	0.000	0.565	0.064		12.041	1.806	0.812	0.000	0.000	0.000	0.000
57	BEND	7	36.582		9.447	-1.461	0.888	0.000	0.000	0.918	0.229		5.413	0.956	0.860	0.000	0.000	0.000	0.000
58	S5H	6	37.132		11.154	-1.643	0.897	0.000	0.000	1.045	0.229		4.467	0.762	0.878	0.000	0.000	0.000	0.000
59	CT	8	37.232		11.486	-1.676	0.898	0.000	0.000	1.068	0.229		4.319	0.727	0.881	0.000	0.000	0.000	0.000
60	SXF	3	37.332		11.825	-1.710	0.900	0.000	0.000	1.090	0.229		4.177	0.691	0.885	0.000	0.000	0.000	0.000
61	S2H	5	37.582		12.700	-1.793	0.903	0.000	0.000	1.148	0.229		3.853	0.603	0.895	0.000	0.000	0.000	0.000
62	QF	9	37.834		13.158	-0.005	0.906	0.000	0.000	1.185	0.065		3.703	0.000	0.906	0.000	0.000	0.000	0.000
63	QF	10	38.086		12.705	1.783	0.909	0.000	0.000	1.180	-0.102		3.853	-0.603	0.916	0.000	0.000	0.000	0.000
64	S3	8	38.386		11.665	1.685	0.913	0.000	0.000	1.150	-0.102		4.247	-0.709	0.928	0.000	0.000	0.000	0.000
65	BEND	8	40.786		5.266	0.954	0.962	0.000	0.000	1.098	0.059		9.687	-1.558	0.989	0.000	0.000	0.000	0.000
66	S5H	7	41.336		4.326	0.755	0.981	0.000	0.000	1.131	0.059		11.508	-1.752	0.997	0.000	0.000	0.000	0.000
67	CT	9	41.436		4.178	0.719	0.984	0.000	0.000	1.136	0.059		11.862	-1.788	0.999	0.000	0.000	0.000	0.000
68	SXD	3	41.536		4.038	0.682	0.988	0.000	0.000	1.142	0.059		12.223	-1.823	1.000	0.000	0.000	0.000	0.000
69	S2H	6	41.786		3.720	0.592	0.998	0.000	0.000	1.157	0.059		13.157	-1.912	1.003	0.000	0.000	0.000	0.000
70	QD	10	42.037		3.575	-0.011	1.009	0.000	0.000	1.193	0.229		13.644	0.000	1.006	0.000	0.000	0.000	0.000
71	QD	11	42.289		3.731	-0.615	1.021	0.000	0.000	1.273	0.407		13.157	1.912	1.009	0.000	0.000	0.000	0.000
72	S32H	3	45.539		11.627	-1.815	1.103	0.000	0.000	2.595	0.407		4.467	0.762	1.079	0.000	0.000	0.000	0.000
73	CT	10	45.639		11.993	-1.852	1.104	0.000	0.000	2.636	0.407		4.319	0.727	1.083	0.000	0.000	0.000	0.000
74	S3H	4	45.989		13.335	-1.981	1.108	0.000	0.000	2.778	0.407		3.853	0.603	1.096	0.000	0.000	0.000	0.000
75	QF	11	46.241		13.866	-0.102	1.111	0.000	0.000	2.831	0.011		3.703	0.000	1.107	0.000	0.000	0.000	0.000
76	QF	12	46.493		13.435	1.791	1.114	0.000	0.000	2.784	-0.385		3.853	-0.603	1.118	0.000	0.000	0.000	0.000
77	S3	9	46.793		12.389	1.697	1.118	0.000	0.000	2.669	-0.385		4.247	-0.709	1.129	0.000	0.000	0.000	0.000
78	BEND	9	49.193		5.820	1.012	1.163	0.000	0.000	1.919	-0.239		9.687	-1.558	1.190	0.000	0.000	0.000	0.000
79	S5H	8	49.743		4.812	0.821	1.180	0.000	0.000	1.787	-0.239		11.508	-1.752	1.199	0.000	0.000	0.000	0.000
80	CT	11	49.843		4.651	0.786	1.183	0.000	0.000	1.763	-0.239		11.862	-1.788	1.200	0.000	0.000	0.000	0.000
81	SXD	4	49.943		4.498	0.751	1.187	0.000	0.000	1.740	-0.239		12.223	-1.823	1.201	0.000	0.000	0.000	0.000
82	S2H	7	50.193		4.144	0.664	1.196	0.000	0.000	1.680	-0.239		13.157	-1.912	1.205	0.000	0.000	0.000	0.000
83	QD	12	50.445		3.976	0.008	1.206	0.000	0.000	1.650	0.002		13.644	0.000	1.207	0.000	0.000	0.000	0.000
84	QD	13	50.697		4.135	-0.646	1.216	0.000	0.000	1.681	0.242		13.157	1.912	1.210	0.000	0.000	0.000	0.000
85	S3	10	50.997		4.553	-0.749	1.227	0.000	0.000	1.754	0.242		12.041	1.806	1.214	0.000	0.000	0.000	0.000
86	BEND	10	53.397		9.894	-1.453	1.285	0.000	0.000	2.515	0.390		5.413	0.956	1.262	0.000	0.000	0.000	0.000
87	S5H	9	53.947		11.588	-1.627	1.293	0.000	0.000	2.729	0.390		4.467	0.762	1.280	0.000	0.000	0.000	0.000
88	CT	12	54.047		11.916	-1.658	1.294	0.000	0.000	2.768	0.390		4.319	0.727	1.284	0.000	0.000	0.000	0.000
89	S3H	5	54.397		13.115	-1.768	1.299	0.000	0.000	2.905	0.390		3.853	0.603	1.297	0.000	0.000	0.000	0.000
90	QF	13	54.649		13.546	0.079	1.302	0.000	0.000	2.951	-0.023		3.703	0.000	1.308	0.000	0.000	0.000	0.000

TABLE II (CONTINUES)

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10:18:00
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING", ZOHREH PARSA
DELTA(P)/P = 0.000000 PAGE 2

POS. NO.	ELEMENT NAME	SEQUENCE OCC. NO.	DIST [M]	I	HORIZONTAL BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I	VERTICAL BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
91	QF	14	54.901		13.038	1.915	1.305	0.000	0.000	2.894	-0.435		3.853	-0.603	1.319	0.000	0.000	0.000	0.000
92	S32H	4	58.151		4.371	0.752	1.376	0.000	0.000	1.481	-0.435		11.508	-1.752	1.400	0.000	0.000	0.000	0.000
93	CT	13	58.251		4.224	0.716	1.379	0.000	0.000	1.437	-0.435		11.862	-1.788	1.401	0.000	0.000	0.000	0.000
94	S3H	6	58.601		3.767	0.590	1.393	0.000	0.000	1.285	-0.435		13.157	-1.912	1.406	0.000	0.000	0.000	0.000
95	QD	14	58.852		3.624	-0.018	1.404	0.000	0.000	1.198	-0.255		13.644	0.000	1.409	0.000	0.000	0.000	0.000
96	QD	15	59.104		3.785	-0.628	1.415	0.000	0.000	1.156	-0.085		13.157	1.912	1.412	0.000	0.000	0.000	0.000
97	S3	11	59.404		4.195	-0.739	1.427	0.000	0.000	1.130	-0.085		12.041	1.806	1.416	0.000	0.000	0.000	0.000
98	BEND	11	61.804		9.644	-1.509	1.488	0.000	0.000	1.118	0.075		5.413	0.956	1.464	0.000	0.000	0.000	0.000
99	S5H	10	62.354		11.407	-1.695	1.497	0.000	0.000	1.159	0.075		4.467	0.762	1.481	0.000	0.000	0.000	0.000
100	CT	14	62.454		11.749	-1.729	1.498	0.000	0.000	1.167	0.075		4.319	0.727	1.485	0.000	0.000	0.000	0.000
101	SXF	4	62.554		12.098	-1.763	1.499	0.000	0.000	1.175	0.075		4.177	0.691	1.489	0.000	0.000	0.000	0.000
102	S2H	8	62.804		13.001	-1.848	1.503	0.000	0.000	1.193	0.075		3.853	0.603	1.499	0.000	0.000	0.000	0.000
103	QF	15	63.056		13.477	-0.017	1.506	0.000	0.000	1.191	-0.093		3.703	0.000	1.509	0.000	0.000	0.000	0.000
104	QF	16	63.308		13.018	1.816	1.509	0.000	0.000	1.147	-0.258		3.853	-0.603	1.520	0.000	0.000	0.000	0.000
105	S3	12	63.608		11.959	1.717	1.512	0.000	0.000	1.070	-0.258		4.247	-0.709	1.532	0.000	0.000	0.000	0.000
106	BEND	12	66.008		5.405	0.986	1.560	0.000	0.000	0.647	-0.094		9.687	-1.558	1.593	0.000	0.000	0.000	0.000
107	S5H	11	66.558		4.431	0.785	1.578	0.000	0.000	0.596	-0.094		11.508	-1.752	1.601	0.000	0.000	0.000	0.000
108	CT	15	66.658		4.278	0.749	1.582	0.000	0.000	0.586	-0.094		11.862	-1.788	1.603	0.000	0.000	0.000	0.000
109	S3H	7	67.008		3.798	0.621	1.596	0.000	0.000	0.554	-0.094		13.157	-1.912	1.607	0.000	0.000	0.000	0.000
110	QD	16	67.260		3.642	0.009	1.607	0.000	0.000	0.540	-0.015		13.644	0.000	1.610	0.000	0.000	0.000	0.000
END	RING	1	201.780		3.642	0.009	4.820	0.000	0.000	0.540	-0.015		13.644	0.000	4.830	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.820000	QY =	4.829999
		QX' =	0.001048	QY' =	-0.001678
ALFA =	0.419701E-01	BETAX(MAX) =	13.865707	BETAY(MAX) =	13.644032
GAMMA(TR) =	4.881238	DX(MAX) =	2.951449	DY(MAX) =	0.000000
		XCO(MAX) =	0.000000	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	0.000000	YCO(R.M.S.) =	0.000000

TABLE III

SURVEY OF THE AGS - BOOSTER

TABLE III

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10:18:00
SURVEY OF BEAM LINE "RING", ZOHREH PARSA

* TABLE III GIVES THE SURVEY, WITH X0=31.86063,Z0=5.55399,THETA0=-.161765

POS. NO.	ELEMENT NAME	OCC. NO.	SEQUENCE SUM(L) M	SEQUENCE ARC M	I I	POSITIONS X M	POSITIONS Y M	POSITIONS Z M	I I	ANGLES THETA RAD	ANGLES PHI RAD	ANGLES PSI RAD
BEGIN	RING	1	0.000000	0.000000		31.860630	0.000000	5.553990		-0.161765	0.000000	0.000000
1	QD	1	0.251875	0.251875		31.820063	0.000000	5.802577		-0.161765	0.000000	0.000000
2	S3	1	0.551875	0.551875		31.771745	0.000000	6.098660		-0.161765	0.000000	0.000000
3	BEND	1	2.951875	2.951875		31.180978	0.000000	8.421673		-0.336298	0.000000	0.000000
4	S5H	1	3.501875	3.501875		30.999481	0.000000	8.940863		-0.336298	0.000000	0.000000
5	CT	1	3.601875	3.601875		30.966482	0.000000	9.035262		-0.336298	0.000000	0.000000
6	SXF	1	3.701875	3.701875		30.933482	0.000000	9.129660		-0.336298	0.000000	0.000000
7	S2H	1	3.951875	3.951875		30.850984	0.000000	9.365656		-0.336298	0.000000	0.000000
8	QF	1	4.203750	4.203750		30.767866	0.000000	9.603421		-0.336298	0.000000	0.000000
9	QF	2	4.455625	4.455625		30.684749	0.000000	9.841187		-0.336298	0.000000	0.000000
10	S3	2	4.755625	4.755625		30.585750	0.000000	10.124382		-0.336298	0.000000	0.000000
11	BEND	2	7.155625	7.155625		29.600572	0.000000	12.309517		-0.510831	0.000000	0.000000
12	S5H	2	7.705625	7.705625		29.331676	0.000000	12.789303		-0.510831	0.000000	0.000000
13	CT	2	7.805625	7.805625		29.282786	0.000000	12.876537		-0.510831	0.000000	0.000000
14	SXD	1	7.905625	7.905625		29.233895	0.000000	12.963771		-0.510831	0.000000	0.000000
15	S2H	2	8.155625	8.155625		29.111670	0.000000	13.181856		-0.510831	0.000000	0.000000
16	QD	2	8.407500	8.407500		28.988528	0.000000	13.401576		-0.510831	0.000000	0.000000
17	QD	3	8.659375	8.659375		28.865385	0.000000	13.621296		-0.510831	0.000000	0.000000
18	S32H	1	11.909375	11.909375		27.276453	0.000000	16.456397		-0.510831	0.000000	0.000000
19	CT	3	12.009375	12.009375		27.227563	0.000000	16.543631		-0.510831	0.000000	0.000000
20	S3H	1	12.359375	12.359375		27.056447	0.000000	16.848949		-0.510831	0.000000	0.000000
21	QF	3	12.611250	12.611250		26.933305	0.000000	17.068669		-0.510831	0.000000	0.000000
22	QF	4	12.863125	12.863125		26.810163	0.000000	17.288390		-0.510831	0.000000	0.000000
23	S3	3	13.163125	13.163125		26.663492	0.000000	17.550091		-0.510831	0.000000	0.000000
24	BEND	3	15.563125	15.563125		25.313836	0.000000	19.530955		-0.685364	0.000000	0.000000
25	S5H	3	16.113125	16.113125		24.965711	0.000000	19.956759		-0.685364	0.000000	0.000000
26	CT	4	16.213125	16.213125		24.902415	0.000000	20.034178		-0.685364	0.000000	0.000000
27	SXD	2	16.313125	16.313125		24.839120	0.000000	20.111597		-0.685364	0.000000	0.000000
28	S2H	3	16.563125	16.563125		24.680881	0.000000	20.305144		-0.685364	0.000000	0.000000
29	QD	4	16.815000	16.815000		24.521456	0.000000	20.500143		-0.685364	0.000000	0.000000
30	QD	5	17.066875	17.066875		24.362030	0.000000	20.695142		-0.685364	0.000000	0.000000
31	S3	4	17.366875	17.366875		24.172144	0.000000	20.927398		-0.685364	0.000000	0.000000
32	BEND	4	19.766875	19.766875		22.499019	0.000000	22.643803		-0.859897	0.000000	0.000000
33	S10	1	20.766875	20.766875		21.741244	0.000000	23.296319		-0.859897	0.000000	0.000000
34	QF	5	21.018750	21.018750		21.550379	0.000000	23.460671		-0.859897	0.000000	0.000000
35	QF	6	21.270625	21.270625		21.359514	0.000000	23.625024		-0.859897	0.000000	0.000000
36	S32H	2	24.520625	24.520625		18.896745	0.000000	25.745700		-0.859897	0.000000	0.000000

TABLE III (CONTINUES)

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10:18:00
SURVEY OF BEAM LINE "RING", ZOHREH PARSA PAGE 2 P
A

POS. NO.	ELEMENT NAME	OCC. NO.	SEQUENCE SUM(L) M	ARC M	I I I	POSITIONS X M	Y M	Z M	I I I	ANGLES THETA RAD	PHI RAD	PSI RAD
37	CT	5	24.620625	24.620625		18.820968	0.000000	25.810951		-0.859897	0.000000	0.000000
38	S3H	2	24.970625	24.970625		18.555746	0.000000	26.039332		-0.859897	0.000000	0.000000
39	QD	6	25.222500	25.222500		18.364882	0.000000	26.203684		-0.859897	0.000000	0.000000
40	QD	7	25.474375	25.474375		18.174017	0.000000	26.368037		-0.859897	0.000000	0.000000
41	S3	5	25.774375	25.774375		17.946685	0.000000	26.563791		-0.859897	0.000000	0.000000
42	BEND	5	28.174375	28.174375		16.000927	0.000000	27.963585		-1.034430	0.000000	0.000000
43	S5H	4	28.724375	28.724375		15.528163	0.000000	28.244644		-1.034430	0.000000	0.000000
44	CT	6	28.824375	28.824375		15.442206	0.000000	28.295746		-1.034430	0.000000	0.000000
45	SXF	2	28.924375	28.924375		15.356249	0.000000	28.346847		-1.034430	0.000000	0.000000
46	S2H	4	29.174375	29.174375		15.141356	0.000000	28.474601		-1.034430	0.000000	0.000000
47	QF	7	29.426250	29.426250		14.924852	0.000000	28.603314		-1.034430	0.000000	0.000000
48	QF	8	29.678125	29.678125		14.708347	0.000000	28.732026		-1.034430	0.000000	0.000000
49	S3	6	29.978125	29.978125		14.450476	0.000000	28.885331		-1.034430	0.000000	0.000000
50	BEND	6	32.378125	32.378125		12.291208	0.000000	29.925981		-1.208963	0.000000	0.000000
51	S5H	5	32.928125	32.928125		11.776821	0.000000	30.120676		-1.208963	0.000000	0.000000
52	CT	7	33.028125	33.028125		11.683296	0.000000	30.156075		-1.208963	0.000000	0.000000
53	S3H	3	33.378125	33.378125		11.355958	0.000000	30.279971		-1.208963	0.000000	0.000000
54	QD	8	33.630000	33.630000		11.120393	0.000000	30.369132		-1.208963	0.000000	0.000000
55	QD	9	33.881875	33.881875		10.884827	0.000000	30.458293		-1.208963	0.000000	0.000000
56	S3	7	34.181875	34.181875		10.604252	0.000000	30.564490		-1.208963	0.000000	0.000000
57	BEND	7	36.581875	36.581875		8.297081	0.000000	31.214378		-1.383495	0.000000	0.000000
58	S5H	6	37.131875	37.131875		7.756700	0.000000	31.316792		-1.383495	0.000000	0.000000
59	CT	8	37.231875	37.231875		7.658449	0.000000	31.335413		-1.383495	0.000000	0.000000
60	SXF	3	37.331875	37.331875		7.560198	0.000000	31.354034		-1.383495	0.000000	0.000000
61	S2H	5	37.581875	37.581875		7.314570	0.000000	31.400586		-1.383495	0.000000	0.000000
62	QF	9	37.833750	37.833750		7.067100	0.000000	31.447487		-1.383495	0.000000	0.000000
63	QF	10	38.085625	38.085625		6.819631	0.000000	31.494388		-1.383495	0.000000	0.000000
64	S3	8	38.385625	38.385625		6.524877	0.000000	31.550250		-1.383495	0.000000	0.000000
65	BEND	8	40.785625	40.785625		4.139905	0.000000	31.789628		-1.558028	0.000000	0.000000
66	S5H	7	41.335625	41.335625		3.589950	0.000000	31.796650		-1.558028	0.000000	0.000000
67	CT	9	41.435625	41.435625		3.489958	0.000000	31.797927		-1.558028	0.000000	0.000000
68	SXD	3	41.535625	41.535625		3.389967	0.000000	31.799204		-1.558028	0.000000	0.000000
69	S2H	6	41.785625	41.785625		3.139987	0.000000	31.802396		-1.558028	0.000000	0.000000
70	QD	10	42.037500	42.037500		2.888132	0.000000	31.805612		-1.558028	0.000000	0.000000
71	QD	11	42.289375	42.289375		2.636278	0.000000	31.808827		-1.558028	0.000000	0.000000
72	S32H	3	45.539375	45.539375		-0.613457	0.000000	31.850322		-1.558028	0.000000	0.000000
73	CT	10	45.639375	45.639375		-0.713449	0.000000	31.851599		-1.558028	0.000000	0.000000

TABLE III (CONTINUES)

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10:18:00
SURVEY OF BEAM LINE "RING", ZOHREH PARSA PAGE 3
3

POS. NO.	ELEMENT NAME	OCC. NO.	SEQUENCE SUM(L) M	SEQUENCE ARC M	I I	POSITIONS X M	POSITIONS Y M	POSITIONS Z M	I I	ANGLES THETA RAD	ANGLES PHI RAD	ANGLES PSI RAD
74	S3H	4	45.989375	45.989375		-1.063420	0.000000	31.856067		-1.558028	0.000000	0.000000
75	QF	11	46.241250	46.241250		-1.315275	0.000000	31.859283		-1.558028	0.000000	0.000000
76	QF	12	46.493125	46.493125		-1.567129	0.000000	31.862499		-1.558028	0.000000	0.000000
77	S3	9	46.793125	46.793125		-1.867105	0.000000	31.866329		-1.558028	0.000000	0.000000
78	BEND	9	49.193125	49.193125		-4.257411	0.000000	31.687925		-1.732561	0.000000	0.000000
79	S5H	8	49.743125	49.743125		-4.800231	0.000000	31.599342		-1.732561	0.000000	0.000000
80	CT	11	49.843125	49.843125		-4.898925	0.000000	31.583236		-1.732561	0.000000	0.000000
81	SXD	4	49.943125	49.943125		-4.997620	0.000000	31.567130		-1.732561	0.000000	0.000000
82	S2H	7	50.193125	50.193125		-5.244356	0.000000	31.526864		-1.732561	0.000000	0.000000
83	QD	12	50.445000	50.445000		-5.492943	0.000000	31.486297		-1.732561	0.000000	0.000000
84	QD	13	50.696875	50.696875		-5.741529	0.000000	31.445730		-1.732561	0.000000	0.000000
85	S3	10	50.996875	50.996875		-6.037613	0.000000	31.397412		-1.732561	0.000000	0.000000
86	BEND	10	53.396875	53.396875		-8.360625	0.000000	30.806646		-1.907094	0.000000	0.000000
87	S5H	9	53.946875	53.946875		-8.879816	0.000000	30.625149		-1.907094	0.000000	0.000000
88	CT	12	54.046875	54.046875		-8.974214	0.000000	30.592149		-1.907094	0.000000	0.000000
89	S3H	5	54.396875	54.396875		-9.304608	0.000000	30.476651		-1.907094	0.000000	0.000000
90	QF	13	54.648750	54.648750		-9.542374	0.000000	30.393534		-1.907094	0.000000	0.000000
91	QF	14	54.900625	54.900625		-9.780139	0.000000	30.310416		-1.907094	0.000000	0.000000
92	S32H	4	58.150625	58.150625		-12.848084	0.000000	29.237933		-1.907094	0.000000	0.000000
93	CT	13	58.250625	58.250625		-12.942482	0.000000	29.204934		-1.907094	0.000000	0.000000
94	S3H	6	58.600625	58.600625		-13.272876	0.000000	29.089436		-1.907094	0.000000	0.000000
95	QD	14	58.852500	58.852500		-13.510641	0.000000	29.006318		-1.907094	0.000000	0.000000
96	QD	15	59.104375	59.104375		-13.748407	0.000000	28.923201		-1.907094	0.000000	0.000000
97	S3	11	59.404375	59.404375		-14.031602	0.000000	28.824200		-1.907094	0.000000	0.000000
98	BEND	11	61.804375	61.804375		-16.216737	0.000000	27.839024		-2.081627	0.000000	0.000000
99	S5H	10	62.354375	62.354375		-16.696524	0.000000	27.570128		-2.081627	0.000000	0.000000
100	CT	14	62.454375	62.454375		-16.783757	0.000000	27.521238		-2.081627	0.000000	0.000000
101	SXF	4	62.554375	62.554375		-16.870991	0.000000	27.472348		-2.081627	0.000000	0.000000
102	S2H	8	62.804375	62.804375		-17.089076	0.000000	27.350122		-2.081627	0.000000	0.000000
103	QF	15	63.056250	63.056250		-17.308796	0.000000	27.226980		-2.081627	0.000000	0.000000
104	QF	16	63.308125	63.308125		-17.528517	0.000000	27.103838		-2.081627	0.000000	0.000000
105	S3	12	63.608125	63.608125		-17.790218	0.000000	26.957167		-2.081627	0.000000	0.000000
106	BEND	12	66.008125	66.008125		-19.771082	0.000000	25.607511		-2.256160	0.000000	0.000000
107	S5H	11	66.558125	66.558125		-20.196886	0.000000	25.259386		-2.256160	0.000000	0.000000
108	CT	15	66.658125	66.658125		-20.274305	0.000000	25.196090		-2.256160	0.000000	0.000000
109	S3H	7	67.008125	67.008125		-20.545271	0.000000	24.974556		-2.256160	0.000000	0.000000
110	QD	16	67.260000	67.260000		-20.740270	0.000000	24.815131		-2.256160	0.000000	0.000000

TABLE III (CONTINUES)

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10:18:00
SURVEY OF BEAM LINE "RING", ZOHREH PARSA PAGE 4

POS. NO.	ELEMENT NAME	ELEMENT OCC. NO.	SEQUENCE SUM(L) M	SEQUENCE ARC M	I I	POSITIONS X M	POSITIONS Y M	POSITIONS Z M	I I	ANGLES THETA RAD	ANGLES PHI RAD	ANGLES PSI RAD
111	QD	17	67.511875	67.511875		-20.935268	0.000000	24.655705		-2.256160	0.000000	0.000000
112	S3	13	67.811875	67.811875		-21.167525	0.000000	24.465819		-2.256160	0.000000	0.000000
113	BEND	13	70.211875	70.211875		-22.883930	0.000000	22.792694		-2.430693	0.000000	0.000000
114	S5H	12	70.761875	70.761875		-23.242814	0.000000	22.375917		-2.430693	0.000000	0.000000
115	CT	16	70.861875	70.861875		-23.308065	0.000000	22.300140		-2.430693	0.000000	0.000000
116	SXF	5	70.961875	70.961875		-23.373317	0.000000	22.224362		-2.430693	0.000000	0.000000
117	S2H	9	71.211875	71.211875		-23.536446	0.000000	22.034919		-2.430693	0.000000	0.000000
118	QF	17	71.463750	71.463750		-23.700798	0.000000	21.844054		-2.430693	0.000000	0.000000
119	QF	18	71.715625	71.715625		-23.865150	0.000000	21.653189		-2.430693	0.000000	0.000000
120	S3	14	72.015625	72.015625		-24.060905	0.000000	21.425857		-2.430693	0.000000	0.000000
121	BEND	14	74.415625	74.415625		-25.460699	0.000000	19.480100		-2.605226	0.000000	0.000000
122	S5H	13	74.965625	74.965625		-25.741758	0.000000	19.007335		-2.605226	0.000000	0.000000
123	CT	17	75.065625	75.065625		-25.792859	0.000000	18.921378		-2.605226	0.000000	0.000000
124	SXD	5	75.165625	75.165625		-25.843961	0.000000	18.835421		-2.605226	0.000000	0.000000
125	S2H	10	75.415625	75.415625		-25.971715	0.000000	18.620529		-2.605226	0.000000	0.000000
126	QD	18	75.667500	75.667500		-26.100427	0.000000	18.404024		-2.605226	0.000000	0.000000
127	QD	19	75.919375	75.919375		-26.229140	0.000000	18.187520		-2.605226	0.000000	0.000000
128	S32H	5	79.169375	79.169375		-27.889943	0.000000	15.393914		-2.605226	0.000000	0.000000
129	CT	18	79.269375	79.269375		-27.941044	0.000000	15.307957		-2.605226	0.000000	0.000000
130	S3H	8	79.619375	79.619375		-28.119900	0.000000	15.007107		-2.605226	0.000000	0.000000
131	QF	19	79.871250	79.871250		-28.248612	0.000000	14.790602		-2.605226	0.000000	0.000000
132	QF	20	80.123125	80.123125		-28.377324	0.000000	14.574098		-2.605226	0.000000	0.000000
133	S3	15	80.423125	80.423125		-28.530629	0.000000	14.316227		-2.605226	0.000000	0.000000
134	BEND	15	82.823125	82.823125		-29.571280	0.000000	12.156958		-2.779759	0.000000	0.000000
135	S5H	14	83.373125	83.373125		-29.765974	0.000000	11.642571		-2.779759	0.000000	0.000000
136	CT	19	83.473125	83.473125		-29.801373	0.000000	11.549046		-2.779759	0.000000	0.000000
137	SXD	6	83.573125	83.573125		-29.836772	0.000000	11.455521		-2.779759	0.000000	0.000000
138	S2H	11	83.823125	83.823125		-29.925269	0.000000	11.221709		-2.779759	0.000000	0.000000
139	QD	20	84.075000	84.075000		-30.014431	0.000000	10.986143		-2.779759	0.000000	0.000000
140	QD	21	84.326875	84.326875		-30.103592	0.000000	10.750577		-2.779759	0.000000	0.000000
141	S3	16	84.626875	84.626875		-30.209789	0.000000	10.470002		-2.779759	0.000000	0.000000
142	BEND	16	87.026875	87.026875		-30.959676	0.000000	8.162831		-2.954292	0.000000	0.000000
143	S10	2	88.026875	88.026875		-31.045884	0.000000	7.180321		-2.954292	0.000000	0.000000
144	QF	21	88.278750	88.278750		-31.092785	0.000000	6.932851		-2.954292	0.000000	0.000000
145	QF	22	88.530625	88.530625		-31.139686	0.000000	6.685381		-2.954292	0.000000	0.000000
146	S32H	6	91.780625	91.780625		-31.744861	0.000000	3.492222		-2.954292	0.000000	0.000000
147	CT	20	91.880625	91.880625		-31.763482	0.000000	3.393971		-2.954292	0.000000	0.000000

Page 17

TABLE III (CONTINUES)

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10:18:00
SURVEY OF BEAM LINE "RING", ZOHREH PARSA PAGE 5
5

POS. NO.	ELEMENT NAME	ELEMENT OCC. NO.	SEQUENCE SUM(L) M	SEQUENCE ARC M	I I I	POSITIONS X M	POSITIONS Y M	POSITIONS Z M	I I I	ANGLES THETA RAD	ANGLES PHI RAD	ANGLES PSI RAD
148	S3H	9	92.230625	92.230625		-31.828654	0.000000	3.050093		-2.954292	0.000000	0.000000
149	QD	22	92.482500	92.482500		-31.875555	0.000000	2.802623		-2.954292	0.000000	0.000000
150	QD	23	92.734375	92.734375		-31.922456	0.000000	2.555153		-2.954292	0.000000	0.000000
151	S3	17	93.034375	93.034375		-31.978319	0.000000	2.260400		-2.954292	0.000000	0.000000
152	BEND	17	95.434375	95.434375		-32.217697	0.000000	-0.124572		-3.128825	0.000000	0.000000
153	S5H	15	95.984375	95.984375		-32.224719	0.000000	-0.674527		-3.128825	0.000000	0.000000
154	CT	21	96.084375	96.084375		-32.225996	0.000000	-0.774519		-3.128825	0.000000	0.000000
155	SXF	6	96.184375	96.184375		-32.227273	0.000000	-0.874511		-3.128825	0.000000	0.000000
156	S2H	12	96.434375	96.434375		-32.230465	0.000000	-1.124491		-3.128825	0.000000	0.000000
157	QF	23	96.686250	96.686250		-32.233680	0.000000	-1.376345		-3.128825	0.000000	0.000000
158	QF	24	96.938125	96.938125		-32.236896	0.000000	-1.628200		-3.128825	0.000000	0.000000
159	S3	18	97.238125	97.238125		-32.240726	0.000000	-1.928175		-3.128825	0.000000	0.000000
160	BEND	18	99.638125	99.638125		-32.062322	0.000000	-4.318482		-3.303358	0.000000	0.000000
161	S10	3	100.638125	100.638125		-31.901262	0.000000	-5.305426		-3.303358	0.000000	0.000000
162	QD	24	100.890000	100.890000		-31.860694	0.000000	-5.554013		-3.303358	0.000000	0.000000
163	QD	25	101.141875	101.141875		-31.820127	0.000000	-5.802600		-3.303358	0.000000	0.000000
164	S3	19	101.441875	101.441875		-31.771809	0.000000	-6.098683		-3.303358	0.000000	0.000000
165	BEND	19	103.841875	103.841875		-31.181043	0.000000	-8.421696		-3.477891	0.000000	0.000000
166	S5H	16	104.391875	104.391875		-30.999546	0.000000	-8.940886		-3.477891	0.000000	0.000000
167	CT	22	104.491875	104.491875		-30.966546	0.000000	-9.035284		-3.477891	0.000000	0.000000
168	SXF	7	104.591875	104.591875		-30.933547	0.000000	-9.129683		-3.477891	0.000000	0.000000
169	S2H	13	104.841875	104.841875		-30.851048	0.000000	-9.365678		-3.477891	0.000000	0.000000
170	QF	25	105.093750	105.093750		-30.767931	0.000000	-9.603444		-3.477891	0.000000	0.000000
171	QF	26	105.345625	105.345625		-30.684813	0.000000	-9.841210		-3.477891	0.000000	0.000000
172	S3	20	105.645625	105.645625		-30.585815	0.000000	-10.124405		-3.477891	0.000000	0.000000
173	BEND	20	108.045625	108.045625		-29.600636	0.000000	-12.309540		-3.652424	0.000000	0.000000
174	S5H	17	108.595625	108.595625		-29.331740	0.000000	-12.789326		-3.652424	0.000000	0.000000
175	CT	23	108.695625	108.695625		-29.282850	0.000000	-12.876560		-3.652424	0.000000	0.000000
176	SXD	7	108.795625	108.795625		-29.233960	0.000000	-12.963794		-3.652424	0.000000	0.000000
177	S2H	14	109.045625	109.045625		-29.111734	0.000000	-13.181879		-3.652424	0.000000	0.000000
178	QD	26	109.297500	109.297500		-28.988592	0.000000	-13.401599		-3.652424	0.000000	0.000000
179	QD	27	109.549375	109.549375		-28.865450	0.000000	-13.621319		-3.652424	0.000000	0.000000
180	S32H	7	112.799375	112.799375		-27.276518	0.000000	-16.456420		-3.652424	0.000000	0.000000
181	CT	24	112.899375	112.899375		-27.227627	0.000000	-16.543654		-3.652424	0.000000	0.000000
182	S3H	10	113.249375	113.249375		-27.056512	0.000000	-16.848972		-3.652424	0.000000	0.000000
183	QF	27	113.501250	113.501250		-26.933369	0.000000	-17.068692		-3.652424	0.000000	0.000000

Page 18

TABLE III (CONTINUES)

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10.18:00
SURVEY OF BEAM LINE "RING", ZOHREH PARSA PAGE 6

POS. NO.	ELEMENT NAME	OCC. NO.	SEQUENCE SUM(L) M	ARC M	I I	POSITIONS X M	Y M	Z M	I I	ANGLES THETA RAD	PHI RAD	PSI RAD
184	QF	28	113.753125	113.753125		-26.810227	0.000000	-17.288413		-3.652424	0.000000	0.000000
185	S3	21	114.053125	114.053125		-26.663557	0.000000	-17.550114		-3.652424	0.000000	0.000000
186	BEND	21	116.453125	116.453125		-25.313900	0.000000	-19.530978		-3.826956	0.000000	0.000000
187	S5H	18	117.003125	117.003125		-24.965775	0.000000	-19.956782		-3.826956	0.000000	0.000000
188	CT	25	117.103125	117.103125		-24.902480	0.000000	-20.034201		-3.826956	0.000000	0.000000
189	SXD	8	117.203125	117.203125		-24.839184	0.000000	-20.111620		-3.826956	0.000000	0.000000
190	S2H	15	117.453125	117.453125		-24.680946	0.000000	-20.305167		-3.826956	0.000000	0.000000
191	QD	28	117.705000	117.705000		-24.521520	0.000000	-20.500166		-3.826956	0.000000	0.000000
192	QD	29	117.956875	117.956875		-24.362095	0.000000	-20.695165		-3.826956	0.000000	0.000000
193	S3	22	118.256875	118.256875		-24.172208	0.000000	-20.927421		-3.826956	0.000000	0.000000
194	BEND	22	120.656875	120.656875		-22.499083	0.000000	-22.643826		-4.001489	0.000000	0.000000
195	S5H	19	121.206875	121.206875		-22.082307	0.000000	-23.002710		-4.001489	0.000000	0.000000
196	CT	26	121.306875	121.306875		-22.006529	0.000000	-23.067961		-4.001489	0.000000	0.000000
197	S3H	11	121.656875	121.656875		-21.741308	0.000000	-23.296342		-4.001489	0.000000	0.000000
198	QF	29	121.908750	121.908750		-21.550444	0.000000	-23.460694		-4.001489	0.000000	0.000000
199	QF	30	122.160625	122.160625		-21.359579	0.000000	-23.625047		-4.001489	0.000000	0.000000
200	S32H	8	125.410625	125.410625		-18.896810	0.000000	-25.745723		-4.001489	0.000000	0.000000
201	CT	27	125.510625	125.510625		-18.821032	0.000000	-25.810974		-4.001489	0.000000	0.000000
202	S3H	12	125.860625	125.860625		-18.555811	0.000000	-26.039355		-4.001489	0.000000	0.000000
203	QD	30	126.112500	126.112500		-18.364946	0.000000	-26.203707		-4.001489	0.000000	0.000000
204	QD	31	126.364375	126.364375		-18.174082	0.000000	-26.368060		-4.001489	0.000000	0.000000
205	S3	23	126.664375	126.664375		-17.946749	0.000000	-26.563814		-4.001489	0.000000	0.000000
206	BEND	23	129.064375	129.064375		-16.000992	0.000000	-27.963608		-4.176022	0.000000	0.000000
207	S5H	20	129.614375	129.614375		-15.528228	0.000000	-28.244667		-4.176022	0.000000	0.000000
208	CT	28	129.714375	129.714375		-15.442271	0.000000	-28.295769		-4.176022	0.000000	0.000000
209	SXF	8	129.814375	129.814375		-15.356314	0.000000	-28.346870		-4.176022	0.000000	0.000000
210	S2H	16	130.064375	130.064375		-15.141421	0.000000	-28.474624		-4.176022	0.000000	0.000000
211	QF	31	130.316250	130.316250		-14.924916	0.000000	-28.603336		-4.176022	0.000000	0.000000
212	QF	32	130.568125	130.568125		-14.708412	0.000000	-28.732049		-4.176022	0.000000	0.000000
213	S3	24	130.868125	130.868125		-14.450541	0.000000	-28.885354		-4.176022	0.000000	0.000000
214	BEND	24	133.268125	133.268125		-12.291272	0.000000	-29.926004		-4.350555	0.000000	0.000000
215	S5H	21	133.818125	133.818125		-11.776885	0.000000	-30.120698		-4.350555	0.000000	0.000000
216	CT	29	133.918125	133.918125		-11.683360	0.000000	-30.156097		-4.350555	0.000000	0.000000
217	S3H	13	134.268125	134.268125		-11.356023	0.000000	-30.279994		-4.350555	0.000000	0.000000
218	QD	32	134.520000	134.520000		-11.120457	0.000000	-30.369155		-4.350555	0.000000	0.000000
219	QD	33	134.771875	134.771875		-10.884891	0.000000	-30.458316		-4.350555	0.000000	0.000000

TABLE III (CONTINUES)

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10:18:00
SURVEY OF BEAM LINE "RING ", ZOHREH PARSA PAGE 7

POS. NO.	ELEMENT NAME	SEQUENCE OCC. NO.	SEQUENCE SUM(L) M	SEQUENCE ARC M	I I	POSITIONS X M	POSITIONS Y M	POSITIONS Z M	I I	ANGLES THETA RAD	ANGLES PHI RAD	ANGLES PSI RAD
220	S3	25	135.071875	135.071875		-10.604316	0.000000	-30.564513		-4.350555	0.000000	0.000000
221	BEND	25	137.471875	137.471875		-8.297145	0.000000	-31.214401		-4.525088	0.000000	0.000000
222	S5H	22	138.021875	138.021875		-7.756764	0.000000	-31.316815		-4.525088	0.000000	0.000000
223	CT	30	138.121875	138.121875		-7.658513	0.000000	-31.335436		-4.525088	0.000000	0.000000
224	SXF	9	138.221875	138.221875		-7.560262	0.000000	-31.354056		-4.525088	0.000000	0.000000
225	S2H	17	138.471875	138.471875		-7.314635	0.000000	-31.400608		-4.525088	0.000000	0.000000
226	QF	33	138.723750	138.723750		-7.067165	0.000000	-31.447509		-4.525088	0.000000	0.000000
227	QF	34	138.975625	138.975625		-6.819695	0.000000	-31.494410		-4.525088	0.000000	0.000000
228	S3	26	139.275625	139.275625		-6.524942	0.000000	-31.550273		-4.525088	0.000000	0.000000
229	BEND	26	141.675625	141.675625		-4.139970	0.000000	-31.789651		-4.699621	0.000000	0.000000
230	S5H	23	142.225625	142.225625		-3.590015	0.000000	-31.796673		-4.699621	0.000000	0.000000
231	CT	31	142.325625	142.325625		-3.490023	0.000000	-31.797950		-4.699621	0.000000	0.000000
232	SXD	9	142.425625	142.425625		-3.390031	0.000000	-31.799227		-4.699621	0.000000	0.000000
233	S2H	18	142.675625	142.675625		-3.140051	0.000000	-31.802419		-4.699621	0.000000	0.000000
234	QD	34	142.927500	142.927500		-2.888197	0.000000	-31.805634		-4.699621	0.000000	0.000000
235	QD	35	143.179375	143.179375		-2.636342	0.000000	-31.808850		-4.699621	0.000000	0.000000
236	S32H	9	146.429375	146.429375		0.613393	0.000000	-31.850345		-4.699621	0.000000	0.000000
237	CT	32	146.529375	146.529375		0.713384	0.000000	-31.851622		-4.699621	0.000000	0.000000
238	S3H	14	146.879375	146.879375		1.063356	0.000000	-31.856090		-4.699621	0.000000	0.000000
239	QF	35	147.131250	147.131250		1.315210	0.000000	-31.859306		-4.699621	0.000000	0.000000
240	QF	36	147.383125	147.383125		1.567065	0.000000	-31.862522		-4.699621	0.000000	0.000000
241	S3	27	147.683125	147.683125		1.867040	0.000000	-31.866352		-4.699621	0.000000	0.000000
242	BEND	27	150.083125	150.083125		4.257347	0.000000	-31.687948		-4.874154	0.000000	0.000000
243	S5H	24	150.633125	150.633125		4.800166	0.000000	-31.599364		-4.874154	0.000000	0.000000
244	CT	33	150.733125	150.733125		4.898861	0.000000	-31.583258		-4.874154	0.000000	0.000000
245	SXD	10	150.833125	150.833125		4.997555	0.000000	-31.567152		-4.874154	0.000000	0.000000
246	S2H	19	151.083125	151.083125		5.244291	0.000000	-31.526887		-4.874154	0.000000	0.000000
247	QD	36	151.335000	151.335000		5.492878	0.000000	-31.486320		-4.874154	0.000000	0.000000
248	QD	37	151.586875	151.586875		5.741465	0.000000	-31.445753		-4.874154	0.000000	0.000000
249	S3	28	151.886875	151.886875		6.037548	0.000000	-31.397435		-4.874154	0.000000	0.000000
250	BEND	28	154.286875	154.286875		8.360561	0.000000	-30.806668		-5.048687	0.000000	0.000000
251	S5H	25	154.836875	154.836875		8.879751	0.000000	-30.625171		-5.048687	0.000000	0.000000
252	CT	34	154.936875	154.936875		8.974150	0.000000	-30.592172		-5.048687	0.000000	0.000000
253	S3H	15	155.286875	155.286875		9.304544	0.000000	-30.476674		-5.048687	0.000000	0.000000
254	QF	37	155.538750	155.538750		9.542309	0.000000	-30.393556		-5.048687	0.000000	0.000000
255	QF	38	155.790625	155.790625		9.780075	0.000000	-30.310439		-5.048687	0.000000	0.000000
256	S32H	10	159.040625	159.040625		12.848019	0.000000	-29.237956		-5.048687	0.000000	0.000000
257	CT	35	159.140625	159.140625		12.942417	0.000000	-29.204957		-5.048687	0.000000	0.000000
258	S3H	16	159.490625	159.490625		13.272811	0.000000	-29.089459		-5.048687	0.000000	0.000000

TABLE III (CONTINUES)

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10:18:00
SURVEY OF BEAM LINE "RING ", ZOHREH PARSA PAGE 8

POS. NO.	ELEMENT NAME	OCC. NO.	SEQUENCE SUM(L) M	SEQUENCE ARC M	I I	POSITIONS X M	Y M	Z M	I I	ANGLES THETA RAD	PHI RAD	PSI RAD
259	QD	38	159.742500	159.742500		13.510577	0.000000	-29.006341		-5.048687	0.000000	0.000000
260	QD	39	159.994375	159.994375		13.748343	0.000000	-28.923224		-5.048687	0.000000	0.000000
261	S3	29	160.294375	160.294375		14.031538	0.000000	-28.824226		-5.048687	0.000000	0.000000
262	BEND	29	162.694375	162.694375		16.216673	0.000000	-27.839047		-5.223220	0.000000	0.000000
263	S5H	26	163.244375	163.244375		16.696459	0.000000	-27.570151		-5.223220	0.000000	0.000000
264	CT	36	163.344375	163.344375		16.783693	0.000000	-27.521261		-5.223220	0.000000	0.000000
265	SXF	10	163.444375	163.444375		16.870927	0.000000	-27.472370		-5.223220	0.000000	0.000000
266	S2H	20	163.694375	163.694375		17.089012	0.000000	-27.350145		-5.223220	0.000000	0.000000
267	QF	39	163.946250	163.946250		17.308732	0.000000	-27.227003		-5.223220	0.000000	0.000000
268	QF	40	164.198125	164.198125		17.528452	0.000000	-27.103860		-5.223220	0.000000	0.000000
269	S3	30	164.498125	164.498125		17.790154	0.000000	-26.957190		-5.223220	0.000000	0.000000
270	BEND	30	166.898125	166.898125		19.771018	0.000000	-25.607534		-5.397753	0.000000	0.000000
271	S5H	27	167.448125	167.448125		20.196821	0.000000	-25.259409		-5.397753	0.000000	0.000000
272	CT	37	167.548125	167.548125		20.274240	0.000000	-25.196113		-5.397753	0.000000	0.000000
273	S3H	17	167.898125	167.898125		20.545206	0.000000	-24.974579		-5.397753	0.000000	0.000000
274	QD	40	168.150000	168.150000		20.740205	0.000000	-24.815154		-5.397753	0.000000	0.000000
275	QD	41	168.401875	168.401875		20.935204	0.000000	-24.655728		-5.397753	0.000000	0.000000
276	S3	31	168.701875	168.701875		21.167461	0.000000	-24.465842		-5.397753	0.000000	0.000000
277	BEND	31	171.101875	171.101875		22.883865	0.000000	-22.792717		-5.572286	0.000000	0.000000
278	S5H	28	171.651875	171.651875		23.242749	0.000000	-22.375940		-5.572286	0.000000	0.000000
279	CT	38	171.751875	171.751875		23.308001	0.000000	-22.300163		-5.572286	0.000000	0.000000
280	SXF	11	171.851875	171.851875		23.373252	0.000000	-22.224385		-5.572286	0.000000	0.000000
281	S2H	21	172.101875	172.101875		23.536381	0.000000	-22.034941		-5.572286	0.000000	0.000000
282	QF	41	172.353750	172.353750		23.700734	0.000000	-21.844077		-5.572286	0.000000	0.000000
283	QF	42	172.605625	172.605625		23.865086	0.000000	-21.653212		-5.572286	0.000000	0.000000
284	S3	32	172.905625	172.905625		24.060841	0.000000	-21.425880		-5.572286	0.000000	0.000000
285	BEND	32	175.305625	175.305625		25.460634	0.000000	-19.480122		-5.746819	0.000000	0.000000
286	S5H	29	175.855625	175.855625		25.741693	0.000000	-19.007358		-5.746819	0.000000	0.000000
287	CT	39	175.955625	175.955625		25.792795	0.000000	-18.921401		-5.746819	0.000000	0.000000
288	SXD	11	176.055625	176.055625		25.843897	0.000000	-18.835444		-5.746819	0.000000	0.000000
289	S2H	22	176.305625	176.305625		25.971651	0.000000	-18.620551		-5.746819	0.000000	0.000000
290	QD	42	176.557500	176.557500		26.100363	0.000000	-18.404047		-5.746819	0.000000	0.000000
291	QD	43	176.809375	176.809375		26.229075	0.000000	-18.187542		-5.746819	0.000000	0.000000
292	S37	1	180.509375	180.509375		28.119835	0.000000	-15.007130		-5.746819	0.000000	0.000000
293	QF	43	180.761250	180.761250		28.248548	0.000000	-14.790625		-5.746819	0.000000	0.000000

TABLE III (CONTINUES)

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 21-NOV-8 10:18:00
SURVEY OF BEAM LINE "RING ", ZOHREH PARSA PAGE 9

POS. NO.	ELEMENT NAME	OCC. NO.	SEQUENCE SUM(L) M	ARC M	I I	POSITIONS X M	Y M	Z M	I I	ANGLES THETA RAD	PHI RAD	PSI RAD
294	QF	44	181.013125	181.013125		28.377260	0.000000	-14.574121		-5.746819	0.000000	0.000000
295	S3	33	181.313125	181.313125		28.530565	0.000000	-14.316249		-5.746819	0.000000	0.000000
296	BEND	33	183.713125	183.713125		29.571215	0.000000	-12.156981		-5.921352	0.000000	0.000000
297	S5H	30	184.263125	184.263125		29.765910	0.000000	-11.642594		-5.921352	0.000000	0.000000
298	CT	40	184.363125	184.363125		29.801309	0.000000	-11.549069		-5.921352	0.000000	0.000000
299	SXD	12	184.463125	184.463125		29.836708	0.000000	-11.455544		-5.921352	0.000000	0.000000
300	S2H	23	184.713125	184.713125		29.925205	0.000000	-11.221732		-5.921352	0.000000	0.000000
301	QD	44	184.965000	184.965000		30.014366	0.000000	-10.986166		-5.921352	0.000000	0.000000
302	QD	45	185.216875	185.216875		30.103527	0.000000	-10.750600		-5.921352	0.000000	0.000000
303	S3	34	185.516875	185.516875		30.209724	0.000000	-10.470025		-5.921352	0.000000	0.000000
304	BEND	34	187.916875	187.916875		30.859612	0.000000	-8.162854		-6.095884	0.000000	0.000000
305	S5H	31	188.466875	188.466875		30.962026	0.000000	-7.622473		-6.095884	0.000000	0.000000
306	CT	41	188.566875	188.566875		30.980647	0.000000	-7.524222		-6.095884	0.000000	0.000000
307	S3H	18	188.916875	188.916875		31.045820	0.000000	-7.180344		-6.095884	0.000000	0.000000
308	QF	45	189.168750	189.168750		31.092721	0.000000	-6.932874		-6.095884	0.000000	0.000000
309	QF	46	189.420625	189.420625		31.139622	0.000000	-6.685404		-6.095884	0.000000	0.000000
310	S37	2	193.120625	193.120625		31.828590	0.000000	-3.050115		-6.095884	0.000000	0.000000
311	QD	46	193.372500	193.372500		31.875491	0.000000	-2.802646		-6.095884	0.000000	0.000000
312	QD	47	193.624375	193.624375		31.922392	0.000000	-2.555176		-6.095884	0.000000	0.000000
313	S3	35	193.924375	193.924375		31.978254	0.000000	-2.260423		-6.095884	0.000000	0.000000
314	BEND	35	196.324375	196.324375		32.217632	0.000000	0.124549		-6.270417	0.000000	0.000000
315	S5H	32	196.874375	196.874375		32.224655	0.000000	0.674505		-6.270417	0.000000	0.000000
316	CT	42	196.974375	196.974375		32.225931	0.000000	0.774496		-6.270417	0.000000	0.000000
317	SXF	12	197.074375	197.074375		32.227208	0.000000	0.874488		-6.270417	0.000000	0.000000
318	S2H	24	197.324375	197.324375		32.230400	0.000000	1.124468		-6.270417	0.000000	0.000000
319	QF	47	197.576250	197.576250		32.233616	0.000000	1.376322		-6.270417	0.000000	0.000000
320	QF	48	197.828125	197.828125		32.236832	0.000000	1.628177		-6.270417	0.000000	0.000000
321	S3	36	198.128125	198.128125		32.240662	0.000000	1.928152		-6.270417	0.000000	0.000000
322	BEND	36	200.528125	200.528125		32.062258	0.000000	4.318459		-6.444950	0.000000	0.000000
323	S10	4	201.528125	201.528125		31.901197	0.000000	5.305403		-6.444950	0.000000	0.000000
324	QD	48	201.780000	201.780000		31.860630	0.000000	5.553990		-6.444950	0.000000	0.000000

TOTAL LENGTH = 201.780000 ARC LENGTH = 201.780000

ERROR(X) = 0.865636E-10 ERROR(Y) = 0.000000E+00 ERROR(Z) = -0.496590E-09

ERROR(THETA) = 0.155864E-10 ERROR(PHI) = 0.000000E+00 ERROR(PSI) = 0.000000E+00

ZOHREH PARSA 21-NOV-8 10:18:34

*USED BNLDAG::DUA0:[PARSA1.MAD.MAD6]MAD6.EX

TABLE IV

a - k

LATTICE FUNCTIONS FOR THE AGS - BOOSTER

WITH

DELTA(P)/P = -.01 TO +.01 with .002 increments.

TABLE IV a

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = -0.010000 SYMM = F PAGE 1

POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	BETAX [M]	ALFAX [1]	HORIZONTAL MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	BETAY [M]	ALFAY [1]	VERTICAL MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000	3.721	0.018	0.000	-4.957	0.096	0.451	-0.005	13.368	-0.045	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630	3.720	0.018	0.804	-4.957	0.096	0.451	-0.005	13.375	-0.045	0.804	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630	3.720	0.018	0.804	-4.957	0.096	0.451	-0.005	13.375	-0.045	0.804	0.000	0.000	0.000	0.000
55	QD	9	33.882	3.867	-0.603	0.815	-5.024	-0.625	0.458	0.061	12.915	1.831	0.807	0.000	0.000	0.000	0.000
56	S3	7	34.182	4.265	-0.710	0.827	-5.213	-0.625	0.476	0.061	11.836	1.729	0.811	0.000	0.000	0.000	0.000
57	BEND	7	36.582	9.575	-1.466	0.888	-8.755	-2.292	0.831	0.229	5.412	0.922	0.860	0.000	0.000	0.000	0.000
58	S5H	6	37.132	11.305	-1.648	0.897	-10.028	-2.292	0.960	0.229	4.494	0.732	0.878	0.000	0.000	0.000	0.000
59	CT	8	37.232	11.641	-1.682	0.898	-10.260	-2.292	0.983	0.229	4.350	0.697	0.881	0.000	0.000	0.000	0.000
60	SXF	3	37.332	11.986	-1.732	0.899	-10.491	-2.300	1.006	0.230	4.212	0.668	0.885	0.000	0.000	0.000	0.000
61	S2H	5	37.582	12.882	-1.816	0.903	-11.072	-2.300	1.065	0.230	3.896	0.582	0.895	0.000	0.000	0.000	0.000
62	QF	9	37.834	13.350	-0.002	0.906	-11.456	-0.711	1.105	0.077	3.757	-0.027	0.906	0.000	0.000	0.000	0.000
END	HCDF	3	37.834	13.350	-0.002	0.906	-11.456	-0.711	1.105	0.077	3.757	-0.027	0.906	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834	13.350	-0.002	0.906	-11.456	-0.711	1.105	0.077	3.757	-0.027	0.906	0.000	0.000	0.000	0.000
63	QF	10	38.086	12.884	1.812	0.909	-11.432	0.903	1.104	-0.079	3.924	-0.639	0.916	0.000	0.000	0.000	0.000
64	S3	8	38.386	11.816	1.711	0.913	-11.158	0.903	1.080	-0.079	4.344	-0.748	0.928	0.000	0.000	0.000	0.000
65	BEND	8	40.786	5.313	0.952	0.962	-10.939	-0.722	1.089	0.086	10.021	-1.590	0.988	0.000	0.000	0.000	0.000
66	S5H	7	41.336	4.366	0.753	0.980	-11.340	-0.722	1.137	0.086	11.896	-1.786	0.996	0.000	0.000	0.000	0.000
67	CT	9	41.436	4.217	0.717	0.984	-11.413	-0.722	1.145	0.086	12.260	-1.821	0.997	0.000	0.000	0.000	0.000
68	SXD	3	41.536	4.072	0.718	0.988	-11.483	-0.669	1.153	0.075	12.643	-1.974	0.999	0.000	0.000	0.000	0.000
69	S2H	6	41.786	3.733	0.624	0.998	-11.652	-0.669	1.173	0.075	13.665	-2.072	1.002	0.000	0.000	0.000	0.000
70	QD	10	42.037	3.571	0.020	1.009	-12.038	-2.380	1.214	0.247	14.221	-0.085	1.005	0.000	0.000	0.000	0.000
END	HCFD	3	42.037	3.571	0.020	1.009	-12.038	-2.380	1.214	0.247	14.221	-0.085	1.005	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037	3.571	0.020	1.009	-12.038	-2.380	1.214	0.247	14.221	-0.085	1.005	0.000	0.000	0.000	0.000
71	QD	11	42.289	3.713	-0.582	1.021	-12.870	-4.180	1.300	0.429	13.749	1.914	1.007	0.000	0.000	0.000	0.000
72	S32H	3	45.539	11.418	-1.765	1.105	-26.590	-4.180	2.722	0.429	4.838	0.800	1.073	0.000	0.000	0.000	0.000
73	CT	10	45.639	11.779	-1.802	1.106	-27.012	-4.180	2.766	0.429	4.680	0.766	1.077	0.000	0.000	0.000	0.000
74	S3H	4	45.989	13.098	-1.929	1.111	-28.490	-4.180	2.919	0.429	4.180	0.646	1.089	0.000	0.000	0.000	0.000
75	QF	11	46.241	13.616	-0.084	1.114	-29.039	-0.123	2.976	0.013	4.017	0.003	1.099	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241	13.616	-0.084	1.114	-29.039	-0.123	2.976	0.013	4.017	0.003	1.099	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241	13.616	-0.084	1.114	-29.039	-0.123	2.976	0.013	4.017	0.003	1.099	0.000	0.000	0.000	0.000
76	QF	12	46.493	13.181	1.772	1.117	-28.552	3.937	2.926	-0.403	4.178	-0.640	1.109	0.000	0.000	0.000	0.000
77	S3	9	46.793	12.136	1.677	1.120	-27.359	3.937	2.802	-0.403	4.597	-0.743	1.120	0.000	0.000	0.000	0.000
78	BEND	9	49.193	5.759	0.951	1.167	-19.665	2.413	2.014	-0.243	10.043	-1.502	1.178	0.000	0.000	0.000	0.000
79	S5H	8	49.743	4.804	0.768	1.184	-18.325	2.413	1.878	-0.243	11.811	-1.682	1.186	0.000	0.000	0.000	0.000
80	CT	11	49.843	4.652	0.734	1.187	-18.081	2.413	1.853	-0.243	12.154	-1.714	1.188	0.000	0.000	0.000	0.000
81	SXD	4	49.943	4.501	0.766	1.191	-17.831	2.544	1.827	-0.270	12.522	-1.929	1.189	0.000	0.000	0.000	0.000
82	S2H	7	50.193	4.136	0.677	1.200	-17.189	2.544	1.758	-0.270	13.521	-2.025	1.192	0.000	0.000	0.000	0.000
83	QD	12	50.445	3.960	0.022	1.210	-16.856	0.084	1.721	-0.019	14.057	-0.059	1.195	0.000	0.000	0.000	0.000
END	HCFD	4	50.445	3.960	0.022	1.210	-16.856	0.084	1.721	-0.019	14.057	-0.059	1.195	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445	3.960	0.022	1.210	-16.856	0.084	1.721	-0.019	14.057	-0.059	1.195	0.000	0.000	0.000	0.000
84	QD	13	50.697	4.113	-0.631	1.220	-17.146	-2.372	1.748	0.232	13.579	1.915	1.198	0.000	0.000	0.000	0.000
85	S3	10	50.997	4.527	-0.733	1.231	-17.865	-2.372	1.819	0.232	12.450	1.811	1.202	0.000	0.000	0.000	0.000
86	BEND	10	53.397	9.925	-1.490	1.290	-25.476	-3.909	2.580	0.391	5.612	1.009	1.248	0.000	0.000	0.000	0.000
87	S5H	9	53.947	11.681	-1.671	1.298	-27.647	-3.909	2.799	0.391	4.602	0.809	1.266	0.000	0.000	0.000	0.000
88	CT	12	54.047	12.022	-1.703	1.300	-28.042	-3.909	2.839	0.391	4.443	0.772	1.269	0.000	0.000	0.000	0.000
89	S3H	5	54.397	13.267	-1.818	1.304	-29.424	-3.909	2.979	0.391	3.942	0.645	1.283	0.000	0.000	0.000	0.000
90	QF	13	54.649	13.722	0.051	1.307	-29.888	0.273	3.025	-0.032	3.772	0.031	1.293	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649	13.722	0.051	1.307	-29.888	0.273	3.025	-0.032	3.772	0.031	1.293	0.000	0.000	0.000	0.000

Page 24

TABLE IV *a*

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = -0.010000 SYMM = F PAGE 2

POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	I	BETAX [M]	ALFAX [1]	HORIZONTAL MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I	BETAY [M]	ALFAY [1]	VERTICAL MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649		13.722	0.051	1.307	-29.888	0.273	3.025	-0.032		3.772	0.031	1.293	0.000	0.000	0.000	0.000
91	QF	14	54.901		13.216	1.913	1.310	-29.286	4.445	2.963	-0.454		3.910	-0.579	1.304	0.000	0.000	0.000	0.000
92	S32H	4	58.151		4.456	0.756	1.380	-14.693	4.445	1.457	-0.454		11.399	-1.702	1.386	0.000	0.000	0.000	0.000
93	CT	13	58.251		4.307	0.720	1.384	-14.245	4.445	1.411	-0.454		11.746	-1.737	1.387	0.000	0.000	0.000	0.000
94	S3H	6	58.601		3.841	0.596	1.398	-12.673	4.445	1.249	-0.454		13.017	-1.858	1.392	0.000	0.000	0.000	0.000
95	QD	14	58.852		3.697	-0.022	1.409	-11.770	2.680	1.155	-0.280		13.487	0.033	1.395	0.000	0.000	0.000	0.000
END	HCFDO	2	58.852		3.697	-0.022	1.409	-11.770	2.680	1.155	-0.280		13.487	0.033	1.395	0.000	0.000	0.000	0.000
BEGIN	HCDF	4	58.852		3.697	-0.022	1.409	-11.770	2.680	1.155	-0.280		13.487	0.033	1.395	0.000	0.000	0.000	0.000
96	QD	15	59.104		3.864	-0.643	1.420	-11.301	1.013	1.104	-0.117		12.984	1.919	1.398	0.000	0.000	0.000	0.000
97	S3	11	59.404		4.288	-0.754	1.431	-10.994	1.013	1.068	-0.117		11.854	1.810	1.402	0.000	0.000	0.000	0.000
98	BEND	11	61.804		9.907	-1.547	1.492	-10.511	-0.615	0.983	0.047		5.155	0.949	1.452	0.000	0.000	0.000	0.000
99	S5H	10	62.354		11.732	-1.738	1.500	-10.853	-0.615	1.010	0.047		4.215	0.744	1.471	0.000	0.000	0.000	0.000
100	CT	14	62.454		12.087	-1.772	1.501	-10.915	-0.615	1.015	0.047		4.068	0.707	1.475	0.000	0.000	0.000	0.000
101	SXF	4	62.554		12.450	-1.825	1.503	-10.977	-0.623	1.019	0.049		3.928	0.675	1.479	0.000	0.000	0.000	0.000
102	S2H	8	62.804		13.394	-1.913	1.506	-11.135	-0.623	1.032	0.049		3.611	0.581	1.489	0.000	0.000	0.000	0.000
103	QF	15	63.056		13.893	-0.026	1.509	-11.094	0.944	1.026	-0.096		3.463	0.007	1.501	0.000	0.000	0.000	0.000
END	HCDF	4	63.056		13.893	-0.026	1.509	-11.094	0.944	1.026	-0.096		3.463	0.007	1.501	0.000	0.000	0.000	0.000
BEGIN	HCFDL	2	63.056		13.893	-0.026	1.509	-11.094	0.944	1.026	-0.096		3.463	0.007	1.501	0.000	0.000	0.000	0.000
104	QF	16	63.308		13.419	1.865	1.512	-10.657	2.478	0.983	-0.238		3.604	-0.566	1.512	0.000	0.000	0.000	0.000
105	S3	12	63.608		12.320	1.764	1.515	-9.906	2.478	0.910	-0.238		3.981	-0.678	1.525	0.000	0.000	0.000	0.000
106	BEND	12	66.008		5.552	1.009	1.562	-5.902	0.821	0.532	-0.071		9.378	-1.549	1.590	0.000	0.000	0.000	0.000
107	S5H	11	66.558		4.543	0.807	1.580	-5.446	0.821	0.493	-0.071		11.211	-1.750	1.599	0.000	0.000	0.000	0.000
108	CT	15	66.658		4.384	0.770	1.584	-5.363	0.821	0.485	-0.071		11.568	-1.787	1.600	0.000	0.000	0.000	0.000
109	S3H	7	67.008		3.885	0.642	1.597	-5.073	0.821	0.460	-0.071		12.876	-1.915	1.605	0.000	0.000	0.000	0.000
110	QD	16	67.260		3.719	0.018	1.608	-4.957	0.096	0.451	-0.005		13.381	-0.045	1.608	0.000	0.000	0.000	0.000
END	HCFDL	2	67.260		3.719	0.018	1.608	-4.957	0.096	0.451	-0.005		13.381	-0.045	1.608	0.000	0.000	0.000	0.000
END	B4S	1	67.260		3.719	0.018	1.608	-4.957	0.096	0.451	-0.005		13.381	-0.045	1.608	0.000	0.000	0.000	0.000
END	RING	1	201.780		3.713	0.018	4.828	-4.957	0.096	0.451	-0.005		13.408	-0.045	4.819	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.827757	QY =	4.818567
		QX' =	-0.527747	QY' =	0.932452
ALFA =	0.401963E-01	BETAX(MAX) =	13.898436	BETAY(MAX) =	14.248702
GAMMA(TR) =	4.987779	DX(MAX) =	3.025205	DY(MAX) =	0.000000
		XCO(MAX) =	29.887657	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	16 743038	YCO(R.M.S.) =	0.000000

... SEARCHING FOR CLOSED ORBIT FOR BEAM LINE "RING ", DELTA(P)/P = -0.008000, SYMM = F

... ITER.	X	PX	Y	PY	ERROR
... 1	-0.004048	0.000078	0.000000	0.000000	0.203318E-02
... 2	-0.004037	0.000085	0.000000	0.000000	0.277075E-04
... 3	-0.004037	0.000085	0.000000	0.000000	0.621002E-09

TABLE IV *b*

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = -0.000B000 SYMM = F

ELEMENT SEQUENCE POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	HORIZONTAL BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	VERTICAL BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000	3.706	0.016	0.000	-4.037	0.085	0.469	-0.007	13.418	-0.035	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630	3.706	0.016	0.804	-4.037	0.085	0.469	-0.007	13.423	-0.035	0.804	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630	3.706	0.016	0.804	-4.037	0.085	0.469	-0.007	13.423	-0.035	0.804	0.000	0.000	0.000	0.000
55	QD	9	33.882	3.853	-0.603	0.814	-4.090	-0.503	0.476	0.062	12.957	1.847	0.807	0.000	0.000	0.000	0.000
56	S3	7	34.182	4.250	-0.710	0.826	-4.242	-0.503	0.495	0.062	11.871	1.744	0.811	0.000	0.000	0.000	0.000
57	BEND	7	36.582	9.551	-1.465	0.888	-7.074	-1.834	0.849	0.229	5.407	0.928	0.860	0.000	0.000	0.000	0.000
58	S5H	6	37.132	11.277	-1.647	0.897	-8.091	-1.834	0.977	0.229	4.484	0.737	0.878	0.000	0.000	0.000	0.000
59	CT	8	37.232	11.612	-1.681	0.898	-8.276	-1.834	1.001	0.229	4.339	0.703	0.882	0.000	0.000	0.000	0.000
60	SXF	3	37.332	11.956	-1.727	0.899	-8.461	-1.839	1.024	0.230	4.200	0.673	0.885	0.000	0.000	0.000	0.000
61	S2H	5	37.582	12.848	-1.811	0.903	-8.925	-1.839	1.082	0.230	3.883	0.585	0.895	0.000	0.000	0.000	0.000
62	QF	9	37.834	13.314	-0.003	0.906	-9.230	-0.559	1.121	0.075	3.742	-0.021	0.906	0.000	0.000	0.000	0.000
END	HCDF	3	37.834	13.314	-0.003	0.906	-9.230	-0.559	1.121	0.075	3.742	-0.021	0.906	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834	13.314	-0.003	0.906	-9.230	-0.559	1.121	0.075	3.742	-0.021	0.906	0.000	0.000	0.000	0.000
63	QF	10	38.086	12.850	1.807	0.909	-9.207	0.741	1.120	-0.083	3.905	-0.631	0.917	0.000	0.000	0.000	0.000
64	S3	8	38.386	11.788	1.706	0.913	-8.983	0.741	1.095	-0.083	4.320	-0.739	0.928	0.000	0.000	0.000	0.000
65	BEND	8	40.786	5.304	0.953	0.962	-8.759	-0.556	1.091	0.080	9.947	-1.583	0.988	0.000	0.000	0.000	0.000
66	S5H	7	41.336	4.358	0.754	0.980	-9.067	-0.556	1.136	0.080	11.811	-1.779	0.997	0.000	0.000	0.000	0.000
67	CT	9	41.436	4.210	0.717	0.984	-9.123	-0.556	1.144	0.080	12.173	-1.814	0.998	0.000	0.000	0.000	0.000
68	SXD	3	41.536	4.066	0.711	0.988	-9.178	-0.522	1.152	0.072	12.551	-1.943	0.999	0.000	0.000	0.000	0.000
69	S2H	6	41.786	3.731	0.618	0.998	-9.309	-0.522	1.170	0.072	13.555	-2.039	1.002	0.000	0.000	0.000	0.000
70	QD	10	42.037	3.572	0.014	1.009	-9.615	-1.889	1.210	0.244	14.097	-0.068	1.005	0.000	0.000	0.000	0.000
END	HCFD	3	42.037	3.572	0.014	1.009	-9.615	-1.889	1.210	0.244	14.097	-0.068	1.005	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037	3.572	0.014	1.009	-9.615	-1.889	1.210	0.244	14.097	-0.068	1.005	0.000	0.000	0.000	0.000
71	QD	11	42.289	3.717	-0.589	1.020	-10.275	-3.326	1.295	0.425	13.623	1.912	1.008	0.000	0.000	0.000	0.000
72	S32H	3	45.539	11.461	-1.775	1.104	-21.171	-3.326	2.697	0.425	4.762	0.792	1.075	0.000	0.000	0.000	0.000
73	CT	10	45.639	11.822	-1.812	1.106	-21.506	-3.326	2.740	0.425	4.606	0.758	1.078	0.000	0.000	0.000	0.000
74	S3H	4	45.989	13.146	-1.939	1.110	-22.680	-3.326	2.891	0.425	4.114	0.637	1.091	0.000	0.000	0.000	0.000
75	QF	11	46.241	13.666	-0.088	1.113	-23.116	-0.097	2.947	0.013	3.954	0.002	1.101	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241	13.666	-0.088	1.113	-23.116	-0.097	2.947	0.013	3.954	0.002	1.101	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241	13.666	-0.088	1.113	-23.116	-0.097	2.947	0.013	3.954	0.002	1.101	0.000	0.000	0.000	0.000
76	QF	12	46.493	13.233	1.776	1.116	-22.729	3.135	2.898	-0.399	4.112	-0.633	1.111	0.000	0.000	0.000	0.000
77	S3	9	46.793	12.187	1.681	1.120	-21.781	3.135	2.776	-0.399	4.526	-0.736	1.122	0.000	0.000	0.000	0.000
78	BEND	9	49.193	5.771	0.964	1.166	-15.656	1.927	1.995	-0.243	9.971	-1.513	1.181	0.000	0.000	0.000	0.000
79	S5H	8	49.743	4.805	0.778	1.183	-14.588	1.927	1.860	-0.243	11.750	-1.696	1.189	0.000	0.000	0.000	0.000
80	CT	11	49.843	4.651	0.745	1.186	-14.394	1.927	1.835	-0.243	12.095	-1.729	1.190	0.000	0.000	0.000	0.000
81	SXD	4	49.943	4.499	0.763	1.190	-14.195	2.010	1.809	-0.264	12.461	-1.907	1.192	0.000	0.000	0.000	0.000
82	S2H	7	50.193	4.137	0.675	1.199	-13.689	2.010	1.742	-0.264	13.446	-2.000	1.195	0.000	0.000	0.000	0.000
83	QD	12	50.445	3.963	0.019	1.209	-13.428	0.051	1.707	-0.015	13.972	-0.046	1.198	0.000	0.000	0.000	0.000
END	HCFD	4	50.445	3.963	0.019	1.209	-13.428	0.051	1.707	-0.015	13.972	-0.046	1.198	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445	3.963	0.019	1.209	-13.428	0.051	1.707	-0.015	13.972	-0.046	1.198	0.000	0.000	0.000	0.000
84	QD	13	50.697	4.117	-0.634	1.219	-13.663	-1.907	1.735	0.234	13.492	1.915	1.201	0.000	0.000	0.000	0.000
85	S3	10	50.997	4.532	-0.737	1.230	-14.239	-1.907	1.806	0.234	12.365	1.811	1.204	0.000	0.000	0.000	0.000
86	BEND	10	53.397	9.920	-1.483	1.289	-20.329	-3.126	2.567	0.391	5.567	0.998	1.251	0.000	0.000	0.000	0.000
87	S5H	9	53.947	11.664	-1.662	1.297	-22.062	-3.126	2.786	0.391	4.571	0.799	1.269	0.000	0.000	0.000	0.000
88	CT	12	54.047	12.002	-1.695	1.298	-22.377	-3.126	2.825	0.391	4.413	0.763	1.272	0.000	0.000	0.000	0.000
89	S3H	5	54.397	13.238	-1.809	1.303	-23.480	-3.126	2.965	0.391	3.920	0.636	1.286	0.000	0.000	0.000	0.000
90	QF	13	54.649	13.688	0.056	1.306	-23.852	0.211	3.011	-0.030	3.754	0.025	1.297	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649	13.688	0.056	1.306	-23.852	0.211	3.011	-0.030	3.754	0.025	1.297	0.000	0.000	0.000	0.000

TABLE IV b

AGS BOOSTER LATTICE FOR SURVEY
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = -Ø.ØØ8ØØØ SYMM = F

"MAD" VERSION: 6.Ø1/Ø3 RUN: 19-NOV-8 Ø8:Ø7:18

POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	I	BETAX [M]	ALFAX [1]	HORIZONTAL MUX [2PI]	X(CO) [MM]	PX(CO) [.ØØ1]	DX [M]	DPX [1]	I	BETAY [M]	ALFAY [1]	VERTICAL MUY [2PI]	Y(CO) [MM]	PY(CO) [.ØØ1]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649		13.688	Ø.Ø56	1.3Ø6	-23.852	Ø.211	3.Ø11	-Ø.Ø3Ø		3.754	Ø.Ø25	1.297	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
91	QF	14	54.9Ø1		13.182	1.913	1.3Ø9	-23.374	3.541	2.949	-Ø.45Ø		3.894	-Ø.583	1.3Ø7	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
92	S32H	4	58.151		4.44Ø	Ø.755	1.379	-11.774	3.541	1.462	-Ø.45Ø		11.412	-1.712	1.389	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
93	CT	13	58.251		4.291	Ø.72Ø	1.383	-11.417	3.541	1.417	-Ø.45Ø		11.761	-1.746	1.39Ø	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
94	S3H	6	58.6Ø1		3.828	Ø.595	1.397	-1Ø.168	3.541	1.256	-Ø.45Ø		13.Ø36	-1.868	1.395	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
95	QD	14	58.852		3.684	-Ø.Ø21	1.4Ø8	-9.451	2.124	1.164	-Ø.275		13.51Ø	Ø.Ø26	1.398	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
END	HCFDO	2	58.852		3.684	-Ø.Ø21	1.4Ø8	-9.451	2.124	1.164	-Ø.275		13.51Ø	Ø.Ø26	1.398	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
BEGIN	HCDF	4	58.852		3.684	-Ø.Ø21	1.4Ø8	-9.451	2.124	1.164	-Ø.275		13.51Ø	Ø.Ø26	1.398	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
96	QD	15	59.1Ø4		3.85Ø	-Ø.64Ø	1.418	-9.Ø83	Ø.785	1.115	-Ø.111		13.Ø1Ø	1.916	1.4Ø1	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
97	S3	11	59.4Ø4		4.27Ø	-Ø.751	1.43Ø	-8.845	Ø.785	1.Ø81	-Ø.111		11.885	1.8Ø7	1.4Ø5	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
98	BEND	11	61.8Ø4		9.857	-1.54Ø	1.491	-8.518	-Ø.514	1.Ø11	Ø.Ø53		5.2Ø5	Ø.95Ø	1.455	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
99	S5H	1Ø	62.354		11.669	-1.729	1.499	-8.8Ø3	-Ø.514	1.Ø4Ø	Ø.Ø53		4.265	Ø.747	1.473	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
1ØØ	CT	14	62.454		12.Ø22	-1.764	1.5ØØ	-8.854	-Ø.514	1.Ø46	Ø.Ø53		4.118	Ø.71Ø	1.477	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
1Ø1	SXF	4	62.554		12.382	-1.813	1.5Ø2	-8.9Ø7	-Ø.52Ø	1.Ø51	Ø.Ø54		3.978	Ø.678	1.481	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
1Ø2	S2H	8	62.8Ø4		13.318	-1.9Ø1	1.5Ø5	-9.Ø37	-Ø.52Ø	1.Ø65	Ø.Ø54		3.659	Ø.586	1.492	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
1Ø3	QF	15	63.Ø56		13.813	-Ø.Ø24	1.5Ø8	-9.ØØ8	Ø.753	1.Ø6Ø	-Ø.Ø95		3.511	Ø.ØØ6	1.5Ø3	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
END	HCDF	4	63.Ø56		13.813	-Ø.Ø24	1.5Ø8	-9.ØØ8	Ø.753	1.Ø6Ø	-Ø.Ø95		3.511	Ø.ØØ6	1.5Ø3	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
BEGIN	HCFDL	2	63.Ø56		13.813	-Ø.Ø24	1.5Ø8	-9.ØØ8	Ø.753	1.Ø6Ø	-Ø.Ø95		3.511	Ø.ØØ6	1.5Ø3	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
1Ø4	QF	16	63.3Ø8		13.342	1.856	1.511	-8.657	1.998	1.Ø16	-Ø.242		3.654	-Ø.574	1.514	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
1Ø5	S3	12	63.6Ø8		12.25Ø	1.755	1.515	-8.Ø53	1.998	Ø.943	-Ø.242		4.Ø34	-Ø.684	1.527	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
1Ø6	BEND	12	66.ØØ8		5.524	1.ØØ4	1.562	-4.814	Ø.675	Ø.556	-Ø.Ø75		9.436	-1.549	1.591	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
1Ø7	S5H	11	66.558		4.522	Ø.8Ø3	1.58Ø	-4.44Ø	Ø.675	Ø.514	-Ø.Ø75		11.265	-1.749	1.599	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
1Ø8	CT	15	66.658		4.364	Ø.766	1.583	-4.372	Ø.675	Ø.5Ø6	-Ø.Ø75		11.621	-1.786	1.6Ø1	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
1Ø9	S3H	7	67.ØØ8		3.869	Ø.638	1.597	-4.133	Ø.675	Ø.479	-Ø.Ø75		12.926	-1.913	1.6Ø5	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
11Ø	QD	16	67.26Ø		3.7Ø5	Ø.Ø16	1.6Ø8	-4.Ø37	Ø.Ø85	Ø.469	-Ø.ØØ7		13.427	-Ø.Ø35	1.6Ø9	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
END	HCFDL	2	67.26Ø		3.7Ø5	Ø.Ø16	1.6Ø8	-4.Ø37	Ø.Ø85	Ø.469	-Ø.ØØ7		13.427	-Ø.Ø35	1.6Ø9	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
END	B4S	1	67.26Ø		3.7Ø5	Ø.Ø16	1.6Ø8	-4.Ø37	Ø.Ø85	Ø.469	-Ø.ØØ7		13.427	-Ø.Ø35	1.6Ø9	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ
END	RING	1	2Ø1.78Ø		3.7Ø1	Ø.Ø16	4.825	-4.Ø37	Ø.Ø85	Ø.469	-Ø.ØØ7		13.444	-Ø.Ø35	4.823	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ	Ø.ØØØ

TOTAL LENGTH =	2Ø1.78ØØØØ	QX =	4.824956	QY =	4.822669
		QX' =	-Ø.414831	QY' =	Ø.746741
ALFA =	Ø.4Ø57Ø5E-Ø1	BETAX(MAX) =	13.815980	BETAY(MAX) =	14.114497
GAMMA(TR) =	4.964723	DX(MAX) =	3.Ø1Ø862	DY(MAX) =	Ø.ØØØØØØ
		XCO(MAX) =	23.851559	YCO(MAX) =	Ø.ØØØØØØ
		XCO(R.M.S.) =	13.378647	YCO(R.M.S.) =	Ø.ØØØØØØ

... SEARCHING FOR CLOSED ORBIT FOR BEAM LINE "RING ", DELTA(P)/P = -Ø.ØØ6ØØØ, SYMM = F

... ITER.	X	PX	Y	PY	ERROR
... 1	-Ø.ØØ3Ø87	Ø.ØØØØ66	Ø.ØØØØØØ	Ø.ØØØØØØ	Ø.154875E-Ø2
... 2	-Ø.ØØ3Ø82	Ø.ØØØØ69	Ø.ØØØØØØ	Ø.ØØØØØØ	Ø.153442E-Ø4
... 3	-Ø.ØØ3Ø82	Ø.ØØØØ69	Ø.ØØØØØØ	Ø.ØØØØØØ	Ø.213103E-Ø9

TABLE IV C

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = -0.006000 SYMM = F

ELEMENT SEQUENCE POS. NO.	ELEMENT NAME	OCC. NO.	I DIST [M] I	HORIZONTAL BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1] I	VERTICAL BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000	3.691	0.015	0.000	-3.082	0.069	0.487	-0.009	13.471	-0.026	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630	3.690	0.015	0.804	-3.082	0.069	0.487	-0.009	13.474	-0.026	0.805	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630	3.690	0.015	0.804	-3.082	0.069	0.487	-0.009	13.474	-0.026	0.805	0.000	0.000	0.000	0.000
55	QD	9	33.882	3.838	-0.603	0.814	-3.121	-0.379	0.494	0.062	13.002	1.863	0.808	0.000	0.000	0.000	0.000
56	S3	7	34.182	4.234	-0.710	0.826	-3.235	-0.379	0.513	0.062	11.909	1.759	0.812	0.000	0.000	0.000	0.000
57	BEND	7	36.582	9.527	-1.464	0.888	-5.358	-1.376	0.867	0.229	5.405	0.935	0.860	0.000	0.000	0.000	0.000
58	S5H	6	37.132	11.248	-1.646	0.897	-6.119	-1.376	0.995	0.229	4.476	0.743	0.878	0.000	0.000	0.000	0.000
59	CT	8	37.232	11.582	-1.680	0.898	-6.258	-1.376	1.018	0.229	4.330	0.708	0.882	0.000	0.000	0.000	0.000
60	SXF	3	37.332	11.925	-1.723	0.899	-6.396	-1.379	1.041	0.230	4.191	0.677	0.885	0.000	0.000	0.000	0.000
61	S2H	5	37.582	12.812	-1.807	0.903	-6.743	-1.379	1.099	0.230	3.872	0.589	0.895	0.000	0.000	0.000	0.000
62	QF	9	37.834	13.276	-0.003	0.906	-6.971	-0.412	1.138	0.072	3.729	-0.016	0.906	0.000	0.000	0.000	0.000
END	HCDF	3	37.834	13.276	-0.003	0.906	-6.971	-0.412	1.138	0.072	3.729	-0.016	0.906	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834	13.276	-0.003	0.906	-6.971	-0.412	1.138	0.072	3.729	-0.016	0.906	0.000	0.000	0.000	0.000
63	QF	10	38.086	12.815	1.801	0.909	-6.951	0.570	1.136	-0.088	3.889	-0.624	0.917	0.000	0.000	0.000	0.000
64	S3	8	38.386	11.758	1.701	0.913	-6.779	0.570	1.109	-0.088	4.298	-0.731	0.929	0.000	0.000	0.000	0.000
65	BEND	8	40.786	5.295	0.954	0.962	-6.575	-0.401	1.093	0.075	9.876	-1.577	0.989	0.000	0.000	0.000	0.000
66	S5H	7	41.336	4.350	0.754	0.980	-6.797	-0.401	1.135	0.075	11.729	-1.772	0.997	0.000	0.000	0.000	0.000
67	CT	9	41.436	4.202	0.718	0.984	-6.837	-0.401	1.142	0.075	12.089	-1.808	0.998	0.000	0.000	0.000	0.000
68	SXD	3	41.536	4.059	0.704	0.988	-6.877	-0.382	1.150	0.068	12.463	-1.912	1.000	0.000	0.000	0.000	0.000
69	S2H	6	41.786	3.728	0.611	0.998	-6.973	-0.382	1.167	0.068	13.449	-2.006	1.003	0.000	0.000	0.000	0.000
70	QD	10	42.037	3.573	0.008	1.009	-7.198	-1.406	1.206	0.240	13.977	-0.051	1.006	0.000	0.000	0.000	0.000
END	HCFD	3	42.037	3.573	0.008	1.009	-7.198	-1.406	1.206	0.240	13.977	-0.051	1.006	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037	3.573	0.008	1.009	-7.198	-1.406	1.206	0.240	13.977	-0.051	1.006	0.000	0.000	0.000	0.000
71	QD	11	42.289	3.721	-0.595	1.020	-7.689	-2.481	1.290	0.420	13.500	1.911	1.009	0.000	0.000	0.000	0.000
72	S32H	3	45.539	11.503	-1.785	1.104	-15.802	-2.481	2.672	0.420	4.688	0.784	1.076	0.000	0.000	0.000	0.000
73	CT	10	45.639	11.865	-1.822	1.105	-16.052	-2.481	2.714	0.420	4.533	0.750	1.080	0.000	0.000	0.000	0.000
74	S3H	4	45.989	13.193	-1.950	1.110	-16.925	-2.481	2.863	0.420	4.048	0.628	1.093	0.000	0.000	0.000	0.000
75	QF	11	46.241	13.717	-0.091	1.112	-17.250	-0.072	2.919	0.013	3.890	0.001	1.103	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241	13.717	-0.091	1.112	-17.250	-0.072	2.919	0.013	3.890	0.001	1.103	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241	13.717	-0.091	1.112	-17.250	-0.072	2.919	0.013	3.890	0.001	1.103	0.000	0.000	0.000	0.000
76	QF	12	46.493	13.284	1.780	1.115	-16.962	2.341	2.870	-0.396	4.047	-0.625	1.113	0.000	0.000	0.000	0.000
77	S3	9	46.793	12.238	1.685	1.119	-16.255	2.341	2.750	-0.396	4.456	-0.729	1.124	0.000	0.000	0.000	0.000
78	BEND	9	49.193	5.782	0.976	1.165	-11.685	1.442	1.976	-0.242	9.899	-1.524	1.183	0.000	0.000	0.000	0.000
79	S5H	8	49.743	4.806	0.789	1.182	-10.887	1.442	1.842	-0.242	11.689	-1.710	1.192	0.000	0.000	0.000	0.000
80	CT	11	49.843	4.651	0.755	1.185	-10.742	1.442	1.817	-0.242	12.036	-1.744	1.193	0.000	0.000	0.000	0.000
81	SXD	4	49.943	4.498	0.760	1.189	-10.594	1.488	1.792	-0.257	12.401	-1.885	1.194	0.000	0.000	0.000	0.000
82	S2H	7	50.193	4.138	0.672	1.198	-10.220	1.488	1.727	-0.257	13.372	-1.977	1.197	0.000	0.000	0.000	0.000
83	QD	12	50.445	3.966	0.016	1.208	-10.029	0.026	1.693	-0.010	13.888	-0.033	1.200	0.000	0.000	0.000	0.000
END	HCFD	4	50.445	3.966	0.016	1.208	-10.029	0.026	1.693	-0.010	13.888	-0.033	1.200	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445	3.966	0.016	1.208	-10.029	0.026	1.693	-0.010	13.888	-0.033	1.200	0.000	0.000	0.000	0.000
84	QD	13	50.697	4.121	-0.637	1.218	-10.207	-1.436	1.721	0.236	13.405	1.915	1.203	0.000	0.000	0.000	0.000
85	S3	10	50.997	4.537	-0.740	1.229	-10.640	-1.436	1.793	0.236	12.281	1.810	1.207	0.000	0.000	0.000	0.000
86	BEND	10	53.397	9.914	-1.476	1.288	-15.208	-2.344	2.554	0.391	5.525	0.987	1.254	0.000	0.000	0.000	0.000
87	S5H	9	53.947	11.646	-1.654	1.296	-16.505	-2.344	2.772	0.391	4.542	0.790	1.272	0.000	0.000	0.000	0.000
88	CT	12	54.047	11.982	-1.686	1.297	-16.741	-2.344	2.811	0.391	4.386	0.754	1.276	0.000	0.000	0.000	0.000
89	S3H	5	54.397	13.208	-1.799	1.302	-17.566	-2.344	2.950	0.391	3.900	0.628	1.289	0.000	0.000	0.000	0.000
90	QF	13	54.649	13.654	0.062	1.305	-17.844	0.153	2.996	-0.028	3.738	0.019	1.300	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649	13.654	0.062	1.305	-17.844	0.153	2.996	-0.028	3.738	0.019	1.300	0.000	0.000	0.000	0.000

TABLE IV C

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = -0.006000 SYMM = F PAGE 2

ELEMENT SEQUENCE POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	I	HORIZONTAL BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I	VERTICAL BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649		13.654	0.062	1.305	-17.844	0.153	2.996	-0.028		3.738	0.019	1.300	0.000	0.000	0.000	0.000
91	QF	14	54.901		13.147	1.914	1.308	-17.489	2.644	2.936	-0.447		3.880	-0.588	1.310	0.000	0.000	0.000	0.000
92	S32H	4	58.151		4.423	0.754	1.378	-8.844	2.644	1.467	-0.447		11.430	-1.721	1.392	0.000	0.000	0.000	0.000
93	CT	13	58.251		4.275	0.719	1.382	-8.578	2.644	1.422	-0.447		11.780	-1.756	1.393	0.000	0.000	0.000	0.000
94	S3H	6	58.601		3.813	0.594	1.396	-7.647	2.644	1.264	-0.447		13.060	-1.878	1.398	0.000	0.000	0.000	0.000
95	QD	14	58.852		3.670	-0.020	1.407	-7.114	1.578	1.173	-0.270		13.537	0.019	1.401	0.000	0.000	0.000	0.000
END	HCFDO	2	58.852		3.670	-0.020	1.407	-7.114	1.578	1.173	-0.270		13.537	0.019	1.401	0.000	0.000	0.000	0.000
BEGIN	HCDF	4	58.852		3.670	-0.020	1.407	-7.114	1.578	1.173	-0.270		13.537	0.019	1.401	0.000	0.000	0.000	0.000
96	QD	15	59.104		3.834	-0.638	1.418	-6.843	0.569	1.125	-0.104		13.041	1.913	1.404	0.000	0.000	0.000	0.000
97	S3	11	59.404		4.252	-0.748	1.429	-6.671	0.569	1.093	-0.104		11.919	1.806	1.408	0.000	0.000	0.000	0.000
98	BEND	11	61.804		9.805	-1.532	1.490	-6.469	-0.402	1.038	0.059		5.256	0.951	1.457	0.000	0.000	0.000	0.000
99	S5H	10	62.354		11.605	-1.721	1.498	-6.692	-0.402	1.071	0.059		4.315	0.750	1.476	0.000	0.000	0.000	0.000
100	CT	14	62.454		11.955	-1.756	1.500	-6.732	-0.402	1.077	0.059		4.168	0.714	1.479	0.000	0.000	0.000	0.000
101	SXF	4	62.554		12.313	-1.801	1.501	-6.773	-0.405	1.083	0.060		4.027	0.681	1.483	0.000	0.000	0.000	0.000
102	S2H	8	62.804		13.241	-1.888	1.504	-6.875	-0.405	1.098	0.060		3.708	0.590	1.494	0.000	0.000	0.000	0.000
103	QF	15	63.056		13.731	-0.022	1.507	-6.855	0.563	1.093	-0.095		3.559	0.004	1.505	0.000	0.000	0.000	0.000
END	HCDF	4	63.056		13.731	-0.022	1.507	-6.855	0.563	1.093	-0.095		3.559	0.004	1.505	0.000	0.000	0.000	0.000
BEGIN	HCFDL	2	63.056		13.731	-0.022	1.507	-6.855	0.563	1.093	-0.095		3.559	0.004	1.505	0.000	0.000	0.000	0.000
104	QF	16	63.308		13.263	1.846	1.510	-6.591	1.511	1.050	-0.246		3.703	-0.581	1.516	0.000	0.000	0.000	0.000
105	S3	12	63.608		12.179	1.746	1.514	-6.135	1.511	0.975	-0.246		4.087	-0.690	1.528	0.000	0.000	0.000	0.000
106	BEND	12	66.008		5.496	1.000	1.561	-3.679	0.520	0.579	-0.080		9.497	-1.551	1.592	0.000	0.000	0.000	0.000
107	S5H	11	66.558		4.501	0.799	1.579	-3.391	0.520	0.534	-0.080		11.322	-1.749	1.600	0.000	0.000	0.000	0.000
108	CT	15	66.658		4.344	0.762	1.583	-3.339	0.520	0.526	-0.080		11.678	-1.785	1.602	0.000	0.000	0.000	0.000
109	S3H	7	67.008		3.852	0.634	1.596	-3.156	0.520	0.498	-0.080		12.979	-1.911	1.606	0.000	0.000	0.000	0.000
110	QD	16	67.260		3.690	0.015	1.607	-3.082	0.069	0.487	-0.009		13.476	-0.026	1.609	0.000	0.000	0.000	0.000
END	HCFDL	2	67.260		3.690	0.015	1.607	-3.082	0.069	0.487	-0.009		13.476	-0.026	1.609	0.000	0.000	0.000	0.000
END	B4S	1	67.260		3.690	0.015	1.607	-3.082	0.069	0.487	-0.009		13.476	-0.026	1.609	0.000	0.000	0.000	0.000
END	RING	1	201.780		3.688	0.015	4.823	-3.082	0.069	0.487	-0.009		13.486	-0.026	4.826	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.822782	QY =	4.825870
		QX' =	-0.305524	QY' =	0.560531
ALFA =	0.409349E-01	BETAX(MAX) =	13.732558	BETAY(MAX) =	13.986908
GAMMA(TR) =	4.942572	DX(MAX) =	2.996328	DY(MAX) =	0.000000
		XCO(MAX) =	17.844336	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	10.022115	YCO(R.M.S.) =	0.000000

... SEARCHING FOR CLOSED ORBIT FOR BEAM LINE "RING ", DELTA(P)/P = -0.004000, SYMM = F

... ITER.	X	PX	Y	PY	ERROR
... 1	-0.002092	0.000049	0.000000	0.000000	0.104601E-02
... 2	-0.002090	0.000050	0.000000	0.000000	0.669404E-05
... 3	-0.002090	0.000050	0.000000	0.000000	0.454029E-10

TABLE IV d

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = -0.004000 SYMM = F

POS. NO.	ELEMENT NAME	SEQUENCE OCC. NO.	DIST [M]	HORIZONTAL BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	VERTICAL BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000	3.675	0.013	0.000	-2.090	0.050	0.505	-0.011	13.527	-0.017	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630	3.675	0.013	0.803	-2.090	0.050	0.505	-0.011	13.528	-0.017	0.805	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630	3.675	0.013	0.803	-2.090	0.050	0.505	-0.011	13.528	-0.017	0.805	0.000	0.000	0.000	0.000
55	QD	9	33.882	3.822	-0.603	0.814	-2.116	-0.254	0.511	0.063	13.051	1.879	0.808	0.000	0.000	0.000	0.000
56	S3	7	34.182	4.218	-0.710	0.826	-2.192	-0.254	0.530	0.063	11.950	1.775	0.812	0.000	0.000	0.000	0.000
57	BEND	7	36.582	9.501	-1.463	0.888	-3.606	-0.918	0.884	0.229	5.405	0.942	0.860	0.000	0.000	0.000	0.000
58	S5H	6	37.132	11.217	-1.645	0.897	-4.113	-0.918	1.012	0.229	4.471	0.749	0.878	0.000	0.000	0.000	0.000
59	CT	8	37.232	11.551	-1.679	0.898	-4.205	-0.918	1.035	0.229	4.324	0.714	0.882	0.000	0.000	0.000	0.000
60	SXF	3	37.332	11.892	-1.719	0.899	-4.297	-0.919	1.058	0.230	4.184	0.681	0.885	0.000	0.000	0.000	0.000
61	S2H	5	37.582	12.776	-1.802	0.903	-4.528	-0.919	1.116	0.230	3.864	0.594	0.895	0.000	0.000	0.000	0.000
62	QF	9	37.834	13.238	-0.004	0.906	-4.679	-0.270	1.154	0.070	3.718	-0.011	0.906	0.000	0.000	0.000	0.000
END	HCDF	3	37.834	13.238	-0.004	0.906	-4.679	-0.270	1.154	0.070	3.718	-0.011	0.906	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834	13.238	-0.004	0.906	-4.679	-0.270	1.154	0.070	3.718	-0.011	0.906	0.000	0.000	0.000	0.000
63	QF	10	38.086	12.780	1.795	0.909	-4.664	0.389	1.151	-0.093	3.875	-0.616	0.917	0.000	0.000	0.000	0.000
64	S3	8	38.386	11.728	1.696	0.913	-4.546	0.389	1.123	-0.093	4.278	-0.724	0.929	0.000	0.000	0.000	0.000
65	BEND	8	40.786	5.286	0.954	0.962	-4.387	-0.257	1.095	0.069	9.809	-1.570	0.989	0.000	0.000	0.000	0.000
66	S5H	7	41.336	4.342	0.754	0.980	-4.529	-0.257	1.134	0.069	11.651	-1.766	0.997	0.000	0.000	0.000	0.000
67	CT	9	41.436	4.195	0.718	0.984	-4.554	-0.257	1.141	0.069	12.009	-1.801	0.999	0.000	0.000	0.000	0.000
68	SXD	3	41.536	4.052	0.697	0.988	-4.580	-0.248	1.147	0.065	12.379	-1.882	1.000	0.000	0.000	0.000	0.000
69	S2H	6	41.786	3.726	0.605	0.998	-4.642	-0.248	1.164	0.065	13.347	-1.974	1.003	0.000	0.000	0.000	0.000
70	QD	10	42.037	3.574	0.001	1.009	-4.790	-0.930	1.202	0.236	13.862	-0.034	1.006	0.000	0.000	0.000	0.000
END	HCFD	3	42.037	3.574	0.001	1.009	-4.790	-0.930	1.202	0.236	13.862	-0.034	1.006	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037	3.574	0.001	1.009	-4.790	-0.930	1.202	0.236	13.862	-0.034	1.006	0.000	0.000	0.000	0.000
71	QD	11	42.289	3.724	-0.602	1.020	-5.115	-1.645	1.284	0.416	13.381	1.910	1.009	0.000	0.000	0.000	0.000
72	S32H	3	45.539	11.544	-1.795	1.103	-10.484	-1.645	2.647	0.416	4.613	0.777	1.077	0.000	0.000	0.000	0.000
73	CT	10	45.639	11.908	-1.832	1.105	-10.649	-1.645	2.688	0.416	4.461	0.742	1.081	0.000	0.000	0.000	0.000
74	S3H	4	45.989	13.241	-1.960	1.109	-11.227	-1.645	2.835	0.416	3.983	0.620	1.094	0.000	0.000	0.000	0.000
75	QF	11	46.241	13.767	-0.095	1.112	-11.442	-0.047	2.890	0.012	3.828	0.001	1.104	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241	13.767	-0.095	1.112	-11.442	-0.047	2.890	0.012	3.828	0.001	1.104	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241	13.767	-0.095	1.112	-11.442	-0.047	2.890	0.012	3.828	0.001	1.104	0.000	0.000	0.000	0.000
76	QF	12	46.493	13.334	1.784	1.115	-11.251	1.553	2.841	-0.392	3.982	-0.618	1.115	0.000	0.000	0.000	0.000
77	S3	9	46.793	12.288	1.689	1.119	-10.783	1.553	2.723	-0.392	4.386	-0.722	1.126	0.000	0.000	0.000	0.000
78	BEND	9	49.193	5.795	0.988	1.165	-7.751	0.960	1.957	-0.241	9.828	-1.535	1.186	0.000	0.000	0.000	0.000
79	S5H	8	49.743	4.808	0.800	1.181	-7.222	0.960	1.823	-0.241	11.628	-1.724	1.194	0.000	0.000	0.000	0.000
80	CT	11	49.843	4.650	0.765	1.185	-7.125	0.960	1.799	-0.241	11.978	-1.758	1.196	0.000	0.000	0.000	0.000
81	SXD	4	49.943	4.498	0.757	1.188	-7.028	0.980	1.774	-0.251	12.341	-1.864	1.197	0.000	0.000	0.000	0.000
82	S2H	7	50.193	4.140	0.669	1.197	-6.782	0.980	1.711	-0.251	13.299	-1.954	1.200	0.000	0.000	0.000	0.000
83	QD	12	50.445	3.969	0.014	1.207	-6.657	0.009	1.679	-0.006	13.805	-0.022	1.203	0.000	0.000	0.000	0.000
END	HCFD	4	50.445	3.969	0.014	1.207	-6.657	0.009	1.679	-0.006	13.805	-0.022	1.203	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445	3.969	0.014	1.207	-6.657	0.009	1.679	-0.006	13.805	-0.022	1.203	0.000	0.000	0.000	0.000
84	QD	13	50.697	4.126	-0.640	1.217	-6.777	-0.962	1.708	0.238	13.321	1.914	1.206	0.000	0.000	0.000	0.000
85	S3	10	50.997	4.542	-0.743	1.229	-7.067	-0.962	1.780	0.238	12.199	1.809	1.210	0.000	0.000	0.000	0.000
86	BEND	10	53.397	9.908	-1.469	1.287	-10.112	-1.562	2.541	0.391	5.485	0.977	1.257	0.000	0.000	0.000	0.000
87	S5H	9	53.947	11.627	-1.645	1.295	-10.975	-1.562	2.758	0.391	4.515	0.780	1.275	0.000	0.000	0.000	0.000
88	CT	12	54.047	11.960	-1.677	1.296	-11.132	-1.562	2.797	0.391	4.361	0.744	1.278	0.000	0.000	0.000	0.000
89	S3H	5	54.397	13.178	-1.789	1.301	-11.681	-1.562	2.935	0.391	3.882	0.619	1.292	0.000	0.000	0.000	0.000
90	QF	13	54.649	13.619	-0.068	1.304	-11.866	0.098	2.982	-0.026	3.724	0.013	1.303	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649	13.619	-0.068	1.304	-11.866	0.098	2.982	-0.026	3.724	0.013	1.303	0.000	0.000	0.000	0.000

TABLE IV d

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = -0.004000 SYMM = F PAGE 2

ELEMENT SEQUENCE				HORIZONTAL						VERTICAL				
POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	BETAY [M]	ALFAY [1]	MUV [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649	13.619	0.068	1.304	-11.866	0.098	2.982	-0.026	3.724	0.013	1.303	0.000	0.000	0.000	0.000
91	QF	14	54.901	13.111	1.914	1.307	-11.631	1.755	2.922	-0.443	3.869	-0.592	1.313	0.000	0.000	0.000	0.000
92	S32H	4	58.151	4.406	0.753	1.377	-5.905	1.755	1.472	-0.443	11.452	-1.732	1.395	0.000	0.000	0.000	0.000
93	CT	13	58.251	4.259	0.718	1.381	-5.729	1.755	1.427	-0.443	11.803	-1.767	1.396	0.000	0.000	0.000	0.000
94	S3H	6	58.601	3.798	0.593	1.395	-5.112	1.755	1.271	-0.443	13.088	-1.889	1.401	0.000	0.000	0.000	0.000
95	QD	14	58.852	3.655	-0.019	1.406	-4.760	1.042	1.181	-0.265	13.568	0.012	1.404	0.000	0.000	0.000	0.000
END	HCFDO	2	58.852	3.655	-0.019	1.406	-4.760	1.042	1.181	-0.265	13.568	0.012	1.404	0.000	0.000	0.000	0.000
BEGIN	HCDF	4	58.852	3.655	-0.019	1.406	-4.760	1.042	1.181	-0.265	13.568	0.012	1.404	0.000	0.000	0.000	0.000
96	QD	15	59.104	3.818	-0.635	1.417	-4.582	0.367	1.135	-0.098	13.076	1.912	1.407	0.000	0.000	0.000	0.000
97	S3	11	59.404	4.234	-0.745	1.429	-4.472	0.367	1.106	-0.098	11.956	1.805	1.411	0.000	0.000	0.000	0.000
98	BEND	11	61.804	9.753	-1.525	1.489	-4.366	-0.279	1.065	0.064	5.308	0.952	1.459	0.000	0.000	0.000	0.000
99	S5H	10	62.354	11.540	-1.713	1.498	-4.520	-0.279	1.101	0.064	4.366	0.754	1.478	0.000	0.000	0.000	0.000
100	CT	14	62.454	11.888	-1.747	1.499	-4.549	-0.279	1.107	0.064	4.218	0.718	1.481	0.000	0.000	0.000	0.000
101	SXF	4	62.554	12.243	-1.789	1.500	-4.577	-0.281	1.114	0.065	4.077	0.684	1.485	0.000	0.000	0.000	0.000
102	S2H	8	62.804	13.162	-1.875	1.504	-4.647	-0.281	1.130	0.065	3.756	0.594	1.496	0.000	0.000	0.000	0.000
103	QF	15	63.056	13.647	-0.021	1.507	-4.635	0.374	1.126	-0.094	3.607	0.003	1.507	0.000	0.000	0.000	0.000
END	HCDF	4	63.056	13.647	-0.021	1.507	-4.635	0.374	1.126	-0.094	3.607	0.003	1.507	0.000	0.000	0.000	0.000
BEGIN	HCFDL	2	63.056	13.647	-0.021	1.507	-4.635	0.374	1.126	-0.094	3.607	0.003	1.507	0.000	0.000	0.000	0.000
104	QF	16	63.308	13.183	1.836	1.510	-4.459	1.015	1.082	-0.250	3.753	-0.588	1.518	0.000	0.000	0.000	0.000
105	S3	12	63.608	12.107	1.736	1.513	-4.154	1.015	1.007	-0.250	4.140	-0.696	1.530	0.000	0.000	0.000	0.000
106	BEND	12	66.008	5.467	0.995	1.561	-2.498	0.356	0.602	-0.084	9.558	-1.552	1.592	0.000	0.000	0.000	0.000
107	S5H	11	66.558	4.478	0.794	1.579	-2.302	0.356	0.555	-0.084	11.382	-1.749	1.601	0.000	0.000	0.000	0.000
108	CT	15	66.658	4.323	0.758	1.582	-2.266	0.356	0.547	-0.084	11.737	-1.785	1.602	0.000	0.000	0.000	0.000
109	S3H	7	67.008	3.835	0.630	1.596	-2.141	0.356	0.517	-0.084	13.035	-1.911	1.607	0.000	0.000	0.000	0.000
110	QD	16	67.260	3.675	0.013	1.607	-2.090	0.050	0.505	-0.011	13.529	-0.017	1.610	0.000	0.000	0.000	0.000
END	HCFDL	2	67.260	3.675	0.013	1.607	-2.090	0.050	0.505	-0.011	13.529	-0.017	1.610	0.000	0.000	0.000	0.000
END	B4S	1	67.260	3.675	0.013	1.607	-2.090	0.050	0.505	-0.011	13.529	-0.017	1.610	0.000	0.000	0.000	0.000
END	RING	1	201.780	3.674	0.013	4.821	-2.090	0.050	0.505	-0.011	13.533	-0.017	4.828	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.821234	QY =	4.828163
		QX' =	-0.199795	QY' =	0.373762
ALFA =	0.412897E-01	BETAX(MAX) =	13.767548	BETAY(MAX) =	13.865950
GAMMA(TR) =	4.921294	DX(MAX) =	2.981590	DY(MAX) =	0.000000
		XCO(MAX) =	11.866382	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	6.673468	YCO(R.M.S.) =	0.000000

... SEARCHING FOR CLOSED ORBIT FOR BEAM LINE "RING ", DELTA(P)/P = -0.002000, SYMM = F

... ITER.	X	PX	Y	PY	ERROR
... 1	-0.001063	0.000027	0.000000	0.000000	0.528537E-03
... 2	-0.001063	0.000027	0.000000	0.000000	0.163783E-05
... 3	-0.001063	0.000027	0.000000	0.000000	0.304682E-11

TABLE IV

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = -0.002000 SYMM = F PAGE 1

ELEMENT SEQUENCE			I	HORIZONTAL						I	VERTICAL					
POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	I I	BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I I	BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000		3.659	0.011	0.000	-1.063	0.027	0.523	-0.013		13.584	-0.008	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630		3.659	0.011	0.803	-1.063	0.027	0.523	-0.013		13.585	-0.008	0.805	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630		3.659	0.011	0.803	-1.063	0.027	0.523	-0.013		13.585	-0.008	0.805	0.000	0.000	0.000	0.000
55	QD	9	33.882		3.806	-0.602	0.814	-1.075	-0.127	0.529	0.063		13.102	1.895	0.808	0.000	0.000	0.000	0.000
56	S3	7	34.182		4.201	-0.710	0.826	-1.113	-0.127	0.548	0.063		11.995	1.790	0.812	0.000	0.000	0.000	0.000
57	BEND	7	36.582		9.474	-1.462	0.888	-1.820	-0.459	0.902	0.229		5.407	0.949	0.860	0.000	0.000	0.000	0.000
58	S5H	6	37.132		11.186	-1.644	0.897	-2.073	-0.459	1.028	0.229		4.468	0.755	0.878	0.000	0.000	0.000	0.000
59	CT	8	37.232		11.519	-1.678	0.898	-2.119	-0.459	1.051	0.229		4.320	0.720	0.882	0.000	0.000	0.000	0.000
60	SXF	3	37.332		11.859	-1.714	0.899	-2.165	-0.459	1.074	0.230		4.179	0.686	0.885	0.000	0.000	0.000	0.000
61	S2H	5	37.582		12.739	-1.797	0.903	-2.280	-0.459	1.132	0.230		3.858	0.598	0.895	0.000	0.000	0.000	0.000
62	QF	9	37.834		13.199	-0.004	0.906	-2.355	-0.132	1.170	0.067		3.710	-0.005	0.906	0.000	0.000	0.000	0.000
END	HCDF	3	37.834		13.199	-0.004	0.906	-2.355	-0.132	1.170	0.067		3.710	-0.005	0.906	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834		13.199	-0.004	0.906	-2.355	-0.132	1.170	0.067		3.710	-0.005	0.906	0.000	0.000	0.000	0.000
63	QF	10	38.086		12.743	1.790	0.909	-2.346	0.199	1.166	-0.097		3.863	-0.609	0.917	0.000	0.000	0.000	0.000
64	S3	8	38.386		11.697	1.690	0.913	-2.287	0.199	1.137	-0.097		4.261	-0.716	0.928	0.000	0.000	0.000	0.000
65	BEND	8	40.786		5.276	0.954	0.962	-2.195	-0.123	1.097	0.064		9.746	-1.564	0.989	0.000	0.000	0.000	0.000
66	S5H	7	41.336		4.334	0.755	0.980	-2.263	-0.123	1.132	0.064		11.578	-1.759	0.997	0.000	0.000	0.000	0.000
67	CT	9	41.436		4.187	0.718	0.984	-2.275	-0.123	1.139	0.064		11.934	-1.794	0.999	0.000	0.000	0.000	0.000
68	SXD	3	41.536		4.045	0.690	0.988	-2.287	-0.121	1.145	0.062		12.299	-1.853	1.000	0.000	0.000	0.000	0.000
69	S2H	6	41.786		3.723	0.598	0.998	-2.318	-0.121	1.161	0.062		13.250	-1.943	1.003	0.000	0.000	0.000	0.000
70	QD	10	42.037		3.575	-0.005	1.009	-2.391	-0.461	1.198	0.232		13.751	-0.017	1.006	0.000	0.000	0.000	0.000
END	HCFD	3	42.037		3.575	-0.005	1.009	-2.391	-0.461	1.198	0.232		13.751	-0.017	1.006	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037		3.575	-0.005	1.009	-2.391	-0.461	1.198	0.232		13.751	-0.017	1.006	0.000	0.000	0.000	0.000
71	QD	11	42.289		3.728	-0.608	1.020	-2.552	-0.818	1.279	0.411		13.267	1.911	1.009	0.000	0.000	0.000	0.000
72	S32H	3	45.539		11.586	-1.805	1.103	-5.216	-0.818	2.621	0.411		4.540	0.769	1.078	0.000	0.000	0.000	0.000
73	CT	10	45.639		11.951	-1.842	1.104	-5.298	-0.818	2.662	0.411		4.389	0.734	1.082	0.000	0.000	0.000	0.000
74	S3H	4	45.989		13.288	-1.971	1.109	-5.585	-0.818	2.807	0.411		3.918	0.611	1.095	0.000	0.000	0.000	0.000
75	QF	11	46.241		13.816	-0.099	1.112	-5.692	-0.023	2.860	0.012		3.765	0.000	1.106	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241		13.816	-0.099	1.112	-5.692	-0.023	2.860	0.012		3.765	0.000	1.106	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241		13.816	-0.099	1.112	-5.692	-0.023	2.860	0.012		3.765	0.000	1.106	0.000	0.000	0.000	0.000
76	QF	12	46.493		13.385	1.787	1.115	-5.597	0.773	2.813	-0.388		3.917	-0.610	1.116	0.000	0.000	0.000	0.000
77	S3	9	46.793		12.339	1.693	1.118	-5.364	0.773	2.696	-0.388		4.316	-0.716	1.128	0.000	0.000	0.000	0.000
78	BEND	9	49.193		5.807	1.000	1.164	-3.857	0.479	1.938	-0.240		9.757	-1.547	1.188	0.000	0.000	0.000	0.000
79	S5H	8	49.743		4.810	0.810	1.181	-3.593	0.479	1.805	-0.240		11.568	-1.738	1.196	0.000	0.000	0.000	0.000
80	CT	11	49.843		4.651	0.776	1.184	-3.545	0.479	1.781	-0.240		11.919	-1.773	1.198	0.000	0.000	0.000	0.000
81	SXD	4	49.943		4.497	0.754	1.187	-3.497	0.484	1.757	-0.245		12.282	-1.843	1.199	0.000	0.000	0.000	0.000
82	S2H	7	50.193		4.141	0.667	1.197	-3.375	0.484	1.696	-0.245		13.227	-1.933	1.202	0.000	0.000	0.000	0.000
83	QD	12	50.445		3.972	0.011	1.207	-3.314	0.000	1.664	-0.002		13.724	-0.010	1.205	0.000	0.000	0.000	0.000
END	HCFD	4	50.445		3.972	0.011	1.207	-3.314	0.000	1.664	-0.002		13.724	-0.010	1.205	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445		3.972	0.011	1.207	-3.314	0.000	1.664	-0.002		13.724	-0.010	1.205	0.000	0.000	0.000	0.000
84	QD	13	50.697		4.130	-0.643	1.217	-3.375	-0.483	1.694	0.240		13.238	1.913	1.208	0.000	0.000	0.000	0.000
85	S3	10	50.997		4.548	-0.746	1.228	-3.520	-0.483	1.767	0.240		12.119	1.807	1.212	0.000	0.000	0.000	0.000
86	BEND	10	53.397		9.901	-1.461	1.286	-5.043	-0.781	2.528	0.391		5.447	0.967	1.260	0.000	0.000	0.000	0.000
87	S5H	9	53.947		11.608	-1.636	1.294	-5.473	-0.781	2.744	0.391		4.490	0.771	1.278	0.000	0.000	0.000	0.000
88	CT	12	54.047		11.939	-1.667	1.295	-5.551	-0.781	2.783	0.391		4.339	0.735	1.281	0.000	0.000	0.000	0.000
89	S3H	5	54.397		13.147	-1.778	1.300	-5.825	-0.781	2.920	0.391		3.867	0.611	1.295	0.000	0.000	0.000	0.000
90	QF	13	54.649		13.583	0.073	1.303	-5.918	0.047	2.967	-0.025		3.713	0.006	1.305	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649		13.583	0.073	1.303	-5.918	0.047	2.967	-0.025		3.713	0.006	1.305	0.000	0.000	0.000	0.000

TABLE IV e

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = -0.002000 SYMM = F PAGE 2

ELEMENT SEQUENCE POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	HORIZONTAL BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	VERTICAL BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649	13.583	0.073	1.303	-5.918	0.047	2.967	-0.025	3.713	0.006	1.305	0.000	0.000	0.000	0.000
91	QF	14	54.901	13.075	1.915	1.306	-5.802	0.874	2.908	-0.439	3.860	-0.597	1.316	0.000	0.000	0.000	0.000
92	S32H	4	58.151	4.389	0.753	1.376	-2.957	0.874	1.476	-0.439	11.478	-1.742	1.398	0.000	0.000	0.000	0.000
93	CT	13	58.251	4.242	0.717	1.380	-2.869	0.874	1.432	-0.439	11.830	-1.777	1.399	0.000	0.000	0.000	0.000
94	S3H	6	58.601	3.783	0.592	1.394	-2.563	0.874	1.278	-0.439	13.120	-1.900	1.403	0.000	0.000	0.000	0.000
95	QD	14	58.852	3.640	-0.019	1.405	-2.388	0.516	1.190	-0.260	13.604	0.006	1.406	0.000	0.000	0.000	0.000
END	HCFDO	2	58.852	3.640	-0.019	1.405	-2.388	0.516	1.190	-0.260	13.604	0.006	1.406	0.000	0.000	0.000	0.000
BEGIN	HCDF	4	58.852	3.640	-0.019	1.405	-2.388	0.516	1.190	-0.260	13.604	0.006	1.406	0.000	0.000	0.000	0.000
96	QD	15	59.104	3.802	-0.631	1.416	-2.301	0.177	1.146	-0.092	13.114	1.911	1.409	0.000	0.000	0.000	0.000
97	S3	11	59.404	4.215	-0.742	1.428	-2.248	0.177	1.118	-0.092	11.997	1.805	1.413	0.000	0.000	0.000	0.000
98	BEND	11	61.804	9.699	-1.517	1.489	-2.210	-0.145	1.092	0.070	5.360	0.954	1.462	0.000	0.000	0.000	0.000
99	S5H	10	62.354	11.474	-1.704	1.497	-2.290	-0.145	1.130	0.070	4.416	0.758	1.480	0.000	0.000	0.000	0.000
100	CT	14	62.454	11.819	-1.738	1.499	-2.304	-0.145	1.137	0.070	4.268	0.722	1.483	0.000	0.000	0.000	0.000
101	SXF	4	62.554	12.171	-1.776	1.500	-2.319	-0.146	1.144	0.070	4.127	0.688	1.487	0.000	0.000	0.000	0.000
102	S2H	8	62.804	13.082	-1.862	1.503	-2.355	-0.146	1.162	0.070	3.805	0.598	1.497	0.000	0.000	0.000	0.000
103	QF	15	63.056	13.563	-0.019	1.506	-2.350	0.186	1.159	-0.093	3.655	0.001	1.508	0.000	0.000	0.000	0.000
END	HCDF	4	63.056	13.563	-0.019	1.506	-2.350	0.186	1.159	-0.093	3.655	0.001	1.508	0.000	0.000	0.000	0.000
BEGIN	HCFDL	2	63.056	13.563	-0.019	1.506	-2.350	0.186	1.159	-0.093	3.655	0.001	1.508	0.000	0.000	0.000	0.000
104	QF	16	63.308	13.101	1.826	1.509	-2.262	0.511	1.115	-0.254	3.803	-0.595	1.519	0.000	0.000	0.000	0.000
105	S3	12	63.608	12.033	1.727	1.513	-2.108	0.511	1.038	-0.254	4.194	-0.702	1.531	0.000	0.000	0.000	0.000
106	BEND	12	66.008	5.436	0.991	1.561	-1.272	0.183	0.625	-0.089	9.622	-1.555	1.593	0.000	0.000	0.000	0.000
107	S5H	11	66.558	4.455	0.790	1.578	-1.171	0.183	0.576	-0.089	11.444	-1.751	1.601	0.000	0.000	0.000	0.000
108	CT	15	66.658	4.301	0.753	1.582	-1.153	0.183	0.567	-0.089	11.798	-1.786	1.602	0.000	0.000	0.000	0.000
109	S3H	7	67.008	3.817	0.625	1.596	-1.089	0.183	0.535	-0.089	13.094	-1.911	1.607	0.000	0.000	0.000	0.000
110	QD	16	67.260	3.658	0.011	1.607	-1.063	0.027	0.523	-0.013	13.585	-0.008	1.610	0.000	0.000	0.000	0.000
END	HCFDL	2	67.260	3.658	0.011	1.607	-1.063	0.027	0.523	-0.013	13.585	-0.008	1.610	0.000	0.000	0.000	0.000
END	B4S	1	67.260	3.658	0.011	1.607	-1.063	0.027	0.523	-0.013	13.585	-0.008	1.610	0.000	0.000	0.000	0.000
END	RING	1	201.780	3.658	0.011	4.820	-1.063	0.027	0.523	-0.013	13.586	-0.008	4.830	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.820307	QY =	4.829541
		QX' =	-0.097612	QY' =	0.186378
ALFA =	0.416347E-01	BETAX(MAX) =	13.816597	BETAY(MAX) =	13.751647
GAMMA(TR) =	4.900858	DX(MAX) =	2.966634	DY(MAX) =	0.000000
		XCO(MAX) =	5.918122	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	3.332744	YCO(R.M.S.) =	0.000000

... SEARCHING FOR CLOSED ORBIT FOR BEAM LINE "RING ", DELTA(P)/P = 0.000000, SYMM = F
... ITER. X PX Y PY ERROR
... 1 0.000000 0.000000 0.000000 0.000000 0.288847E-19

Page 33

TABLE IV f

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.000000 SYMM = F PAGE 1

POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	BETAY [M]	ALFAY [1]	MUY [2PI]	V(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
	ELEMENT SEQUENCE		I	HORIZONTAL						I	VERTICAL						
BEGIN	RING	1	0.000	3.642	0.009	0.000	0.000	0.000	0.540	-0.015	13.644	0.000	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630	3.642	0.009	0.803	0.000	0.000	0.540	-0.015	13.644	0.000	0.805	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630	3.642	0.009	0.803	0.000	0.000	0.540	-0.015	13.644	0.000	0.805	0.000	0.000	0.000	0.000
55	QD	9	33.882	3.789	-0.602	0.814	0.000	0.000	0.546	0.064	13.157	1.912	0.808	0.000	0.000	0.000	0.000
56	S3	7	34.182	4.183	-0.710	0.826	0.000	0.000	0.565	0.064	12.041	1.806	0.812	0.000	0.000	0.000	0.000
57	BEND	7	36.582	9.447	-1.461	0.888	0.000	0.000	0.918	0.229	5.413	0.956	0.860	0.000	0.000	0.000	0.000
58	S5H	6	37.132	11.154	-1.643	0.897	0.000	0.000	1.045	0.229	4.467	0.762	0.878	0.000	0.000	0.000	0.000
59	CT	8	37.232	11.486	-1.676	0.898	0.000	0.000	1.068	0.229	4.319	0.727	0.881	0.000	0.000	0.000	0.000
60	SXF	3	37.332	11.825	-1.710	0.900	0.000	0.000	1.090	0.229	4.177	0.691	0.885	0.000	0.000	0.000	0.000
61	S2H	5	37.582	12.700	-1.793	0.903	0.000	0.000	1.148	0.229	3.853	0.603	0.895	0.000	0.000	0.000	0.000
62	QF	9	37.834	13.158	-0.005	0.906	0.000	0.000	1.185	0.065	3.703	0.000	0.906	0.000	0.000	0.000	0.000
END	HCDF	3	37.834	13.158	-0.005	0.906	0.000	0.000	1.185	0.065	3.703	0.000	0.906	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834	13.158	-0.005	0.906	0.000	0.000	1.185	0.065	3.703	0.000	0.906	0.000	0.000	0.000	0.000
63	QF	10	38.086	12.705	1.783	0.909	0.000	0.000	1.180	-0.102	3.853	-0.603	0.916	0.000	0.000	0.000	0.000
64	S3	8	38.386	11.665	1.685	0.913	0.000	0.000	1.150	-0.102	4.247	-0.709	0.928	0.000	0.000	0.000	0.000
65	BEND	8	40.786	5.266	0.954	0.962	0.000	0.000	1.098	0.059	9.687	-1.558	0.989	0.000	0.000	0.000	0.000
66	S5H	7	41.336	4.326	0.755	0.981	0.000	0.000	1.131	0.059	11.508	-1.752	0.997	0.000	0.000	0.000	0.000
67	CT	9	41.436	4.178	0.719	0.984	0.000	0.000	1.136	0.059	11.862	-1.788	0.999	0.000	0.000	0.000	0.000
68	SXD	3	41.536	4.038	0.682	0.988	0.000	0.000	1.142	0.059	12.223	-1.823	1.000	0.000	0.000	0.000	0.000
69	S2H	6	41.786	3.720	0.592	0.998	0.000	0.000	1.157	0.059	13.157	-1.912	1.003	0.000	0.000	0.000	0.000
70	QD	10	42.037	3.575	-0.011	1.009	0.000	0.000	1.193	0.229	13.644	0.000	1.006	0.000	0.000	0.000	0.000
END	HCFD	3	42.037	3.575	-0.011	1.009	0.000	0.000	1.193	0.229	13.644	0.000	1.006	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037	3.575	-0.011	1.009	0.000	0.000	1.193	0.229	13.644	0.000	1.006	0.000	0.000	0.000	0.000
71	QD	11	42.289	3.731	-0.615	1.021	0.000	0.000	1.273	0.407	13.157	1.912	1.009	0.000	0.000	0.000	0.000
72	S32H	3	45.539	11.627	-1.815	1.103	0.000	0.000	2.595	0.407	4.467	0.762	1.079	0.000	0.000	0.000	0.000
73	CT	10	45.639	11.993	-1.852	1.104	0.000	0.000	2.636	0.407	4.319	0.727	1.083	0.000	0.000	0.000	0.000
74	S3H	4	45.989	13.335	-1.981	1.108	0.000	0.000	2.778	0.407	3.853	0.603	1.096	0.000	0.000	0.000	0.000
75	QF	11	46.241	13.866	-0.102	1.111	0.000	0.000	2.831	0.011	3.703	0.000	1.107	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241	13.866	-0.102	1.111	0.000	0.000	2.831	0.011	3.703	0.000	1.107	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241	13.866	-0.102	1.111	0.000	0.000	2.831	0.011	3.703	0.000	1.107	0.000	0.000	0.000	0.000
76	QF	12	46.493	13.435	1.791	1.114	0.000	0.000	2.784	-0.385	3.853	-0.603	1.118	0.000	0.000	0.000	0.000
77	S3	9	46.793	12.389	1.697	1.118	0.000	0.000	2.669	-0.385	4.247	-0.709	1.129	0.000	0.000	0.000	0.000
78	BEND	9	49.193	5.820	1.012	1.163	0.000	0.000	1.919	-0.239	9.687	-1.558	1.190	0.000	0.000	0.000	0.000
79	S5H	8	49.743	4.812	0.821	1.180	0.000	0.000	1.787	-0.239	11.508	-1.752	1.199	0.000	0.000	0.000	0.000
80	CT	11	49.843	4.651	0.786	1.183	0.000	0.000	1.763	-0.239	11.862	-1.788	1.200	0.000	0.000	0.000	0.000
81	SXD	4	49.943	4.498	0.751	1.187	0.000	0.000	1.740	-0.239	12.223	-1.823	1.201	0.000	0.000	0.000	0.000
82	S2H	7	50.193	4.144	0.664	1.196	0.000	0.000	1.680	-0.239	13.157	-1.912	1.205	0.000	0.000	0.000	0.000
83	QD	12	50.445	3.976	0.008	1.206	0.000	0.000	1.650	0.002	13.644	0.000	1.207	0.000	0.000	0.000	0.000
END	HCFD	4	50.445	3.976	0.008	1.206	0.000	0.000	1.650	0.002	13.644	0.000	1.207	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445	3.976	0.008	1.206	0.000	0.000	1.650	0.002	13.644	0.000	1.207	0.000	0.000	0.000	0.000
84	QD	13	50.697	4.135	-0.646	1.216	0.000	0.000	1.681	0.242	13.157	1.912	1.210	0.000	0.000	0.000	0.000
85	S3	10	50.997	4.553	-0.749	1.227	0.000	0.000	1.754	0.242	12.041	1.806	1.214	0.000	0.000	0.000	0.000
86	BEND	10	53.397	9.894	-1.453	1.285	0.000	0.000	2.515	0.390	5.413	0.956	1.262	0.000	0.000	0.000	0.000
87	S5H	9	53.947	11.588	-1.627	1.293	0.000	0.000	2.729	0.390	4.467	0.762	1.280	0.000	0.000	0.000	0.000
88	CT	12	54.047	11.916	-1.658	1.294	0.000	0.000	2.768	0.390	4.319	0.727	1.284	0.000	0.000	0.000	0.000
89	S3H	5	54.397	13.115	-1.768	1.299	0.000	0.000	2.905	0.390	3.853	0.603	1.297	0.000	0.000	0.000	0.000
90	QF	13	54.649	13.546	0.079	1.302	0.000	0.000	2.951	-0.023	3.703	0.000	1.308	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649	13.546	0.079	1.302	0.000	0.000	2.951	-0.023	3.703	0.000	1.308	0.000	0.000	0.000	0.000

TABLE IV f

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.000000 SYMM = F

POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	I	BETAX [M]	ALFAX [1]	HORIZONTAL MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I	BETAY [M]	ALFAY [1]	VERTICAL MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649		13.546	0.079	1.302	0.000	0.000	2.951	-0.023		3.703	0.000	1.308	0.000	0.000	0.000	0.000
91	QF	14	54.901		13.038	1.915	1.305	0.000	0.000	2.894	-0.435		3.853	-0.603	1.319	0.000	0.000	0.000	0.000
92	S32H	4	58.151		4.371	0.752	1.376	0.000	0.000	1.481	-0.435		11.508	-1.752	1.400	0.000	0.000	0.000	0.000
93	CT	13	58.251		4.224	0.716	1.379	0.000	0.000	1.437	-0.435		11.862	-1.788	1.401	0.000	0.000	0.000	0.000
94	S3H	6	58.601		3.767	0.590	1.393	0.000	0.000	1.285	-0.435		13.157	-1.912	1.406	0.000	0.000	0.000	0.000
95	QD	14	58.852		3.624	-0.018	1.404	0.000	0.000	1.198	-0.255		13.644	0.000	1.409	0.000	0.000	0.000	0.000
END	HCFDO	2	58.852		3.624	-0.018	1.404	0.000	0.000	1.198	-0.255		13.644	0.000	1.409	0.000	0.000	0.000	0.000
BEGIN	HCDF	4	58.852		3.624	-0.018	1.404	0.000	0.000	1.198	-0.255		13.644	0.000	1.409	0.000	0.000	0.000	0.000
96	QD	15	59.104		3.785	-0.628	1.415	0.000	0.000	1.156	-0.085		13.157	1.912	1.412	0.000	0.000	0.000	0.000
97	S3	11	59.404		4.195	-0.739	1.427	0.000	0.000	1.130	-0.085		12.041	1.806	1.416	0.000	0.000	0.000	0.000
98	BEND	11	61.804		9.644	-1.509	1.488	0.000	0.000	1.118	0.075		5.413	0.956	1.464	0.000	0.000	0.000	0.000
99	S5H	10	62.354		11.407	-1.695	1.497	0.000	0.000	1.159	0.075		4.467	0.762	1.481	0.000	0.000	0.000	0.000
100	CT	14	62.454		11.749	-1.729	1.498	0.000	0.000	1.167	0.075		4.319	0.727	1.485	0.000	0.000	0.000	0.000
101	SXF	4	62.554		12.098	-1.763	1.499	0.000	0.000	1.175	0.075		4.177	0.691	1.489	0.000	0.000	0.000	0.000
102	S2H	8	62.804		13.001	-1.848	1.503	0.000	0.000	1.193	0.075		3.853	0.603	1.499	0.000	0.000	0.000	0.000
103	QF	15	63.056		13.477	-0.017	1.506	0.000	0.000	1.191	-0.093		3.703	0.000	1.509	0.000	0.000	0.000	0.000
END	HCDF	4	63.056		13.477	-0.017	1.506	0.000	0.000	1.191	-0.093		3.703	0.000	1.509	0.000	0.000	0.000	0.000
BEGIN	HCFDL	2	63.056		13.477	-0.017	1.506	0.000	0.000	1.191	-0.093		3.703	0.000	1.509	0.000	0.000	0.000	0.000
104	QF	16	63.308		13.018	1.816	1.509	0.000	0.000	1.147	-0.258		3.853	-0.603	1.520	0.000	0.000	0.000	0.000
105	S3	12	63.608		11.959	1.717	1.512	0.000	0.000	1.070	-0.258		4.247	-0.709	1.532	0.000	0.000	0.000	0.000
106	BEND	12	66.008		5.405	0.986	1.560	0.000	0.000	0.647	-0.094		9.687	-1.558	1.593	0.000	0.000	0.000	0.000
107	S5H	11	66.558		4.431	0.785	1.578	0.000	0.000	0.596	-0.094		11.508	-1.752	1.601	0.000	0.000	0.000	0.000
108	CT	15	66.658		4.278	0.749	1.582	0.000	0.000	0.586	-0.094		11.862	-1.788	1.603	0.000	0.000	0.000	0.000
109	S3H	7	67.008		3.798	0.621	1.596	0.000	0.000	0.554	-0.094		13.157	-1.912	1.607	0.000	0.000	0.000	0.000
110	QD	16	67.260		3.642	0.009	1.607	0.000	0.000	0.540	-0.015		13.644	0.000	1.610	0.000	0.000	0.000	0.000
END	HCFDL	2	67.260		3.642	0.009	1.607	0.000	0.000	0.540	-0.015		13.644	0.000	1.610	0.000	0.000	0.000	0.000
END	B4S	1	67.260		3.642	0.009	1.607	0.000	0.000	0.540	-0.015		13.644	0.000	1.610	0.000	0.000	0.000	0.000
END	RING	1	201.780		3.642	0.009	4.820	0.000	0.000	0.540	-0.015		13.644	0.000	4.830	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.820000	QY =	4.829999
		QX' =	0.001048	QY' =	-0.001678
ALFA =	0.419701E-01	BETAX(MAX) =	13.865707	BETAY(MAX) =	13.644032
GAMMA(TR) =	4.881238	DX(MAX) =	2.951449	DY(MAX) =	0.000000
		XCO(MAX) =	0.000000	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	0.000000	YCO(R.M.S.) =	0.000000

... SEARCHING FOR CLOSED ORBIT FOR BEAM LINE "RING ", DELTA(P)/P = 0.002000, SYMM = F

... ITER.	X	PX	Y	PY	ERROR
... 1	0.001097	-0.000032	0.000000	0.000000	0.535866E-03
... 2	0.001097	-0.000031	0.000000	0.000000	0.155487E-05
... 3	0.001097	-0.000031	0.000000	0.000000	0.347445E-11

TABLE IV 9

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.002000 SYMM = F PAGE 1

POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	BETAX [M]	ALFAX [1]	HORIZONTAL MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	BETAV [M]	ALFAV [1]	VERTICAL MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000	3.624	0.007	0.000	1.097	-0.031	0.557	-0.017	13.706	0.008	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630	3.624	0.007	0.803	1.097	-0.031	0.557	-0.017	13.706	0.008	0.805	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630	3.624	0.007	0.803	1.097	-0.031	0.557	-0.017	13.706	0.008	0.805	0.000	0.000	0.000	0.000
55	QD	9	33.882	3.772	-0.602	0.814	1.110	0.128	0.563	0.064	13.213	1.928	0.808	0.000	0.000	0.000	0.000
56	S3	7	34.182	4.165	-0.710	0.826	1.148	0.128	0.583	0.064	12.091	1.821	0.812	0.000	0.000	0.000	0.000
57	BEND	7	36.582	9.419	-1.460	0.888	1.853	0.459	0.935	0.229	5.420	0.964	0.860	0.000	0.000	0.000	0.000
58	S5H	6	37.132	11.121	-1.642	0.897	2.105	0.459	1.060	0.229	4.469	0.769	0.877	0.000	0.000	0.000	0.000
59	CT	8	37.232	11.452	-1.675	0.898	2.151	0.459	1.083	0.229	4.319	0.733	0.881	0.000	0.000	0.000	0.000
60	SXF	3	37.332	11.790	-1.705	0.900	2.197	0.459	1.106	0.229	4.177	0.696	0.885	0.000	0.000	0.000	0.000
61	S2H	5	37.582	12.661	-1.788	0.903	2.311	0.459	1.163	0.229	3.851	0.608	0.895	0.000	0.000	0.000	0.000
62	QF	9	37.834	13.117	-0.006	0.906	2.385	0.127	1.200	0.062	3.699	0.005	0.905	0.000	0.000	0.000	0.000
END	HCDF	3	37.834	13.117	-0.006	0.906	2.385	0.127	1.200	0.062	3.699	0.005	0.905	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834	13.117	-0.006	0.906	2.385	0.127	1.200	0.062	3.699	0.005	0.905	0.000	0.000	0.000	0.000
63	QF	10	38.086	12.667	1.777	0.909	2.375	-0.208	1.194	-0.106	3.846	-0.596	0.916	0.000	0.000	0.000	0.000
64	S3	8	38.386	11.632	1.679	0.913	2.313	-0.208	1.163	-0.106	4.235	-0.702	0.928	0.000	0.000	0.000	0.000
65	BEND	8	40.786	5.255	0.954	0.962	2.198	0.112	1.099	0.054	9.632	-1.552	0.989	0.000	0.000	0.000	0.000
66	S5H	7	41.336	4.317	0.755	0.981	2.259	0.112	1.129	0.054	11.442	-1.746	0.997	0.000	0.000	0.000	0.000
67	CT	9	41.436	4.170	0.719	0.984	2.271	0.112	1.134	0.054	11.794	-1.781	0.999	0.000	0.000	0.000	0.000
68	SXD	3	41.536	4.031	0.675	0.988	2.282	0.115	1.140	0.056	12.151	-1.794	1.000	0.000	0.000	0.000	0.000
69	S2H	6	41.786	3.717	0.585	0.999	2.310	0.115	1.153	0.056	13.068	-1.881	1.003	0.000	0.000	0.000	0.000
70	QD	10	42.037	3.576	-0.017	1.010	2.382	0.454	1.188	0.225	13.542	0.017	1.006	0.000	0.000	0.000	0.000
END	HCFD	3	42.037	3.576	-0.017	1.010	2.382	0.454	1.188	0.225	13.542	0.017	1.006	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037	3.576	-0.017	1.010	2.382	0.454	1.188	0.225	13.542	0.017	1.006	0.000	0.000	0.000	0.000
71	QD	11	42.289	3.734	-0.621	1.021	2.540	0.809	1.267	0.402	13.051	1.913	1.009	0.000	0.000	0.000	0.000
72	S32H	3	45.539	11.667	-1.825	1.102	5.164	0.809	2.569	0.402	4.396	0.755	1.080	0.000	0.000	0.000	0.000
73	CT	10	45.639	12.035	-1.862	1.104	5.245	0.809	2.609	0.402	4.248	0.719	1.083	0.000	0.000	0.000	0.000
74	S3H	4	45.989	13.381	-1.991	1.108	5.528	0.809	2.749	0.402	3.789	0.595	1.097	0.000	0.000	0.000	0.000
75	QF	11	46.241	13.915	-0.106	1.111	5.633	0.022	2.801	0.011	3.642	0.000	1.108	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241	13.915	-0.106	1.111	5.633	0.022	2.801	0.011	3.642	0.000	1.108	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241	13.915	-0.106	1.111	5.633	0.022	2.801	0.011	3.642	0.000	1.108	0.000	0.000	0.000	0.000
76	QF	12	46.493	13.485	1.794	1.114	5.539	-0.765	2.755	-0.381	3.790	-0.595	1.119	0.000	0.000	0.000	0.000
77	S3	9	46.793	12.439	1.700	1.118	5.310	-0.765	2.641	-0.381	4.178	-0.702	1.131	0.000	0.000	0.000	0.000
78	BEND	9	49.193	5.833	1.024	1.163	3.818	-0.476	1.899	-0.238	9.617	-1.569	1.192	0.000	0.000	0.000	0.000
79	S5H	8	49.743	4.815	0.831	1.179	3.557	-0.476	1.769	-0.238	11.448	-1.767	1.201	0.000	0.000	0.000	0.000
80	CT	11	49.843	4.652	0.796	1.183	3.509	-0.476	1.746	-0.238	11.805	-1.803	1.202	0.000	0.000	0.000	0.000
81	SXD	4	49.943	4.498	0.749	1.186	3.462	-0.471	1.722	-0.233	12.165	-1.804	1.203	0.000	0.000	0.000	0.000
82	S2H	7	50.193	4.146	0.662	1.195	3.344	-0.471	1.664	-0.233	13.087	-1.892	1.207	0.000	0.000	0.000	0.000
83	QD	12	50.445	3.980	0.006	1.205	3.286	0.008	1.636	0.006	13.566	0.010	1.210	0.000	0.000	0.000	0.000
END	HCFD	4	50.445	3.980	0.006	1.205	3.286	0.008	1.636	0.006	13.566	0.010	1.210	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445	3.980	0.006	1.205	3.286	0.008	1.636	0.006	13.566	0.010	1.210	0.000	0.000	0.000	0.000
84	QD	13	50.697	4.140	-0.649	1.215	3.348	0.487	1.667	0.244	13.077	1.910	1.213	0.000	0.000	0.000	0.000
85	S3	10	50.997	4.559	-0.752	1.226	3.494	0.487	1.740	0.244	11.965	1.803	1.216	0.000	0.000	0.000	0.000
86	BEND	10	53.397	9.887	-1.446	1.284	5.016	0.780	2.501	0.390	5.380	0.946	1.265	0.000	0.000	0.000	0.000
87	S5H	9	53.947	11.568	-1.617	1.292	5.444	0.780	2.715	0.390	4.447	0.753	1.283	0.000	0.000	0.000	0.000
88	CT	12	54.047	11.894	-1.648	1.293	5.522	0.780	2.754	0.390	4.301	0.718	1.286	0.000	0.000	0.000	0.000
89	S3H	5	54.397	13.083	-1.757	1.298	5.795	0.780	2.890	0.390	3.842	0.595	1.300	0.000	0.000	0.000	0.000
90	QF	13	54.649	13.509	0.085	1.301	5.888	-0.043	2.936	-0.021	3.696	-0.006	1.311	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649	13.509	0.085	1.301	5.888	-0.043	2.936	-0.021	3.696	-0.006	1.311	0.000	0.000	0.000	0.000

TABLE IV 9

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.002000 SYMM = F PAGE 2

POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	I	BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I	BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649		13.509	0.085	1.301	5.888	-0.043	2.936	-0.021		3.696	-0.006	1.311	0.000	0.000	0.000	0.000
91	QF	14	54.901		13.000	1.916	1.304	5.773	-0.866	2.879	-0.431		3.849	-0.609	1.321	0.000	0.000	0.000	0.000
92	S32H	4	58.151		4.352	0.751	1.375	2.965	-0.866	1.485	-0.431		11.542	-1.763	1.402	0.000	0.000	0.000	0.000
93	CT	13	58.251		4.206	0.715	1.379	2.879	-0.866	1.442	-0.431		11.897	-1.799	1.404	0.000	0.000	0.000	0.000
94	S3H	6	58.601		3.750	0.589	1.393	2.577	-0.866	1.292	-0.431		13.197	-1.923	1.408	0.000	0.000	0.000	0.000
95	QD	14	58.852		3.608	-0.017	1.404	2.405	-0.506	1.207	-0.250		13.688	-0.006	1.411	0.000	0.000	0.000	0.000
END	HCFDO	2	58.852		3.608	-0.017	1.404	2.405	-0.506	1.207	-0.250		13.688	-0.006	1.411	0.000	0.000	0.000	0.000
BEGIN	HCDF	4	58.852		3.608	-0.017	1.404	2.405	-0.506	1.207	-0.250		13.688	-0.006	1.411	0.000	0.000	0.000	0.000
96	QD	15	59.104		3.767	-0.625	1.414	2.321	-0.164	1.165	-0.079		13.203	1.913	1.414	0.000	0.000	0.000	0.000
97	S3	11	59.404		4.175	-0.736	1.426	2.272	-0.164	1.142	-0.079		12.089	1.807	1.418	0.000	0.000	0.000	0.000
98	BEND	11	61.804		9.589	-1.500	1.488	2.262	0.156	1.144	0.081		5.465	0.959	1.465	0.000	0.000	0.000	0.000
99	S5H	10	62.354		11.338	-1.687	1.496	2.348	0.156	1.189	0.081		4.519	0.766	1.483	0.000	0.000	0.000	0.000
100	CT	14	62.454		11.678	-1.720	1.498	2.364	0.156	1.197	0.081		4.369	0.731	1.486	0.000	0.000	0.000	0.000
101	SXF	4	62.554		12.025	-1.750	1.499	2.379	0.156	1.205	0.080		4.227	0.695	1.490	0.000	0.000	0.000	0.000
102	S2H	8	62.804		12.919	-1.835	1.502	2.418	0.156	1.225	0.080		3.902	0.607	1.500	0.000	0.000	0.000	0.000
103	QF	15	63.056		13.390	-0.016	1.505	2.414	-0.185	1.223	-0.092		3.752	-0.001	1.510	0.000	0.000	0.000	0.000
END	HCDF	4	63.056		13.390	-0.016	1.505	2.414	-0.185	1.223	-0.092		3.752	-0.001	1.510	0.000	0.000	0.000	0.000
BEGIN	HCFDL	2	63.056		13.390	-0.016	1.505	2.414	-0.185	1.223	-0.092		3.752	-0.001	1.510	0.000	0.000	0.000	0.000
104	QF	16	63.308		12.934	1.806	1.508	2.326	-0.519	1.179	-0.261		3.903	-0.610	1.521	0.000	0.000	0.000	0.000
105	S3	12	63.608		11.883	1.707	1.512	2.170	-0.519	1.101	-0.261		4.300	-0.715	1.533	0.000	0.000	0.000	0.000
106	BEND	12	66.008		5.373	0.981	1.560	1.317	-0.192	0.669	-0.098		9.754	-1.562	1.593	0.000	0.000	0.000	0.000
107	S5H	11	66.558		4.406	0.780	1.578	1.211	-0.192	0.616	-0.098		11.574	-1.755	1.601	0.000	0.000	0.000	0.000
108	CT	15	66.658		4.254	0.744	1.582	1.192	-0.192	0.606	-0.098		11.928	-1.790	1.603	0.000	0.000	0.000	0.000
109	S3H	7	67.008		3.779	0.616	1.596	1.125	-0.192	0.572	-0.098		13.221	-1.913	1.607	0.000	0.000	0.000	0.000
110	QD	16	67.260		3.624	0.007	1.607	1.097	-0.031	0.557	-0.017		13.706	0.008	1.610	0.000	0.000	0.000	0.000
END	HCFDL	2	67.260		3.624	0.007	1.607	1.097	-0.031	0.557	-0.017		13.706	0.008	1.610	0.000	0.000	0.000	0.000
END	B4S	1	67.260		3.624	0.007	1.607	1.097	-0.031	0.557	-0.017		13.706	0.008	1.610	0.000	0.000	0.000	0.000
END	RING	1	201.780		3.624	0.007	4.820	1.097	-0.031	0.557	-0.017		13.707	0.008	4.830	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.820310	QY =	4.829533
		QX' =	0.096209	QY' =	-0.190458
ALFA =	0.422958E-01	BETAX(MAX) =	13.914840	BETAY(MAX) =	13.707415
GAMMA(TR) =	4.862407	DX(MAX) =	2.936023	DY(MAX) =	0.000000
		XCO(MAX) =	5.887512	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	3.324695	YCO(R.M.S.) =	0.000000

... SEARCHING FOR CLOSED ORBIT FOR BEAM LINE "RING ", DELTA(P)/P = 0.004000, SYMM = F

... ITER.	X	PX	Y	PY	ERROR
... 1	0.002228	-0.000068	0.000000	0.000000	0.107529E-02
... 2	0.002229	-0.000066	0.000000	0.000000	0.603280E-05
... 3	0.002229	-0.000066	0.000000	0.000000	0.590999E-10

TABLE IV b

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.004000 SYMM = F PAGE 1

ELEMENT SEQUENCE				HORIZONTAL						VERTICAL					
POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000	3.607	0.005	0.000	2.229	-0.066	0.575	-0.019	13.769	0.016	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630	3.606	0.005	0.803	2.229	-0.066	0.575	-0.019	13.770	0.016	0.805	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630	3.606	0.005	0.803	2.229	-0.066	0.575	-0.019	13.770	0.016	0.805	0.000	0.000	0.000	0.000
55	QD	9	33.882	3.754	-0.602	0.814	2.253	0.258	0.580	0.065	13.273	1.944	0.808	0.000	0.000	0.000	0.000
56	S3	7	34.182	4.146	-0.710	0.826	2.330	0.258	0.600	0.065	12.143	1.837	0.812	0.000	0.000	0.000	0.000
57	BEND	7	36.582	9.389	-1.459	0.889	3.739	0.918	0.951	0.229	5.430	0.972	0.859	0.000	0.000	0.000	0.000
58	S5H	6	37.132	11.087	-1.641	0.897	4.242	0.918	1.076	0.229	4.473	0.775	0.877	0.000	0.000	0.000	0.000
59	CT	8	37.232	11.418	-1.674	0.899	4.333	0.918	1.099	0.229	4.322	0.740	0.880	0.000	0.000	0.000	0.000
60	SXF	3	37.332	11.754	-1.700	0.900	4.424	0.916	1.122	0.229	4.179	0.702	0.884	0.000	0.000	0.000	0.000
61	S2H	5	37.582	12.621	-1.783	0.903	4.653	0.916	1.178	0.229	3.851	0.613	0.894	0.000	0.000	0.000	0.000
62	QF	9	37.834	13.075	-0.006	0.906	4.799	0.250	1.214	0.060	3.697	0.010	0.905	0.000	0.000	0.000	0.000
END	HCDF	3	37.834	13.075	-0.006	0.906	4.799	0.250	1.214	0.060	3.697	0.010	0.905	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834	13.075	-0.006	0.906	4.799	0.250	1.214	0.060	3.697	0.010	0.905	0.000	0.000	0.000	0.000
63	QF	10	38.086	12.627	1.771	0.909	4.777	-0.425	1.208	-0.111	3.841	-0.591	0.915	0.000	0.000	0.000	0.000
64	S3	8	38.386	11.598	1.673	0.913	4.650	-0.425	1.175	-0.111	4.225	-0.695	0.927	0.000	0.000	0.000	0.000
65	BEND	8	40.786	5.245	0.955	0.963	4.397	0.214	1.100	0.048	9.580	-1.546	0.989	0.000	0.000	0.000	0.000
66	S5H	7	41.336	4.308	0.755	0.981	4.515	0.214	1.127	0.048	11.380	-1.740	0.997	0.000	0.000	0.000	0.000
67	CT	9	41.436	4.162	0.719	0.985	4.536	0.214	1.132	0.048	11.730	-1.775	0.998	0.000	0.000	0.000	0.000
68	SXD	3	41.536	4.024	0.668	0.989	4.558	0.223	1.137	0.053	12.083	-1.766	1.000	0.000	0.000	0.000	0.000
69	S2H	6	41.786	3.713	0.578	0.999	4.613	0.223	1.150	0.053	12.984	-1.851	1.003	0.000	0.000	0.000	0.000
70	QD	10	42.037	3.576	-0.023	1.010	4.754	0.900	1.184	0.221	13.445	0.035	1.006	0.000	0.000	0.000	0.000
END	HCFD	3	42.037	3.576	-0.023	1.010	4.754	0.900	1.184	0.221	13.445	0.035	1.006	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037	3.576	-0.023	1.010	4.754	0.900	1.184	0.221	13.445	0.035	1.006	0.000	0.000	0.000	0.000
71	QD	11	42.289	3.737	-0.628	1.021	5.068	1.609	1.261	0.398	12.949	1.916	1.009	0.000	0.000	0.000	0.000
72	S32H	3	45.539	11.707	-1.835	1.102	10.276	1.609	2.543	0.398	4.324	0.748	1.080	0.000	0.000	0.000	0.000
73	CT	10	45.639	12.077	-1.872	1.104	10.437	1.609	2.582	0.398	4.179	0.712	1.084	0.000	0.000	0.000	0.000
74	S3H	4	45.989	13.427	-2.002	1.108	10.998	1.609	2.720	0.398	3.726	0.587	1.098	0.000	0.000	0.000	0.000
75	QF	11	46.241	13.963	-0.110	1.111	11.206	0.044	2.772	0.010	3.581	0.000	1.109	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241	13.963	-0.110	1.111	11.206	0.044	2.772	0.010	3.581	0.000	1.109	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241	13.963	-0.110	1.111	11.206	0.044	2.772	0.010	3.581	0.000	1.109	0.000	0.000	0.000	0.000
76	QF	12	46.493	13.535	1.797	1.114	11.019	-1.523	2.726	-0.377	3.727	-0.588	1.120	0.000	0.000	0.000	0.000
77	S3	9	46.793	12.489	1.704	1.117	10.564	-1.523	2.613	-0.377	4.110	-0.696	1.132	0.000	0.000	0.000	0.000
78	BEND	9	49.193	5.847	1.036	1.162	7.597	-0.950	1.880	-0.236	9.549	-1.580	1.194	0.000	0.000	0.000	0.000
79	S5H	8	49.743	4.818	0.842	1.179	7.077	-0.950	1.751	-0.236	11.390	-1.781	1.203	0.000	0.000	0.000	0.000
80	CT	11	49.843	4.654	0.807	1.182	6.982	-0.950	1.728	-0.236	11.748	-1.818	1.204	0.000	0.000	0.000	0.000
81	SXD	4	49.943	4.499	0.746	1.186	6.888	-0.931	1.705	-0.227	12.107	-1.786	1.205	0.000	0.000	0.000	0.000
82	S2H	7	50.193	4.149	0.660	1.195	6.657	-0.931	1.648	-0.227	13.018	-1.872	1.209	0.000	0.000	0.000	0.000
83	QD	12	50.445	3.984	0.004	1.205	6.543	0.023	1.621	0.010	13.489	0.019	1.212	0.000	0.000	0.000	0.000
END	HCFD	4	50.445	3.984	0.004	1.205	6.543	0.023	1.621	0.010	13.489	0.019	1.212	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445	3.984	0.004	1.205	6.543	0.023	1.621	0.010	13.489	0.019	1.212	0.000	0.000	0.000	0.000
84	QD	13	50.697	4.145	-0.652	1.215	6.668	0.978	1.653	0.246	13.000	1.907	1.215	0.000	0.000	0.000	0.000
85	S3	10	50.997	4.566	-0.755	1.225	6.961	0.978	1.727	0.246	11.892	1.801	1.218	0.000	0.000	0.000	0.000
86	BEND	10	53.397	9.879	-1.438	1.283	10.004	1.560	2.487	0.390	5.350	0.936	1.267	0.000	0.000	0.000	0.000
87	S5H	9	53.947	11.547	-1.608	1.291	10.859	1.560	2.700	0.390	4.430	0.744	1.285	0.000	0.000	0.000	0.000
88	CT	12	54.047	11.870	-1.639	1.293	11.014	1.560	2.739	0.390	4.285	0.709	1.289	0.000	0.000	0.000	0.000
89	S3H	5	54.397	13.051	-1.747	1.297	11.558	1.560	2.874	0.390	3.833	0.587	1.302	0.000	0.000	0.000	0.000
90	QF	13	54.649	13.471	0.091	1.300	11.744	-0.083	2.920	-0.019	3.691	-0.013	1.313	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649	13.471	0.091	1.300	11.744	-0.083	2.920	-0.019	3.691	-0.013	1.313	0.000	0.000	0.000	0.000

TABLE IV h

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.004000 SYMM = F PAGE 2

POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	I	BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I	BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649		13.471	0.091	1.300	11.744	-0.083	2.920	-0.019		3.691	-0.013	1.313	0.000	0.000	0.000	0.000
91	QF	14	54.901		12.961	1.916	1.303	11.517	-1.723	2.865	-0.427		3.846	-0.615	1.324	0.000	0.000	0.000	0.000
92	S32H	4	58.151		4.333	0.749	1.374	5.939	-1.723	1.489	-0.427		11.580	-1.774	1.404	0.000	0.000	0.000	0.000
93	CT	13	58.251		4.187	0.714	1.378	5.768	-1.723	1.447	-0.427		11.937	-1.810	1.406	0.000	0.000	0.000	0.000
94	S3H	6	58.601		3.733	0.588	1.392	5.167	-1.723	1.298	-0.427		13.243	-1.935	1.410	0.000	0.000	0.000	0.000
95	QD	14	58.852		3.591	-0.016	1.403	4.826	-1.001	1.215	-0.245		13.737	-0.011	1.413	0.000	0.000	0.000	0.000
END	HCFDO	2	58.852		3.591	-0.016	1.403	4.826	-1.001	1.215	-0.245		13.737	-0.011	1.413	0.000	0.000	0.000	0.000
BEGIN	HCDF	4	58.852		3.591	-0.016	1.403	4.826	-1.001	1.215	-0.245		13.737	-0.011	1.413	0.000	0.000	0.000	0.000
96	QD	15	59.104		3.749	-0.622	1.414	4.662	-0.316	1.175	-0.072		13.253	1.915	1.416	0.000	0.000	0.000	0.000
97	S3	11	59.404		4.154	-0.732	1.426	4.567	-0.316	1.154	-0.072		12.140	1.810	1.420	0.000	0.000	0.000	0.000
98	BEND	11	61.804		9.532	-1.492	1.488	4.577	0.323	1.170	0.086		5.519	0.962	1.467	0.000	0.000	0.000	0.000
99	S5H	10	62.354		11.269	-1.678	1.496	4.754	0.323	1.217	0.086		4.570	0.771	1.484	0.000	0.000	0.000	0.000
100	CT	14	62.454		11.606	-1.711	1.497	4.786	0.323	1.226	0.086		4.420	0.736	1.488	0.000	0.000	0.000	0.000
101	SXF	4	62.554		11.950	-1.737	1.499	4.818	0.322	1.234	0.086		4.277	0.698	1.491	0.000	0.000	0.000	0.000
102	S2H	8	62.804		12.836	-1.821	1.502	4.898	0.322	1.256	0.086		3.951	0.612	1.501	0.000	0.000	0.000	0.000
103	QF	15	63.056		13.302	-0.014	1.505	4.893	-0.368	1.255	-0.091		3.800	-0.003	1.511	0.000	0.000	0.000	0.000
END	HCDF	4	63.056		13.302	-0.014	1.505	4.893	-0.368	1.255	-0.091		3.800	-0.003	1.511	0.000	0.000	0.000	0.000
BEGIN	HCFDL	2	63.056		13.302	-0.014	1.505	4.893	-0.368	1.255	-0.091		3.800	-0.003	1.511	0.000	0.000	0.000	0.000
104	QF	16	63.308		12.849	1.795	1.508	4.715	-1.046	1.210	-0.265		3.953	-0.617	1.522	0.000	0.000	0.000	0.000
105	S3	12	63.608		11.806	1.697	1.512	4.402	-1.046	1.131	-0.265		4.354	-0.722	1.533	0.000	0.000	0.000	0.000
106	BEND	12	66.008		5.340	0.976	1.560	2.678	-0.393	0.692	-0.103		9.821	-1.566	1.593	0.000	0.000	0.000	0.000
107	S5H	11	66.558		4.381	0.776	1.578	2.463	-0.393	0.636	-0.103		11.642	-1.758	1.601	0.000	0.000	0.000	0.000
108	CT	15	66.658		4.230	0.739	1.582	2.424	-0.393	0.625	-0.103		11.996	-1.793	1.602	0.000	0.000	0.000	0.000
109	S3H	7	67.008		3.759	0.612	1.596	2.287	-0.393	0.590	-0.103		13.289	-1.916	1.607	0.000	0.000	0.000	0.000
110	QD	16	67.260		3.606	0.005	1.607	2.229	-0.066	0.575	-0.019		13.772	0.016	1.610	0.000	0.000	0.000	0.000
END	HCFDL	2	67.260		3.606	0.005	1.607	2.229	-0.066	0.575	-0.019		13.772	0.016	1.610	0.000	0.000	0.000	0.000
END	B4S	1	67.260		3.606	0.005	1.607	2.229	-0.066	0.575	-0.019		13.772	0.016	1.610	0.000	0.000	0.000	0.000
END	RING	1	201.780		3.605	0.005	4.821	2.229	-0.066	0.575	-0.019		13.776	0.016	4.828	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.821236	QY =	4.828138
		QX' =	0.187891	QY' =	-0.380013
ALFA =	0.426119E-01	BETAX(MAX) =	13.963957	BETAY(MAX) =	13.775956
GAMMA(TR) =	4.844341	DX(MAX) =	2.920346	DY(MAX) =	0.000000
		XCO(MAX) =	11.743923	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	6.641259	YCO(R.M.S.) =	0.000000

... SEARCHING FOR CLOSED ORBIT FOR BEAM LINE "RING ", DELTA(P)/P = 0.006000, SYMM = F

... ITER.	X	PX	Y	PY	ERROR
... 1	0.003394	-0.000109	0.000000	0.000000	0.161451E-02
... 2	0.003396	-0.000106	0.000000	0.000000	0.131262E-04
... 3	0.003396	-0.000106	0.000000	0.000000	0.317276E-09

TABLE IV

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.006000 SYMM = F PAGE 1

ELEMENT SEQUENCE				HORIZONTAL						VERTICAL					
POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000	3.588	0.003	0.000	3.396	-0.106	0.592	-0.021	13.834	0.023	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630	3.588	0.003	0.804	3.396	-0.106	0.592	-0.021	13.837	0.023	0.805	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630	3.588	0.003	0.804	3.396	-0.106	0.592	-0.021	13.837	0.023	0.805	0.000	0.000	0.000	0.000
55	QD	9	33.882	3.736	-0.601	0.814	3.431	0.388	0.597	0.065	13.334	1.961	0.808	0.000	0.000	0.000	0.000
56	S3	7	34.182	4.127	-0.710	0.827	3.546	0.388	0.616	0.065	12.197	1.852	0.811	0.000	0.000	0.000	0.000
57	BEND	7	36.582	9.360	-1.457	0.889	5.657	1.376	0.967	0.229	5.442	0.979	0.859	0.000	0.000	0.000	0.000
58	S5H	6	37.132	11.053	-1.640	0.898	6.409	1.376	1.091	0.229	4.479	0.782	0.876	0.000	0.000	0.000	0.000
59	CT	8	37.232	11.382	-1.673	0.899	6.546	1.376	1.114	0.229	4.327	0.747	0.880	0.000	0.000	0.000	0.000
60	SXF	3	37.332	11.717	-1.696	0.900	6.683	1.373	1.137	0.228	4.183	0.707	0.884	0.000	0.000	0.000	0.000
61	S2H	5	37.582	12.580	-1.778	0.904	7.024	1.373	1.193	0.228	3.854	0.618	0.893	0.000	0.000	0.000	0.000
62	QF	9	37.834	13.032	-0.007	0.907	7.242	0.367	1.229	0.057	3.697	0.015	0.904	0.000	0.000	0.000	0.000
END	HCDF	3	37.834	13.032	-0.007	0.907	7.242	0.367	1.229	0.057	3.697	0.015	0.904	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834	13.032	-0.007	0.907	7.242	0.367	1.229	0.057	3.697	0.015	0.904	0.000	0.000	0.000	0.000
63	QF	10	38.086	12.587	1.764	0.910	7.207	-0.651	1.221	-0.115	3.838	-0.585	0.915	0.000	0.000	0.000	0.000
64	S3	8	38.386	11.564	1.667	0.914	7.012	-0.651	1.187	-0.115	4.218	-0.689	0.927	0.000	0.000	0.000	0.000
65	BEND	8	40.786	5.234	0.954	0.963	6.599	0.306	1.101	0.043	9.533	-1.540	0.988	0.000	0.000	0.000	0.000
66	S5H	7	41.336	4.299	0.755	0.981	6.766	0.306	1.125	0.043	11.323	-1.734	0.996	0.000	0.000	0.000	0.000
67	CT	9	41.436	4.153	0.719	0.985	6.797	0.306	1.129	0.043	11.671	-1.769	0.998	0.000	0.000	0.000	0.000
68	SXD	3	41.536	4.016	0.660	0.989	6.828	0.325	1.133	0.049	12.020	-1.738	0.999	0.000	0.000	0.000	0.000
69	S2H	6	41.786	3.710	0.571	0.999	6.909	0.325	1.146	0.049	12.904	-1.821	1.002	0.000	0.000	0.000	0.000
70	QD	10	42.037	3.576	-0.029	1.010	7.116	1.338	1.179	0.217	13.352	0.053	1.005	0.000	0.000	0.000	0.000
END	HCFD	3	42.037	3.576	-0.029	1.010	7.116	1.338	1.179	0.217	13.352	0.053	1.005	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037	3.576	-0.029	1.010	7.116	1.338	1.179	0.217	13.352	0.053	1.005	0.000	0.000	0.000	0.000
71	QD	11	42.289	3.740	-0.634	1.021	7.583	2.400	1.254	0.393	12.852	1.920	1.008	0.000	0.000	0.000	0.000
72	S32H	3	45.539	11.747	-1.845	1.102	15.336	2.400	2.516	0.393	4.254	0.742	1.080	0.000	0.000	0.000	0.000
73	CT	10	45.639	12.118	-1.882	1.104	15.574	2.400	2.555	0.393	4.110	0.706	1.084	0.000	0.000	0.000	0.000
74	S3H	4	45.989	13.472	-2.012	1.108	16.409	2.400	2.691	0.393	3.663	0.579	1.098	0.000	0.000	0.000	0.000
75	QF	11	46.241	14.011	-0.114	1.111	16.719	0.064	2.741	0.010	3.520	-0.001	1.110	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241	14.011	-0.114	1.111	16.719	0.064	2.741	0.010	3.520	-0.001	1.110	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241	14.011	-0.114	1.111	16.719	0.064	2.741	0.010	3.520	-0.001	1.110	0.000	0.000	0.000	0.000
76	QF	12	46.493	13.584	1.800	1.114	16.441	-2.274	2.696	-0.373	3.664	-0.580	1.121	0.000	0.000	0.000	0.000
77	S3	9	46.793	12.538	1.707	1.117	15.763	-2.274	2.585	-0.373	4.042	-0.689	1.133	0.000	0.000	0.000	0.000
78	BEND	9	49.193	5.860	1.048	1.162	11.337	-1.421	1.860	-0.235	9.481	-1.592	1.196	0.000	0.000	0.000	0.000
79	S5H	8	49.743	4.821	0.852	1.178	10.560	-1.421	1.733	-0.235	11.332	-1.796	1.205	0.000	0.000	0.000	0.000
80	CT	11	49.843	4.655	0.817	1.182	10.419	-1.421	1.710	-0.235	11.693	-1.833	1.206	0.000	0.000	0.000	0.000
81	SXD	4	49.943	4.500	0.744	1.185	10.280	-1.377	1.687	-0.220	12.051	-1.769	1.207	0.000	0.000	0.000	0.000
82	S2H	7	50.193	4.152	0.658	1.194	9.938	-1.377	1.633	-0.220	12.951	-1.854	1.210	0.000	0.000	0.000	0.000
83	QD	12	50.445	3.989	0.001	1.204	9.772	0.046	1.607	0.014	13.414	0.027	1.213	0.000	0.000	0.000	0.000
END	HCFD	4	50.445	3.989	0.001	1.204	9.772	0.046	1.607	0.014	13.414	0.027	1.213	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445	3.989	0.001	1.204	9.772	0.046	1.607	0.014	13.414	0.027	1.213	0.000	0.000	0.000	0.000
84	QD	13	50.697	4.151	-0.655	1.214	9.961	1.472	1.639	0.248	12.924	1.905	1.216	0.000	0.000	0.000	0.000
85	S3	10	50.997	4.572	-0.758	1.225	10.400	1.472	1.713	0.248	11.820	1.798	1.220	0.000	0.000	0.000	0.000
86	BEND	10	53.397	9.871	-1.429	1.282	14.965	2.339	2.473	0.389	5.323	0.927	1.269	0.000	0.000	0.000	0.000
87	S5H	9	53.947	11.526	-1.598	1.291	16.244	2.339	2.685	0.389	4.414	0.736	1.287	0.000	0.000	0.000	0.000
88	CT	12	54.047	11.847	-1.629	1.292	16.476	2.339	2.723	0.389	4.272	0.701	1.291	0.000	0.000	0.000	0.000
89	S3H	5	54.397	13.017	-1.736	1.296	17.290	2.339	2.858	0.389	3.826	0.579	1.304	0.000	0.000	0.000	0.000
90	QF	13	54.649	13.432	0.097	1.299	17.569	-0.119	2.904	-0.017	3.688	-0.020	1.315	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649	13.432	0.097	1.299	17.569	-0.119	2.904	-0.017	3.688	-0.020	1.315	0.000	0.000	0.000	0.000

TABLE IV

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.006000 SYMM = F PAGE 2

POS. NO.	ELEMENT NAME	SEQUENCE OCC. NO.	DIST [M]	I	HORIZONTAL BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I	VERTICAL BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649		13.432	0.097	1.299	17.569	-0.119	2.904	-0.017		3.688	-0.020	1.315	0.000	0.000	0.000	0.000
91	QF	14	54.901		12.922	1.917	1.302	17.231	-2.572	2.850	-0.423		3.846	-0.621	1.326	0.000	0.000	0.000	0.000
92	S32H	4	58.151		4.313	0.748	1.374	8.921	-2.572	1.493	-0.423		11.622	-1.786	1.406	0.000	0.000	0.000	0.000
93	CT	13	58.251		4.168	0.712	1.377	8.665	-2.572	1.451	-0.423		11.981	-1.822	1.407	0.000	0.000	0.000	0.000
94	S3H	6	58.601		3.716	0.587	1.391	7.770	-2.572	1.305	-0.423		13.292	-1.947	1.412	0.000	0.000	0.000	0.000
95	QD	14	58.852		3.574	-0.015	1.402	7.264	-1.486	1.223	-0.240		13.789	-0.015	1.415	0.000	0.000	0.000	0.000
END	HCFDO	2	58.852		3.574	-0.015	1.402	7.264	-1.486	1.223	-0.240		13.789	-0.015	1.415	0.000	0.000	0.000	0.000
BEGIN	HCDF	4	58.852		3.574	-0.015	1.402	7.264	-1.486	1.223	-0.240		13.789	-0.015	1.415	0.000	0.000	0.000	0.000
96	QD	15	59.104		3.731	-0.618	1.413	7.021	-0.454	1.185	-0.066		13.307	1.918	1.418	0.000	0.000	0.000	0.000
97	S3	11	59.404		4.133	-0.729	1.425	6.886	-0.454	1.165	-0.066		12.194	1.814	1.421	0.000	0.000	0.000	0.000
98	BEND	11	61.804		9.475	-1.484	1.487	6.943	0.502	1.196	0.092		5.573	0.965	1.468	0.000	0.000	0.000	0.000
99	S5H	10	62.354		11.198	-1.669	1.496	7.217	0.502	1.246	0.092		4.621	0.775	1.485	0.000	0.000	0.000	0.000
100	CT	14	62.454		11.533	-1.702	1.497	7.267	0.502	1.255	0.092		4.471	0.741	1.489	0.000	0.000	0.000	0.000
101	SXF	4	62.554		11.874	-1.724	1.499	7.317	0.498	1.264	0.091		4.327	0.702	1.492	0.000	0.000	0.000	0.000
102	S2H	8	62.804		12.751	-1.807	1.502	7.440	0.498	1.286	0.091		4.000	0 616	1.502	0.000	0.000	0.000	0.000
103	QF	15	63.056		13.212	-0.012	1.505	7.434	-0.551	1.286	-0.091		3.848	-0.004	1.512	0.000	0.000	0.000	0.000
END	HCDF	4	63.056		13.212	-0.012	1.505	7.434	-0.551	1.286	-0.091		3.848	-0.004	1.512	0.000	0.000	0.000	0.000
BEGIN	HCFDL	2	63.056		13.212	-0.012	1.505	7.434	-0.551	1.286	-0.091		3.848	-0.004	1.512	0.000	0.000	0.000	0.000
104	QF	16	63.308		12.763	1.785	1.508	7.166	-1.580	1.241	-0.269		4.003	-0 625	1.522	0.000	0.000	0.000	0.000
105	S3	12	63.608		11.728	1.687	1.512	6.695	-1.580	1.162	-0.269		4.407	-0.728	1.534	0.000	0.000	0.000	0.000
106	BEND	12	66.008		5.307	0.971	1.560	4.083	-0.603	0.714	-0.107		9.891	-1.570	1.592	0.000	0.000	0.000	0.000
107	S5H	11	66.558		4.355	0.771	1.579	3.754	-0.603	0.655	-0.107		11.713	-1.762	1.601	0.000	0.000	0.000	0.000
108	CT	15	66.658		4.205	0.734	1.582	3.694	-0.603	0.645	-0.107		12.066	-1.797	1.602	0.000	0.000	0.000	0.000
109	S3H	7	67.008		3.738	0.607	1.596	3.484	-0.603	0.607	-0.107		13.359	-1.919	1.606	0.000	0.000	0.000	0.000
110	QD	16	67.260		3.587	0.003	1.607	3.396	-0.106	0.592	-0.021		13 840	0 023	1.609	0.000	0.000	0.000	0.000
END	HCFDL	2	67.260		3.587	0.003	1.607	3.396	-0.106	0.592	-0.021		13.840	0.023	1.609	0.000	0.000	0.000	0.000
END	B4S	1	67.260		3.587	0.003	1.607	3.396	-0.106	0.592	-0.021		13.840	0.023	1.609	0.000	0.000	0.000	0.000
END	RING	1	201.780		3.585	0.003	4.823	3.396	-0.106	0.592	-0.021		13.850	0.023	4.826	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.822774	QY =	4.825811
		QX' =	0.276111	QY' =	-0.570392
ALFA =	0.429182E-01	BETAX(MAX) =	14.013023	BETAY(MAX) =	13.849585
GAMMA(TR) =	4.827019	DX(MAX) =	2.904409	DY(MAX) =	0.000000
		XCO(MAX) =	17.568722	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	9.949599	YCO(R.M.S.) =	0.000000

... SEARCHING FOR CLOSED ORBIT FOR BEAM LINE "RING ", DELTA(P)/P = 0.008000, SYMM = F

... ITER.	X	PX	Y	PY	ERROR
... 1	0.004595	-0.000156	0.000000	0.000000	0.214977E-02
... 2	0.004596	-0.000149	0.000000	0.000000	0.224955E-04
... 3	0.004596	-0.000149	0.000000	0.000000	0.106091E-08

Page 41

TABLE IV 9

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.008000 SYMM = F

ELEMENT SEQUENCE POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	HORIZONTAL BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	VERTICAL BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000	3.570	0.001	0.000	4.596	-0.149	0.608	-0.023	13.901	0.030	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630	3.569	0.001	0.804	4.596	-0.149	0.608	-0.023	13.906	0.030	0.804	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630	3.569	0.001	0.804	4.596	-0.149	0.608	-0.023	13.906	0.030	0.804	0.000	0.000	0.000	0.000
55	QD	9	33.882	3.717	-0.601	0.815	4.642	0.518	0.614	0.066	13.398	1.977	0.807	0.000	0.000	0.000	0.000
56	S3	7	34.182	4.107	-0.709	0.827	4.796	0.518	0.633	0.066	12.254	1.868	0.811	0.000	0.000	0.000	0.000
57	BEND	7	36.582	9.329	-1.456	0.889	7.606	1.834	0.982	0.229	5.457	0.987	0.858	0.000	0.000	0.000	0.000
58	S5H	6	37.132	11.017	-1.638	0.898	8.607	1.834	1.106	0.229	4.488	0.790	0.876	0.000	0.000	0.000	0.000
59	CT	8	37.232	11.346	-1.672	0.899	8.789	1.834	1.129	0.229	4.335	0.754	0.879	0.000	0.000	0.000	0.000
60	SXF	3	37.332	11.679	-1.691	0.901	8.970	1.829	1.151	0.228	4.189	0.713	0.883	0.000	0.000	0.000	0.000
61	S2H	5	37.582	12.538	-1.773	0.904	9.424	1.829	1.207	0.228	3.858	0.623	0.893	0.000	0.000	0.000	0.000
62	QF	9	37.834	12.988	-0.008	0.907	9.713	0.480	1.242	0.055	3.699	0.020	0.903	0.000	0.000	0.000	0.000
END	HCDF	3	37.834	12.988	-0.008	0.907	9.713	0.480	1.242	0.055	3.699	0.020	0.903	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834	12.988	-0.008	0.907	9.713	0.480	1.242	0.055	3.699	0.020	0.903	0.000	0.000	0.000	0.000
63	QF	10	38.086	12.546	1.757	0.910	9.662	-0.886	1.234	-0.120	3 837	-0.580	0.914	0.000	0.000	0.000	0.000
64	S3	8	38.386	11.529	1.660	0.914	9.398	-0.886	1.199	-0.120	4.213	-0.683	0.926	0.000	0.000	0.000	0.000
65	BEND	8	40.786	5.223	0.954	0.963	8.802	0.387	1.102	0.038	9.489	-1.535	0.987	0.000	0.000	0.000	0.000
66	S5H	7	41.336	4.290	0.755	0.982	9.013	0.387	1.122	0.038	11.269	-1.728	0.996	0.000	0.000	0.000	0.000
67	CT	9	41.436	4.144	0.718	0.986	9.051	0.387	1.126	0.038	11.616	-1.763	0.997	0.000	0.000	0.000	0.000
68	SXD	3	41.536	4.008	0.653	0.989	9.091	0.420	1.130	0.046	11.960	-1.710	0.998	0.000	0.000	0.000	0.000
69	S2H	6	41.786	3.706	0.565	1.000	9.195	0.420	1.141	0.046	12.829	-1.792	1.002	0.000	0.000	0.000	0.000
70	QD	10	42.037	3.576	-0.035	1.011	9.468	1.769	1.173	0.213	13.264	0.071	1.005	0.000	0.000	0.000	0.000
END	HCFD	3	42.037	3.576	-0.035	1.011	9.468	1.769	1.173	0.213	13.264	0.071	1.005	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037	3.576	-0.035	1.011	9.468	1.769	1.173	0.213	13.264	0.071	1.005	0.000	0.000	0.000	0.000
71	QD	11	42.289	3.743	-0.640	1.022	10.085	3.181	1.248	0.388	12.759	1.924	1.008	0.000	0.000	0.000	0.000
72	S32H	3	45.539	11.786	-1.855	1.102	20.342	3.181	2.490	0.388	4.185	0.736	1.080	0.000	0.000	0.000	0.000
73	CT	10	45.639	12.158	-1.892	1.104	20.657	3.181	2.528	0.388	4.042	0.699	1.084	0.000	0.000	0.000	0.000
74	S3H	4	45.989	13.517	-2.023	1.108	21.762	3.181	2.662	0.388	3.601	0.571	1.099	0.000	0.000	0.000	0.000
75	QF	11	46.241	14.058	-0.118	1.111	22.171	0.084	2.711	0.010	3.460	-0.001	1.110	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241	14.058	-0.118	1.111	22.171	0.084	2.711	0.010	3.460	-0.001	1.110	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241	14.058	-0.118	1.111	22.171	0.084	2.711	0.010	3.460	-0.001	1.110	0.000	0.000	0.000	0.000
76	QF	12	46.493	13.632	1.803	1.114	21.804	-3.017	2.666	-0.370	3.602	-0.573	1.121	0.000	0.000	0.000	0.000
77	S3	9	46.793	12.587	1.711	1.117	20.906	-3.017	2.557	-0.370	3.975	-0.682	1.134	0.000	0.000	0.000	0.000
78	BEND	9	49.193	5.874	1.060	1.162	15.038	-1.889	1.841	-0.233	9.413	-1.603	1.198	0.000	0.000	0.000	0.000
79	S5H	8	49.743	4.825	0.863	1.178	14.008	-1.889	1.714	-0.233	11.276	-1.810	1.206	0.000	0.000	0.000	0.000
80	CT	11	49.843	4.657	0.827	1.181	13.820	-1.889	1.691	-0.233	11.639	-1.848	1.208	0.000	0.000	0.000	0.000
81	SXD	4	49.943	4.502	0.741	1.185	13.637	-1.812	1.669	-0.214	11.996	-1.752	1.209	0.000	0.000	0.000	0.000
82	S2H	7	50.193	4.155	0.656	1.194	13.187	-1.812	1.617	-0.214	12.885	-1.836	1.212	0.000	0.000	0.000	0.000
83	QD	12	50.445	3.994	-0.001	1.204	12.971	0.078	1.592	0.017	13.341	0.035	1.215	0.000	0.000	0.000	0.000
END	HCFD	4	50.445	3.994	-0.001	1.204	12.971	0.078	1.592	0.017	13.341	0.035	1.215	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445	3.994	-0.001	1.204	12.971	0.078	1.592	0.017	13.341	0.035	1.215	0.000	0.000	0.000	0.000
84	QD	13	50.697	4.156	-0.658	1.214	13.226	1.970	1.626	0.250	12.851	1.902	1.218	0.000	0.000	0.000	0.000
85	S3	10	50.997	4.578	-0.761	1.224	13.813	1.970	1.699	0.250	11.751	1.795	1.222	0.000	0.000	0.000	0.000
86	BEND	10	53.397	9.863	-1.421	1.282	19.897	3.117	2.459	0.389	5.298	0.917	1.271	0.000	0.000	0.000	0.000
87	S5H	9	53.947	11.505	-1.588	1.290	21.598	3.117	2.669	0.389	4.401	0.727	1.289	0.000	0.000	0.000	0.000
88	CT	12	54.047	11.823	-1.619	1.291	21.907	3.117	2.708	0.389	4.261	0.693	1.293	0.000	0.000	0.000	0.000
89	S3H	5	54.397	12.984	-1.725	1.296	22.990	3.117	2.842	0.389	3.821	0.572	1.306	0.000	0.000	0.000	0.000
90	QF	13	54.649	13.394	0.103	1.299	23.361	-0.151	2.888	-0.015	3.687	-0.026	1.317	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649	13.394	0.103	1.299	23.361	-0.151	2.888	-0.015	3.687	-0.026	1.317	0.000	0.000	0.000	0.000

TABLE IV 9

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.008000 SYMM = F PAGE 2

ELEMENT SEQUENCE				HORIZONTAL						VERTICAL					
POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649	13.394	0.103	1.299	23.361	-0.151	2.888	-0.015	3.687	-0.026	1.317	0.000	0.000	0.000	0.000
91	QF	14	54.901	12.883	1.917	1.302	22.915	-3.413	2.834	-0.418	3.848	-0.628	1.328	0.000	0.000	0.000	0.000
92	S32H	4	58.151	4.293	0.747	1.373	11.910	-3.413	1.496	-0.418	11.668	-1.797	1.408	0.000	0.000	0.000	0.000
93	CT	13	58.251	4.148	0.711	1.377	11.571	-3.413	1.455	-0.418	12.028	-1.833	1.409	0.000	0.000	0.000	0.000
94	S3H	6	58.601	3.698	0.585	1.391	10.386	-3.413	1.311	-0.418	13.345	-1.959	1.413	0.000	0.000	0.000	0.000
95	QD	14	58.852	3.557	-0.014	1.402	9.717	-1.961	1.230	-0.235	13.845	-0.020	1.416	0.000	0.000	0.000	0.000
END	HCFDO	2	58.852	3.557	-0.014	1.402	9.717	-1.961	1.230	-0.235	13.845	-0.020	1.416	0.000	0.000	0.000	0.000
BEGIN	HCDF	4	58.852	3.557	-0.014	1.402	9.717	-1.961	1.230	-0.235	13.845	-0.020	1.416	0.000	0.000	0.000	0.000
96	QD	15	59.104	3.712	-0.615	1.413	9.400	-0.580	1.194	-0.060	13.364	1.923	1.419	0.000	0.000	0.000	0.000
97	S3	11	59.404	4.111	-0.725	1.425	9.228	-0.580	1.177	-0.060	12.251	1.818	1.423	0.000	0.000	0.000	0.000
98	BEND	11	61.804	9.417	-1.475	1.487	9.360	0.691	1.221	0.097	5.627	0.968	1.469	0.000	0.000	0.000	0.000
99	S5H	10	62.354	11.127	-1.659	1.496	9.737	0.691	1.274	0.097	4.673	0.780	1.486	0.000	0.000	0.000	0.000
100	CT	14	62.454	11.460	-1.693	1.497	9.805	0.691	1.284	0.097	4.521	0.746	1.489	0.000	0.000	0.000	0.000
101	SXF	4	62.554	11.797	-1.710	1.498	9.873	0.684	1.293	0.096	4.377	0.706	1.493	0.000	0.000	0.000	0.000
102	S2H	8	62.804	12.666	-1.793	1.502	10.043	0.684	1.317	0.096	4.048	0.621	1.502	0.000	0.000	0.000	0.000
103	QF	15	63.056	13.122	-0.010	1.505	10.037	-0.732	1.317	-0.090	3.896	-0.005	1.512	0.000	0.000	0.000	0.000
END	HCDF	4	63.056	13.122	-0.010	1.505	10.037	-0.732	1.317	-0.090	3.896	-0.005	1.512	0.000	0.000	0.000	0.000
BEGIN	HCFDL	2	63.056	13.122	-0.010	1.505	10.037	-0.732	1.317	-0.090	3.896	-0.005	1.512	0.000	0.000	0.000	0.000
104	QF	16	63.308	12.676	1.774	1.508	9.680	-2.122	1.272	-0.273	4.054	-0.632	1.523	0.000	0.000	0.000	0.000
105	S3	12	63.608	11.649	1.677	1.512	9.048	-2.122	1.192	-0.273	4.460	-0.735	1.534	0.000	0.000	0.000	0.000
106	BEND	12	66.008	5.273	0.966	1.561	5.532	-0.822	0.735	-0.112	9.961	-1.576	1.592	0.000	0.000	0.000	0.000
107	S5H	11	66.558	4.328	0.766	1.579	5.083	-0.822	0.675	-0.112	11.785	-1.766	1.600	0.000	0.000	0.000	0.000
108	CT	15	66.658	4.179	0.730	1.583	5.002	-0.822	0.664	-0.112	12.139	-1.801	1.601	0.000	0.000	0.000	0.000
109	S3H	7	67.008	3.717	0.602	1.597	4.717	-0.822	0.625	-0.112	13.431	-1.923	1.606	0.000	0.000	0.000	0.000
110	QD	16	67.260	3.568	0.001	1.608	4.596	-0.149	0.608	-0.023	13.910	0.030	1.608	0.000	0.000	0.000	0.000
END	HCFDL	2	67.260	3.568	0.001	1.608	4.596	-0.149	0.608	-0.023	13.910	0.030	1.608	0.000	0.000	0.000	0.000
END	B4S	1	67.260	3.568	0.001	1.608	4.596	-0.149	0.608	-0.023	13.910	0.030	1.608	0.000	0.000	0.000	0.000
END	RING	1	201.780	3.565	0.001	4.825	4.596	-0.149	0.608	-0.023	13.928	0.030	4.823	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.824923	QY =	4.822551
		QX' =	0.360883	QY' =	-0.761640
ALFA =	0.432149E-01	BETAX(MAX) =	14.062001	BETAY(MAX) =	13.928248
GAMMA(TR) =	4.810421	DX(MAX) =	2.888203	DY(MAX) =	0.000000
		XCO(MAX) =	23.361379	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	13.249608	YCO(R.M.S.) =	0.000000

... SEARCHING FOR CLOSED ORBIT FOR BEAM LINE "RING ", DELTA(P)/P = 0.010000, SYMM = F

... ITER.	X	PX	Y	PY	ERROR
... 1	0.005831	-0.000207	0.000000	0.000000	0.267736E-02
... 2	0.005829	-0.000197	0.000000	0.000000	0.337740E-04
... 3	0.005829	-0.000197	0.000000	0.000000	0.273442E-08

TABLE IV

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.010000 SYMM = F

POS. NO.	ELEMENT NAME	SEQUENCE OCC. NO.	DIST [M]	I	HORIZONTAL BETAX [M]	ALFAX [1]	MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I	VERTICAL BETAY [M]	ALFAY [1]	MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	RING	1	0.000		3.551	-0.001	0.000	5.829	-0.197	0.625	-0.025		13.969	0.036	0.000	0.000	0.000	0.000	0.000
BEGIN	B4S	1	33.630		3.550	-0.001	0.804	5.829	-0.197	0.625	-0.025		13.976	0.036	0.804	0.000	0.000	0.000	0.000
BEGIN	HCDF	3	33.630		3.550	-0.001	0.804	5.829	-0.197	0.625	-0.025		13.976	0.036	0.804	0.000	0.000	0.000	0.000
55	QD	9	33.882		3.698	-0.600	0.815	5.886	0.650	0.630	0.066		13.464	1.993	0.807	0.000	0.000	0.000	0.000
56	S3	7	34.182		4.087	-0.709	0.827	6.079	0.650	0.650	0.066		12.313	1.884	0.811	0.000	0.000	0.000	0.000
57	BEND	7	36.582		9.298	-1.455	0.890	9.586	2.292	0.997	0.229		5.474	0.995	0.857	0.000	0.000	0.000	0.000
58	S5H	6	37.132		10.981	-1.637	0.898	10.834	2.292	1.121	0.229		4.498	0.797	0.875	0.000	0.000	0.000	0.000
59	CT	8	37.232		11.309	-1.670	0.900	11.060	2.292	1.143	0.229		4.344	0.761	0.878	0.000	0.000	0.000	0.000
60	SXF	3	37.332		11.641	-1.686	0.901	11.287	2.283	1.165	0.227		4.198	0.718	0.882	0.000	0.000	0.000	0.000
61	S2H	5	37.582		12.496	-1.767	0.904	11.852	2.283	1.221	0.227		3.864	0.629	0.892	0.000	0.000	0.000	0.000
62	QF	9	37.834		12.944	-0.009	0.907	12.211	0.587	1.256	0.052		3.703	0.025	0.902	0.000	0.000	0.000	0.000
END	HCDF	3	37.834		12.944	-0.009	0.907	12.211	0.587	1.256	0.052		3.703	0.025	0.902	0.000	0.000	0.000	0.000
BEGIN	HCFD	3	37.834		12.944	-0.009	0.907	12.211	0.587	1.256	0.052		3.703	0.025	0.902	0.000	0.000	0.000	0.000
63	QF	10	38.086		12.505	1.750	0.911	12.143	-1.130	1.247	-0.124		3.839	-0.575	0.913	0.000	0.000	0.000	0.000
64	S3	8	38.386		11.494	1.654	0.914	11.807	-1.130	1.210	-0.124		4.211	-0.678	0.925	0.000	0.000	0.000	0.000
65	BEND	8	40.786		5.212	0.954	0.964	11.005	0.458	1.102	0.033		9.450	-1.530	0.986	0.000	0.000	0.000	0.000
66	S5H	7	41.336		4.281	0.755	0.982	11.254	0.458	1.119	0.033		11.220	-1.723	0.995	0.000	0.000	0.000	0.000
67	CT	9	41.436		4.136	0.718	0.986	11.300	0.458	1.123	0.033		11.565	-1.758	0.996	0.000	0.000	0.000	0.000
68	SXD	3	41.536		4.001	0.645	0.990	11.348	0.510	1.126	0.043		11.906	-1.683	0.998	0.000	0.000	0.000	0.000
69	S2H	6	41.786		3.703	0.558	1.000	11.474	0.510	1.137	0.043		12.759	-1.763	1.001	0.000	0.000	0.000	0.000
70	QD	10	42.037		3.576	-0.041	1.011	11.809	2.192	1.168	0.210		13.181	0.089	1.004	0.000	0.000	0.000	0.000
END	HCFD	3	42.037		3.576	-0.041	1.011	11.809	2.192	1.168	0.210		13.181	0.089	1.004	0.000	0.000	0.000	0.000
BEGIN	HCDFO	2	42.037		3.576	-0.041	1.011	11.809	2.192	1.168	0.210		13.181	0.089	1.004	0.000	0.000	0.000	0.000
71	QD	11	42.289		3.745	-0.647	1.022	12.573	3.954	1.241	0.384		12.671	1.929	1.007	0.000	0.000	0.000	0.000
72	S32H	3	45.539		11.825	-1.864	1.102	25.294	3.954	2.463	0.384		4.116	0.730	1.080	0.000	0.000	0.000	0.000
73	CT	10	45.639		12.198	-1.902	1.104	25.685	3.954	2.500	0.384		3.975	0.693	1.084	0.000	0.000	0.000	0.000
74	S3H	4	45.989		13.562	-2.033	1.108	27.055	3.954	2.632	0.384		3.540	0.564	1.099	0.000	0.000	0.000	0.000
75	QF	11	46.241		14.105	-0.122	1.111	27.562	0.103	2.680	0.009		3.401	-0.001	1.110	0.000	0.000	0.000	0.000
END	HCDFO	2	46.241		14.105	-0.122	1.111	27.562	0.103	2.680	0.009		3.401	-0.001	1.110	0.000	0.000	0.000	0.000
BEGIN	HCFD	4	46.241		14.105	-0.122	1.111	27.562	0.103	2.680	0.009		3.401	-0.001	1.110	0.000	0.000	0.000	0.000
76	QF	12	46.493		13.680	1.806	1.114	27.106	-3.752	2.636	-0.366		3.540	-0.565	1.122	0.000	0.000	0.000	0.000
77	S3	9	46.793		12.635	1.714	1.117	25.992	-3.752	2.529	-0.366		3.909	-0.676	1.135	0.000	0.000	0.000	0.000
78	BEND	9	49.193		5.888	1.072	1.161	18.699	-2.353	1.821	-0.231		9.347	-1.615	1.199	0.000	0.000	0.000	0.000
79	S5H	8	49.743		4.829	0.873	1.178	17.418	-2.353	1.696	-0.231		11.220	-1.825	1.208	0.000	0.000	0.000	0.000
80	CT	11	49.843		4.659	0.837	1.181	17.185	-2.353	1.673	-0.231		11.585	-1.863	1.209	0.000	0.000	0.000	0.000
81	SXD	4	49.943		4.503	0.739	1.184	16.958	-2.235	1.652	-0.208		11.941	-1.736	1.210	0.000	0.000	0.000	0.000
82	S2H	7	50.193		4.159	0.654	1.194	16.405	-2.235	1.601	-0.208		12.821	-1.819	1.214	0.000	0.000	0.000	0.000
83	QD	12	50.445		3.998	-0.003	1.203	16.142	0.116	1.578	0.021		13.270	0.043	1.217	0.000	0.000	0.000	0.000
END	HCFD	4	50.445		3.998	-0.003	1.203	16.142	0.116	1.578	0.021		13.270	0.043	1.217	0.000	0.000	0.000	0.000
BEGIN	HCDFL	1	50.445		3.998	-0.003	1.203	16.142	0.116	1.578	0.021		13.270	0.043	1.217	0.000	0.000	0.000	0.000
84	QD	13	50.697		4.162	-0.661	1.213	16.463	2.472	1.611	0.252		12.780	1.898	1.220	0.000	0.000	0.000	0.000
85	S3	10	50.997		4.585	-0.763	1.224	17.197	2.472	1.685	0.252		11.684	1.791	1.224	0.000	0.000	0.000	0.000
86	BEND	10	53.397		9.854	-1.413	1.281	24.801	3.895	2.444	0.389		5.276	0.907	1.273	0.000	0.000	0.000	0.000
87	S5H	9	53.947		11.483	-1.578	1.289	26.921	3.895	2.654	0.389		4.391	0.719	1.291	0.000	0.000	0.000	0.000
88	CT	12	54.047		11.798	-1.608	1.291	27.307	3.895	2.692	0.389		4.252	0.685	1.294	0.000	0.000	0.000	0.000
89	S3H	5	54.397		12.950	-1.714	1.295	28.657	3.895	2.825	0.389		3.819	0.565	1.308	0.000	0.000	0.000	0.000
90	QF	13	54.649		13.354	0.109	1.298	29.121	-0.179	2.872	-0.013		3.688	-0.033	1.319	0.000	0.000	0.000	0.000
END	HCDFL	1	54.649		13.354	0.109	1.298	29.121	-0.179	2.872	-0.013		3.688	-0.033	1.319	0.000	0.000	0.000	0.000

TABLE IV

AGS BOOSTER LATTICE FOR SURVEY "MAD" VERSION: 6.01/03 RUN: 19-NOV-8 08:07:18
LINEAR LATTICE PARAMETERS FOR BEAM LINE: "RING ZOHREH PARSA /
DELTA(P)/P = 0.010000 SYMM = F PAGE 2

POS. NO.	ELEMENT NAME	OCC. NO.	DIST [M]	I	BETAX [M]	ALFAX [1]	HORIZONTAL MUX [2PI]	X(CO) [MM]	PX(CO) [.001]	DX [M]	DPX [1]	I	BETAY [M]	ALFAY [1]	VERTICAL MUY [2PI]	Y(CO) [MM]	PY(CO) [.001]	DY [M]	DPY [1]
BEGIN	HCFDO	2	54.649		13.354	0.109	1.298	29.121	-0.179	2.872	-0.013		3.688	-0.033	1.319	0.000	0.000	0.000	0.000
91	QF	14	54.901		12.843	1.917	1.301	28.568	-4.246	2.819	-0.414		3.852	-0.635	1.329	0.000	0.000	0.000	0.000
92	S32H	4	58.151		4.273	0.746	1.373	14.906	-4.246	1.500	-0.414		11.718	-1.809	1.409	0.000	0.000	0.000	0.000
93	CT	13	58.251		4.129	0.710	1.376	14.486	-4.246	1.459	-0.414		12.079	-1.845	1.410	0.000	0.000	0.000	0.000
94	S3H	6	58.601		3.680	0.584	1.390	13.015	-4.246	1.317	-0.414		13.402	-1.972	1.415	0.000	0.000	0.000	0.000
95	QD	14	58.852		3.539	-0.013	1.402	12.185	-2.425	1.238	-0.230		13.906	-0.024	1.417	0.000	0.000	0.000	0.000
END	HCFDO	2	58.852		3.539	-0.013	1.402	12.185	-2.425	1.238	-0.230		13.906	-0.024	1.417	0.000	0.000	0.000	0.000
BEGIN	HCDF	4	58.852		3.539	-0.013	1.402	12.185	-2.425	1.238	-0.230		13.906	-0.024	1.417	0.000	0.000	0.000	0.000
96	QD	15	59.104		3.693	-0.611	1.413	11.798	-0.693	1.203	-0.053		13.425	1.928	1.420	0.000	0.000	0.000	0.000
97	S3	11	59.404		4.089	-0.721	1.425	11.592	-0.693	1.188	-0.053		12.311	1.823	1.424	0.000	0.000	0.000	0.000
98	BEND	11	61.804		9.358	-1.467	1.487	11.828	0.891	1.247	0.103		5.681	0.972	1.470	0.000	0.000	0.000	0.000
99	S5H	10	62.354		11.055	-1.650	1.496	12.313	0.891	1.302	0.103		4.725	0.785	1.487	0.000	0.000	0.000	0.000
100	CT	14	62.454		11.385	-1.683	1.497	12.401	0.891	1.312	0.103		4.572	0.751	1.490	0.000	0.000	0.000	0.000
101	SXF	4	62.554		11.719	-1.697	1.498	12.489	0.880	1.322	0.100		4.428	0.710	1.494	0.000	0.000	0.000	0.000
102	S2H	8	62.804		12.580	-1.779	1.502	12.706	0.880	1.347	0.100		4.097	0.626	1.503	0.000	0.000	0.000	0.000
103	QF	15	63.056		13.030	-0.008	1.505	12.702	-0.911	1.348	-0.090		3.944	-0.006	1.513	0.000	0.000	0.000	0.000
END	HCDF	4	63.056		13.030	-0.008	1.505	12.702	-0.911	1.348	-0.090		3.944	-0.006	1.513	0.000	0.000	0.000	0.000
BEGIN	HCFDL	2	63.056		13.030	-0.008	1.505	12.702	-0.911	1.348	-0.090		3.944	-0.006	1.513	0.000	0.000	0.000	0.000
104	QF	16	63.308		12.588	1.763	1.508	12.254	-2.671	1.303	-0.276		4.104	-0.639	1.523	0.000	0.000	0.000	0.000
105	S3	12	63.608		11.569	1.666	1.512	11.461	-2.671	1.221	-0.276		4.514	-0.741	1.534	0.000	0.000	0.000	0.000
106	BEND	12	66.008		5.237	0.961	1.561	7.024	-1.050	0.757	-0.116		10.033	-1.581	1.591	0.000	0.000	0.000	0.000
107	S5H	11	66.558		4.300	0.761	1.579	6.452	-1.050	0.694	-0.116		11.859	-1.771	1.599	0.000	0.000	0.000	0.000
108	CT	15	66.658		4.153	0.724	1.583	6.348	-1.050	0.683	-0.116		12.213	-1.806	1.600	0.000	0.000	0.000	0.000
109	S3H	7	67.008		3.695	0.597	1.597	5.984	-1.050	0.643	-0.116		13.506	-1.927	1.605	0.000	0.000	0.000	0.000
110	QD	16	67.260		3.548	-0.001	1.608	5.829	-0.197	0.625	-0.025		13.983	0.036	1.608	0.000	0.000	0.000	0.000
END	HCFDL	2	67.260		3.548	-0.001	1.608	5.829	-0.197	0.625	-0.025		13.983	0.036	1.608	0.000	0.000	0.000	0.000
END	B4S	1	67.260		3.548	-0.001	1.608	5.829	-0.197	0.625	-0.025		13 983	0.036	1.608	0.000	0.000	0.000	0.000
END	RING	1	201.780		3.543	-0.001	4.828	5.829	-0.197	0.625	-0.025		14.012	0.036	4.818	0.000	0.000	0.000	0.000

TOTAL LENGTH =	201.780000	QX =	4.827681	QY =	4.818355
		QX' =	0.442220	QY' =	-0.953803
ALFA =	0.435019E-01	BETAX(MAX) =	14.110854	BETAY(MAX) =	14.011904
GAMMA(TR) =	4.794526	DX(MAX) =	2.871719	DY(MAX) =	0.000000
		XCO(MAX) =	29.121348	YCO(MAX) =	0.000000
		XCO(R.M.S.) =	16.541174	YCO(R.M.S.) =	0.000000