SSC-N-536
8/25/88

The 90° (September '87) SSC Lattice Related to the ISP Footprint

T. E. Toohig

J. Sanford in SSC-N-524 has systematized the development of the "footprint" in the ISP which specifies the land requirements for the SSC laboratory.[1] The "footprint" is developed from a lattice described by S. Peggs in a memorandum dated 22 January 1987.

The current SSC lattice is described by A. A. Garren and D. E. Johnson in report SSC-146.[2] Paralleling the development in the Sanford report, this new lattice is here cast into the simplified representation developed by G. Drouet. Figure 1 presents the resultant "oval ring" that approximates the calculated lattice. The parameters of this ring are:

Arc radius	R = 38,100 ft
Cluster radius	R' = 91,457 ft
Arc center offset	oa = 7,498 ft
Cluster center offset	ob = 53,357 ft

The points of tangency for the two radii are at the points of inflection (PI's) in the diagram.

The arcs are each divided into 4 sectors centered on service areas. The sectors are further subdivided into 8 sections, as shown in Figure 2, which constitute minimum cryogenic operating lengths; the basic half cell is detailed in Figure 3.

The overall lattice representation is shown in somewhat more detail in Figure 4. The primary division of the lattice is into arcs and modules with lengths.

Arc length = 107,861 ft
Module length = 7,498 ft

The two arcs and 8 modules comprise the circumference of 274,380 ft, or approximately 52 miles.

The 4 modules on either side constitute a cluster whose details are shown in 5 and 6.

When this lattice is overlaid on the ISP land areas template, it lies everywhere inside the inner boundary of the land, as shown in Figure 7.

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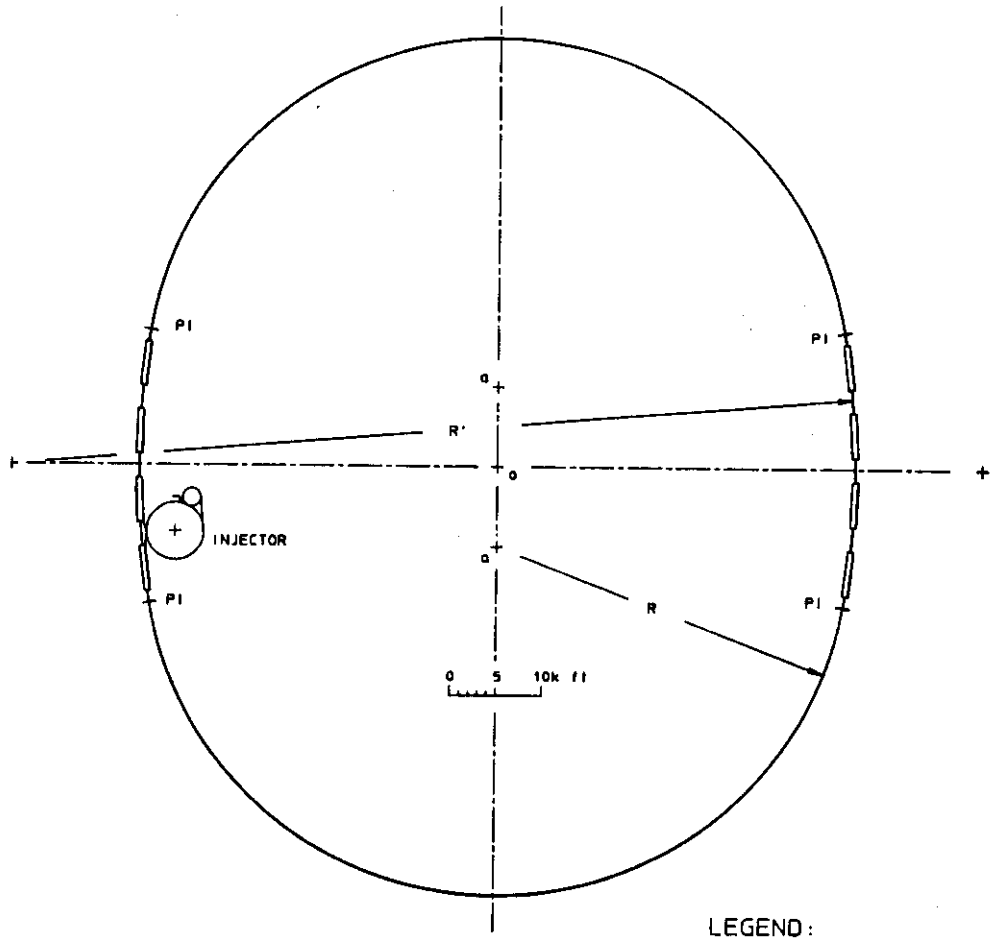
[1] J. R. Sanford, *A Study of the ISP Footprint*, SSC-N-524, June 1988.

[2] A. A. Garren, D. E. Johnson, *The 90° (September 1987) SSC Lattice*, SSC-146, September 1987.



LEGEND:

ARC RADIUS, R..... 38100.0 ft
ARC CENTER OFFSET, aa ..... 7497.7 ft

CLUSTER RADIUS, R'..... 91457.0 ft
CLUSTER CENTER OFFSET, ab... 53357.0 ft

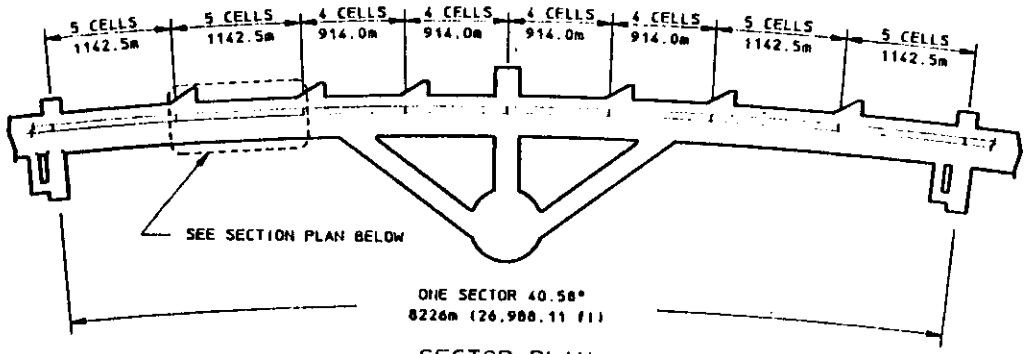
SSC SIMPLIFIED RING TEMPLATE

90° (SEPT.'87) LATTICE

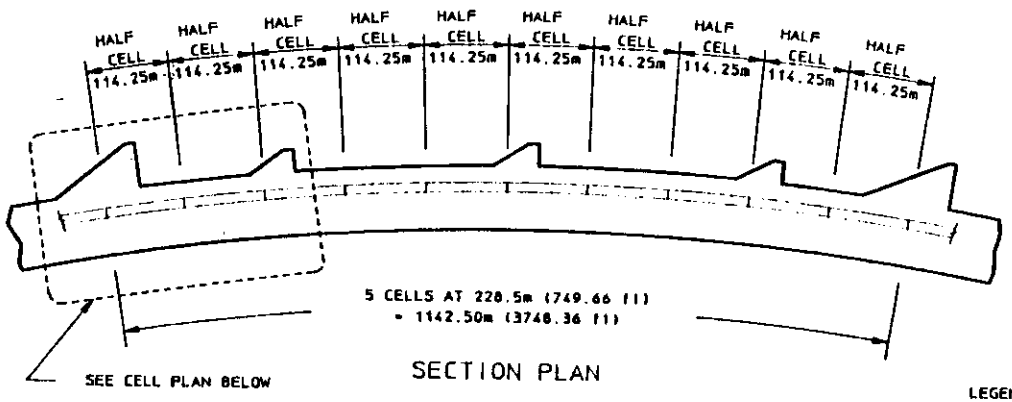
SSC CENTRAL DESIGN GROUP

SSC SITE LAYOUT
90° (SEPT. '87) LATTICE

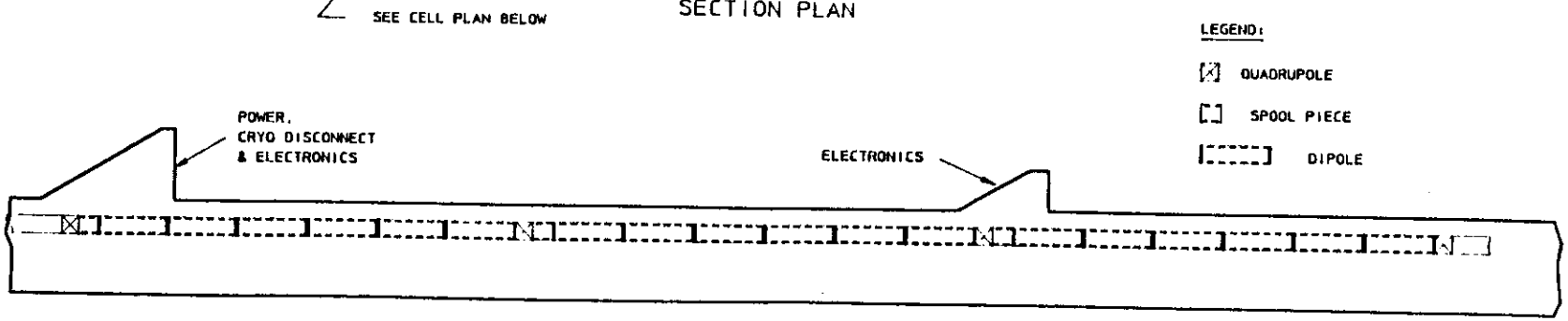
83A311



SECTOR PLAN



SECTION PLAN

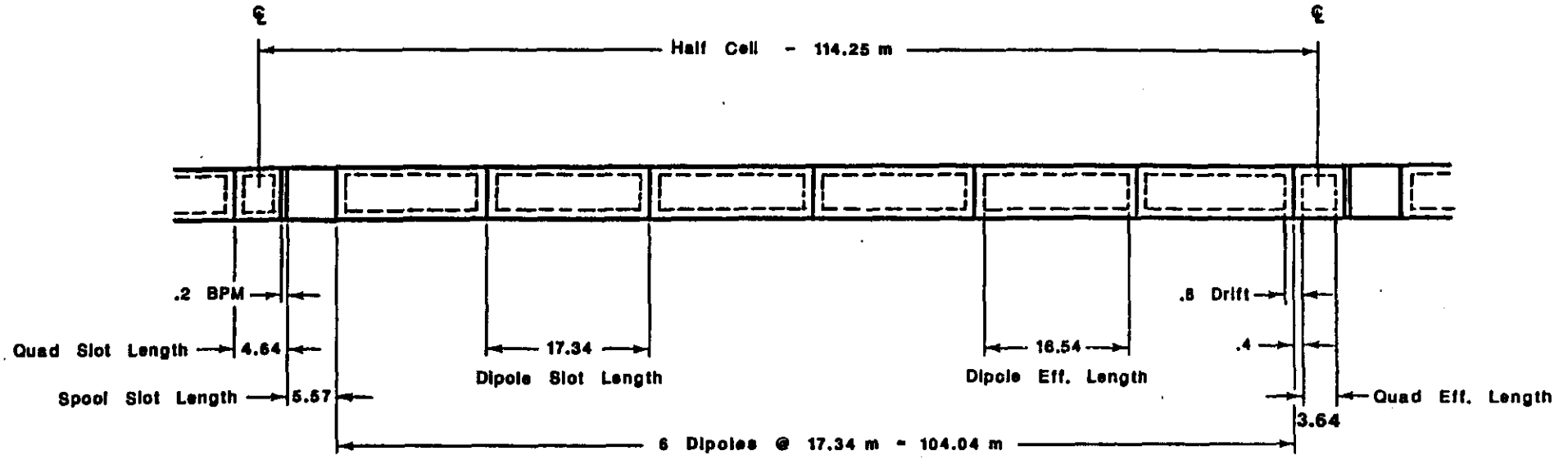


CELL PLAN

SSC CENTRAL DESIGN GROUP

COLLIDER RING/STANDARD SECTOR

83A307

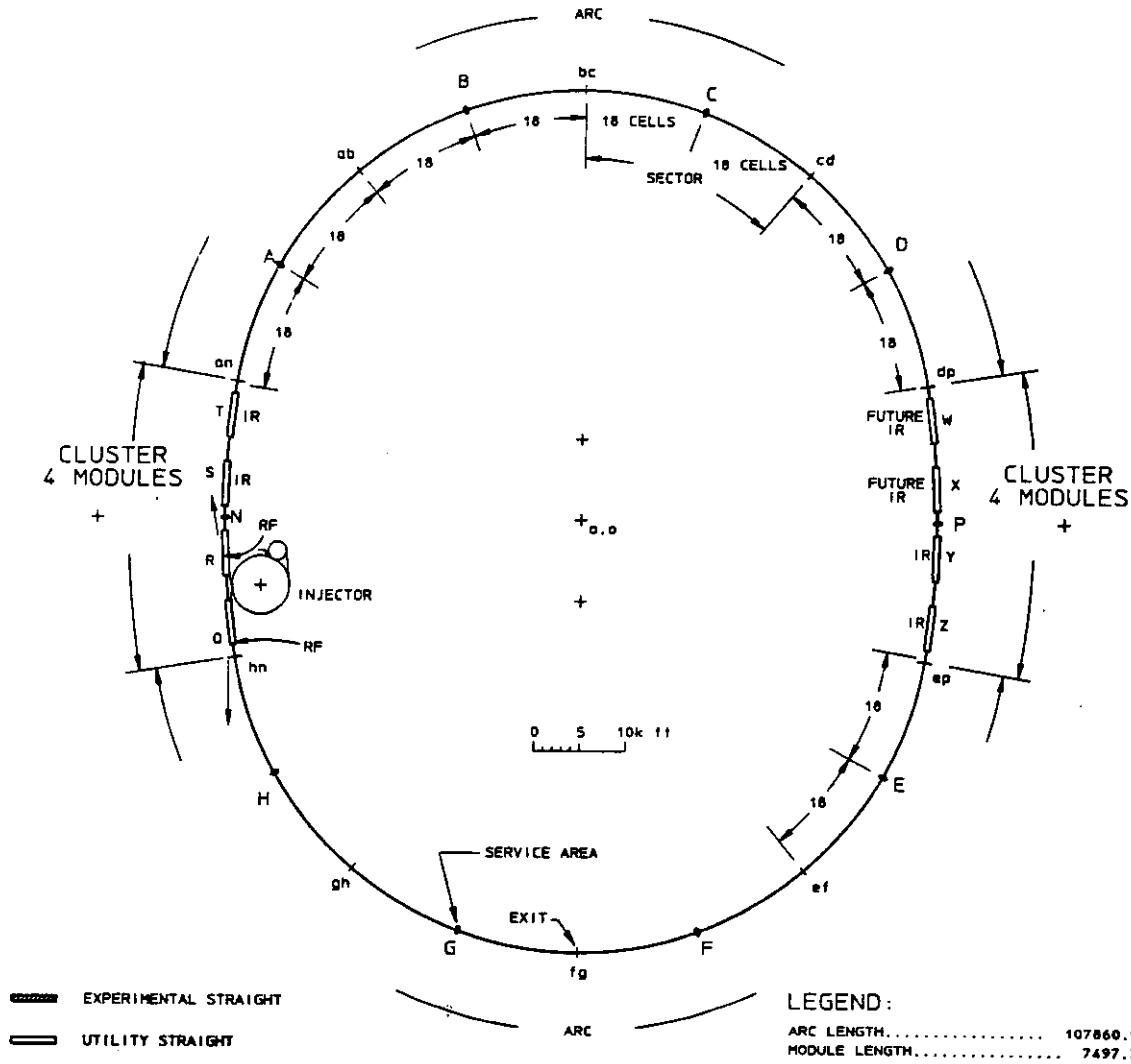


STANDARD HALF CELL - 90° OPTION (SEPT. '87) LATTICE

(G=230 T/m, B=6.6 T)

0 10 20 m

SSC CENTRAL DESIGN GROUP	
DRAWING NO. B3A286	COLLIDER, 90° OPTION STANDARD HALF CELL
SHEET ___ OF ___	DWN BY FH DATE
SCALE	APPR BY T.T. 1-28-88



EXPERIMENTAL STRAIGHT

UTILITY STRAIGHT

SERVICE AREA

EXIT

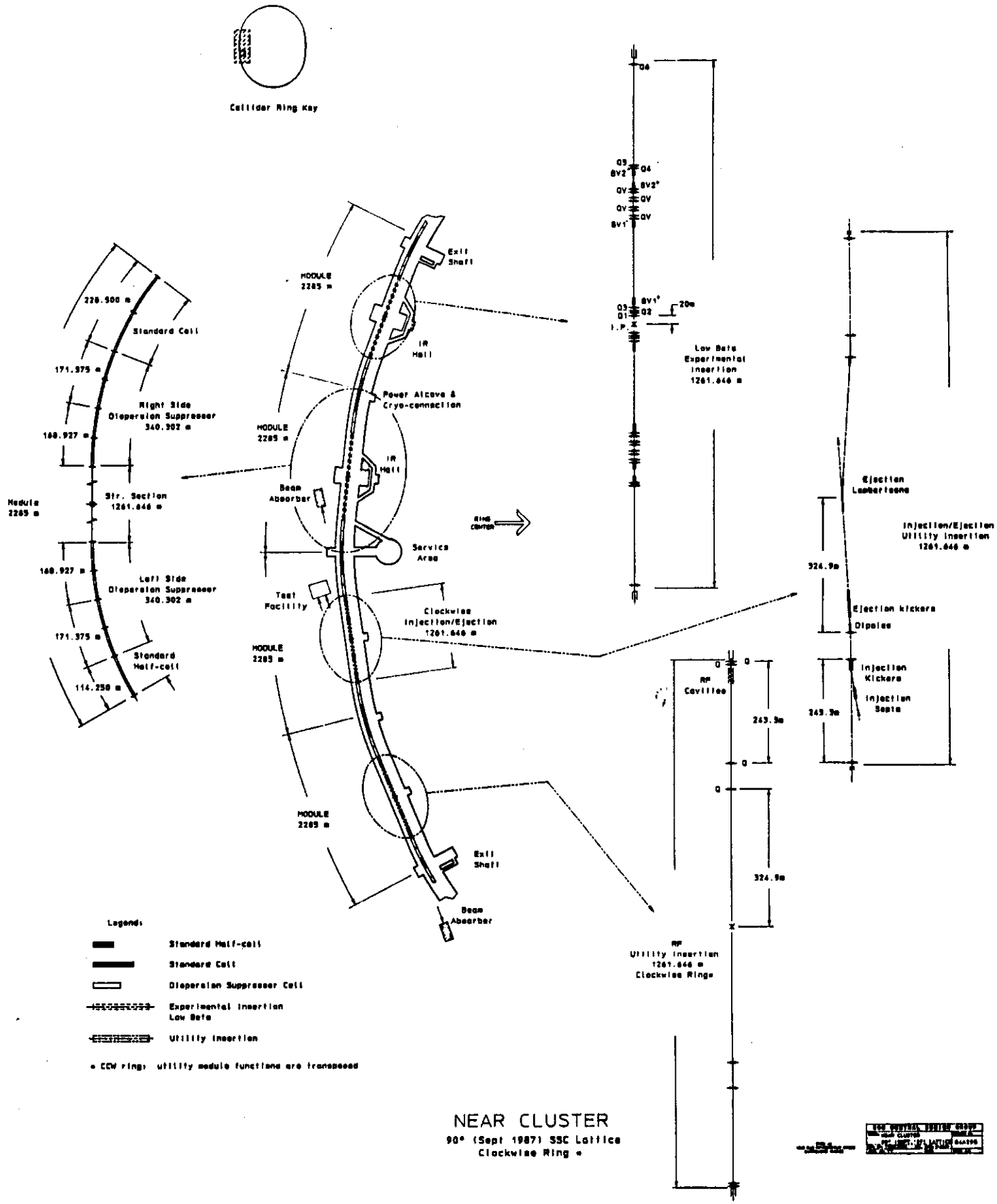
LEGEND:

ARC LENGTH..... 107860.9 ft
MODULE LENGTH..... 7497.7 ft
CIRCUMFERENCE..... 274380.0 ft

SSC SERVICE AREAS & EXITS LAYOUT

90° (SEPT.'87) LATTICE

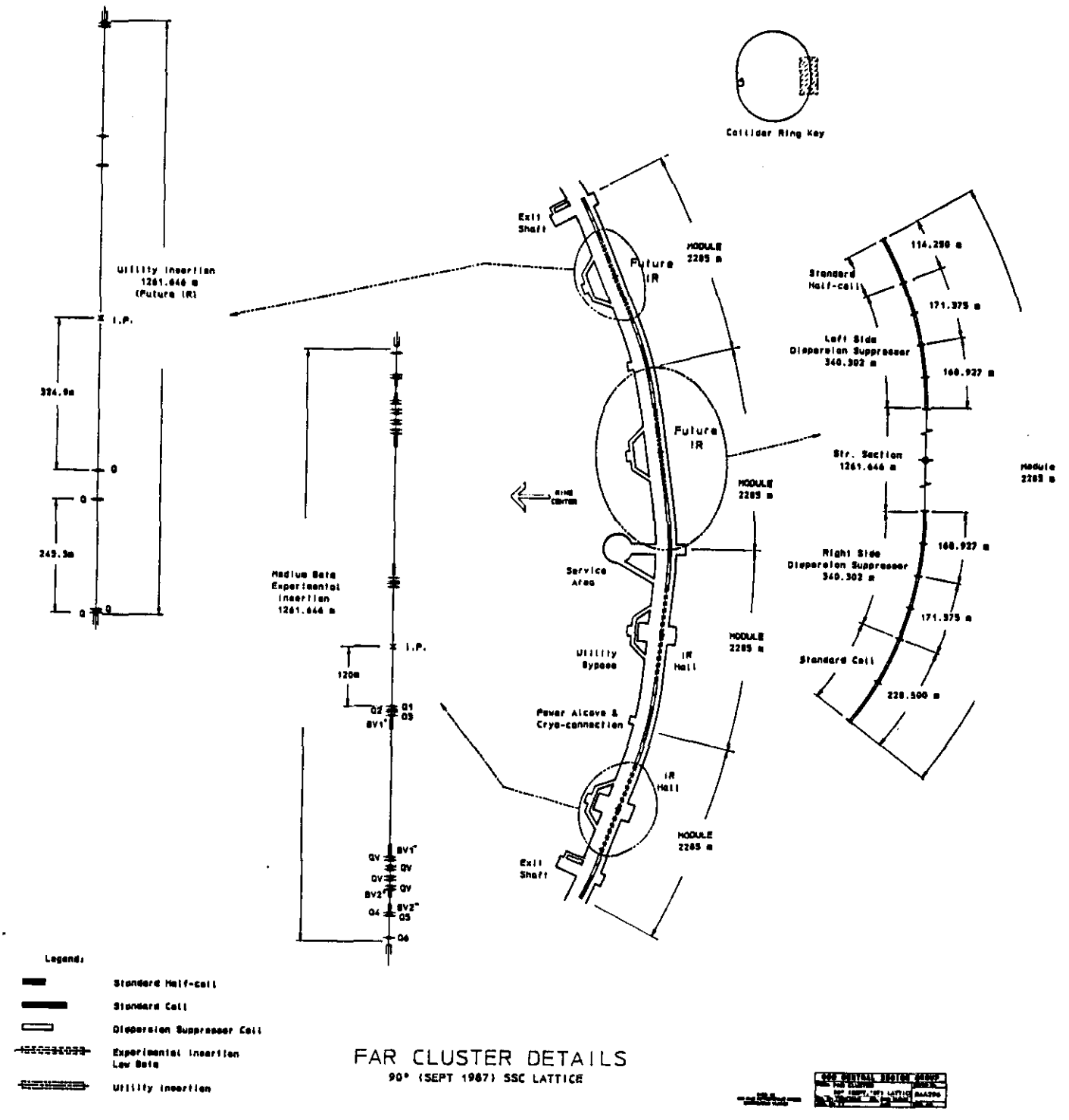
SSC CENTRAL DESIGN GROUP	
SSC SITE LAYOUT 90° (SEPT. '87) LATTICE	B3A310



NEAR CLUSTER

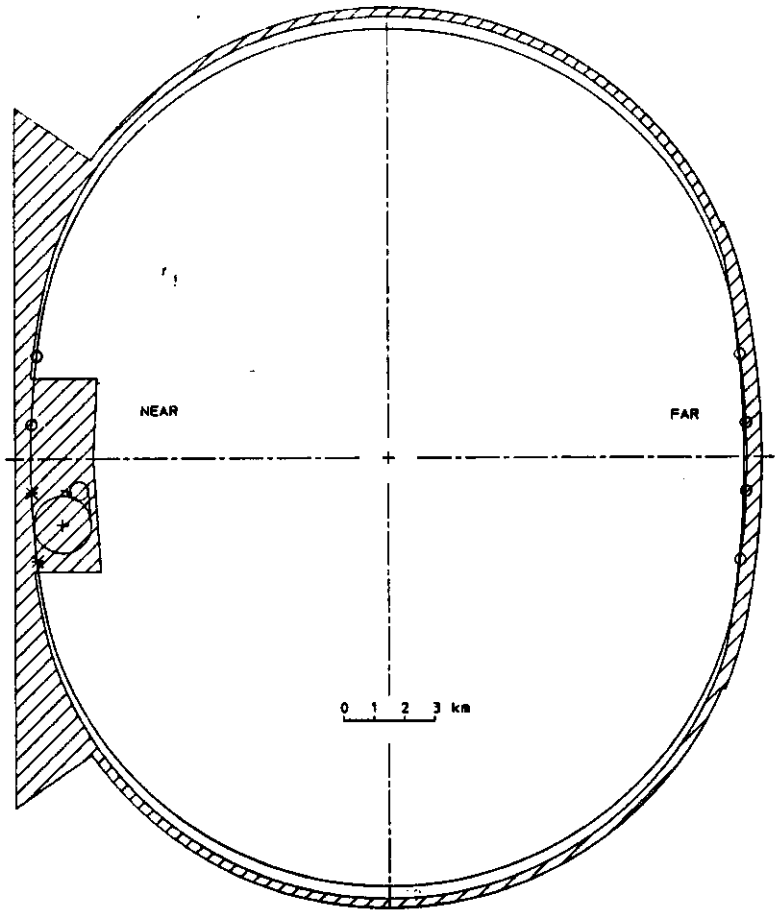
90° (Sept 1987) SSC Lattice

Clockwise Ring *



FAR CLUSTER DETAILS

90° (SEPT 1987) SSC LATTICE



SSC LATTICE/ISP FOOTPRINT OVERLAY
90° (SEPT'87) LATTICE