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The synchrotron-light-based optical system used to measure the electron and positron vertical beam sizes has proved to be an essential diagnostic tool since the start of operations at CESR. Continuous immediate information on the behavior of the beams during both tuning and routine operation by means of television monitors as well as detailed analysis of profiles obtained with CCD arrays with long-term archiving provided useful information on emittance, instabilities and damping characteristics of the beams. The original telescopic optical system, which provided a resolution of about 170 microns, was complemented with a more accurate interferometric system in 2003. This note describes the relevant beam-line elements, the extraction of the light beam, the optical elements in the light path, and details of the associated control system.

1 Introduction

The installation of the six superconducting wiggler magnets during the summer of 2004 as part of the final phase of the CESR-c upgrade necessitated moving the synchrotron-light monitor for the electron beam from its position at 14W to the other available light port at 23W. The move motivated renewed effort to develop and document a detailed description of its design and operation. Taking advantage of this work, this note presents such a description of both the electron-monitoring system and the positron-monitoring system, which has been operating at 23E since the inception of CESR operations.

2 Optics

Figure 1 shows the optical light path of the synchrotron light extracted at 23W to monitor the electron beam. The system used for the positron beam at 23E is similar but for the absence of the two horizontal mirrors.

The synchrotron light beam sweeps across the beryllium mirror installed on the outer side of the beam pipe. The reflected light is extracted via the light port on the inner side of the beam pipe and enters the vertical periscope via a UV filter. The periscope contains two remotely controlled mirrors, the so-called "touchy" and "control" mirrors. Two horizontally reflecting fixed mirrors guide the light into the entrance of the optics box. The two horizontal mirrors outside the optics box, as well as the mirrors inside the box, are mechanically fixed and are cannot be adjusted remotely. The remotely controlled interferometer slits to be further described in

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Fig. 1. Schematic diagram of the optical path of the synchrotron light extracted at 23W

Sect. 3 are located just inside the entrance to the optics box. The optical elements in the box act as a simple telescope. A parabolic mirror of 445-mm focal length focuses the image onto an eyepiece via one mirror. This eyepiece serves to focus on the light source point, which is inside the dipole magnet upstream of the primary mirror. The following splitter permits some of the light to continue onto a mirror which reflects it upward onto a CCD array. The rest of the light is reflected toward a TV camera via a set of remotely controlled neutral density filters.

Figure 2 shows the geometry of the synchrotron light extraction.[‡] P denotes the point of intersection between the line tangent to particle orbit at the end of the magnetic field and the line perpendicular to this tangent which intersects the extraction mirror location. The latter is the direction of the extracted light beam. The radius of the nominal central orbit is denoted by ρ ; w is the distance from the end of the magnetic field to the point P; d is the distance from the point P to the extraction mirror; ϕ is half the arc angle along the particle orbit in the bend magnet from the light source point to the end of the magnetic field; $\alpha = 90 - \phi$; $\beta = 180 - 2\alpha = 2\phi$; γ is half the reflection angle at the extraction mirror; L is the distance from the light source point to the extraction mirror; $L' = L - \rho \sin \phi$.

Some simple relations based on the geometry follow:

$$L' = \frac{d}{\sin 2\phi},\tag{1}$$

$$L = L' + \rho \sin \phi. \tag{2}$$

Since $d \ll \rho$, we make the following approximation:

$$L \approx \frac{d}{2\phi_0} + \rho\phi_0,\tag{3}$$

$$\rho\phi + w \approx \frac{d}{2\phi},\tag{4}$$

$$\rho\phi + w \approx L',\tag{5}$$

$$\phi_0 \approx \left| \frac{-w - \sqrt{w^2 + 2\rho d}}{2\rho} \right|. \tag{6}$$

Introducing radial deviations from the nominal central orbit, x and x', we obtain:

$$L \approx \frac{d-x}{2\phi} + \rho(\phi - x'). \tag{7}$$

Typical values are $\rho = 89$ m, w = 1.117 m at 14W and w = 1.457 m at 23W, and d = 4.5 cm.

Figure 3 is the first application of Eq. 7, showing the distance from the source point to the mirror, L, as a function of the displacement x for several values of x'. This distance varies from 2.2 to 3.75 m at 14W and 2.4 to 3.9 m at 23W for pretzel

4 Synchrotron-Light-Based Beam Profile Measurement in CESR



Fig. 2. Synchrotron light extraction geometry



Fig. 3. Distance of the source point to the mirror for various pretzel angles at 14W and 23W

angles between -2 and 2 mrad and pretzel displacement between -20 and 20 mm. The difference in this distance between locations 14W and 23W is less than 20 cm.

The results of an analogous calculation is shown in Fig. 4, which gives the distance L for various values of x. L varies from about 1.75 to 3.65 m at 14W and 1.95 to 3.8 m at 23W for perpendicular distances from the mirror to the beam axis between 3 and 4.8 cm. The difference in this distance between locations 14W and 23W is less than 25 cm.



Fig. 4. Distance to the mirror for various perpendicular distances at 14W and 23W

Finally, Fig. 5 shows the extraction reflection angle as a function of pretzel displacement for 14W and 23W. This angle varies from .759 to .766 radians at 14W and .756 and .763 radians at 23W. The difference in this angle between locations 14W and 23W is less than 3 mrad.

The positions and lengths of the beam elements in 2004 are summarized in the following tables. Table 1 gives these values for 14W, Table 2 gives them for 23W, and Table 3 gives them for 23E.

Element	Distance of Element e^- Entrance from IP along e^+ flight direction (m)	Length (m)
e^- Mirror	93.622	0.0000
Bend Magnet B15W	101.300	6.5743
Quadrupole Q15W	102.057	0.60000
Sextupole X15W	102.394	0.27200

Table 1. Beam elements at $14\mathrm{W}$

[‡]See also S.V. Milton, M.S. thesis, Cornell University, 1988



Fig. 5. Extraction reflection angle at $14\mathrm{W}$ and $23\mathrm{W}$

Element	Distance of Element e^- Entrance from IP along e^+ flight direction (m)	Length (m)
e^- Mirror	167.553	0.00000
Bend Magnet B24W	175.601	6.5743
Quadrupole Q24W	176.358	0.60000
Sextupole X24W	176.830	0.27200

Table 2. Beam elements at 23W

Element	Distance of Element e^- Entrance from IP along e^+ flight direction (m)	Length (m)
Sextupole X24E	592.013	0.27200
Quadrupole Q24E	592.679	0.60000
Bend Magnet B24E	599.410	6.5743
e^+ Mirror	600.861	0.0000

Table 3. Beam elements at $23\mathrm{E}$

2.1 Optical Resolution

The two dominant contributions to the measurement of vertical beam size are the diffraction limit of about 100 microns and the depth-of-field of the optical system combined with the geometrical effect of the beam sweeping horizontally across the beryllium mirror, which contributes about 140 microns[§]

The diffraction limit can be approximated as the apparent size of a point object viewed via the parallel component of polarization of the radiation in the visible region of the spectrum. The perpendicular component is filtered out in the optics. The RMS size of such an image is

$$\sigma_D \simeq \frac{1}{k \,\theta_0},\tag{8}$$

where k is the wavenumber of the light ($\lambda = 2\pi/k = 500$ nm) and θ_0 is the vertical opening angle:

$$\theta_0 \simeq \left[\frac{\lambda}{2\pi^2 \rho}\right]^{1/3} = 17 \,\mu \text{rad},$$
(9)

where ρ is the radius of curvature at the source point ($\rho = 89$ m). This opening angle is calculated in the approximation that the spectrum is limited to wavelengths much shorter than the critical wavelength of the synchrotron radiation.[¶] Note that the opening angle does not depend on the beam energy in this approximation, since the radius of curvature is fixed.

The contribution from the horizontal aperture limit A, which may be either the horizontal extent of the beryllium mirror, or an aperture in the optics further downstream, is

$$\sigma_f \simeq \frac{S}{2} \theta_0 \simeq \frac{A\rho}{2L} \theta_0, \tag{10}$$

where S is the length interval of the radiating particle trajectory from which light is accepted and L is the distance from the aperture limit to the source point.

The sum in quadrature of the two above contributions yields the total optical contribution of 170 microns to the measured vertical beam size.

2.2 Mirror-Alignment and Focusing Procedures

Two additional mirrors were required at 23W in the optical system by the longitudinal displacement of the optics box relative to the synchrotron light port. The primary beryllium mirror, the two mirrors in the vertical periscope, the new horizontal mirrors, the parabolic mirror in the optics box, and the mirror reflecting the beam onto the eyepiece, all had to be re-aligned.

 $[\]rm \$S.V.$ Milton, Master's thesis, Cornell University, 1988

 $[\]P{Electrodynamics},$ J.D. Jackson, $2^{\rm nd}$ edition, p. 676

The beryllium mirror at 14W exhibited some thermal dis-coloration at the impact swath position of the synchrotron light, so it was replaced with a spare. The alignment of the new beryllium mirror was done by surveying the angle of the mount on the mounting port at 14W and by measuring the reflection angle relative to the mount in a bench setup prior to re-installing the mount on the mount port at 23W. Provision was made for a copper knife-edge vacuum seal ring which was to be manufactured on short notice at the time of installation to reproduce the mount angle at 14W. This turned out to be unnecessary, since the mount port at 23W turned out to have an angle relative to the beam axis close to that at 14W. However, the remounting of the beryllium mirror on its mount did turn out to be very important, since its angle was only approximately constrained by the mounting screws. So the procedure of fixing the mount, setting up a laser beam to measure the angle, removing the old mirror from the mount, then mounting the new mirror such as to reproduce this angle turned out to be crucial to the entire alignment procedure.

Once the beryllium mirror was installed, alignment of the downstream mirrors of the optical system required the use of an electron beam. Paper targets were set up sequentially at 1) the entrance to the vertical periscope to check the position and profile of the beam exiting the beampipe, 2) midway through the vertical periscope, 3) at the exit of the periscope, 4) midway between the horizontal mirrors, 5) in the optics box in front of the parabolic mirror, 6) in front of the even even and 7) at the 50% splitter in front of the CCD. For each position of the target, a TV camera was used to display in the control room the image of the synchrotron light beam on the target, borrowing the TV signal line connection at the electronics control rack for this purpose (see Fig. 7). Since each step required setting up the target and camera, then returning to the control room to see the position of the beam on the target, then returning to the tunnel to adjust the mirror position, then returning to the control room to check that the move had the desired effect, this procedure was very time-consuming. The complete alignment required three sessions of several hours each. With practice, aperture limits could be seen on the TV image of the beam profile. It was important to align each mirror in turn along the light path without skipping any steps. Viewing the target in front of the even even involved aiming the camera through a separate port in the optics box and using a mirror inside the box for which the sole purpose was this step of the alignment procedure. Centering the beam on the evepiece was useful, but since this is a focal point in the beam, it was the worst place to try to identify any shape to the profile such as would be caused by any aperture limits. The best place to see such structure was during the final step with the target in front of the beam splitter.

Once the mirrors were aligned, the source position as a function of eyepiece position was measured using an optical rail placed on top of the upstream dipole magnet. The collimated light-beam from a pen-lamp mounted on the rail was directed onto the entrance of a special-purpose two-mirror additional periscope set up so as to deflect the beam into the entrance port of the vertical periscope. Using a local TV monitor to view the beam image on the TV camera in the optics box, the source position at which the image was focused could be determined for several eyepiece position settings. This eyepiece position setting was measured locally with a DVM on the local control chassis (see Fig. 7). The calibration of readback voltage to control database computer units (f) was then obtained to determine the following functions for source point (distance from the interaction point) and magnification factor:

23W	Source Point (m) = $(170.076 + 0.220) - (f - 560) * 0.004$
e^-	Magnification = $1 + (f - 800) * 0.0008$
23E	Source Point (m) = $(597.60 + 0.220) + (f - 600) * 0.004$
e^+	Magnification = $1 + (f - 700) * 0.0008$

The magnification is defined here as the size of the TV image divided by the collimated source size. The contribution of the length of the special-purpose periscope, 22 cm, is shown explicitly in the calculation. The settings of the eyepiece position as of October, 2004, were f = 520 for the positron beam, resulting in a source position of 597.50 and a magnification factor of 0.86. For the electron beam, the setting was f = 422, yielding a source position of 170.85 and a magnification of 0.70.

3 Interferometer

Interferometer slits can be dropped into the synchrotron-light beam at the entrance port of the optics box, providing a means for measuring the transverse image size avoiding the optical sources of resolution which amount to about 170μ for the imaging method described in this note. The slits of the interferometer are 500μ wide and spaced 2 mm apart. There is a filter in front of the interferometer slits which transmits a 10 nm wide optical frequency band centered at 500 nm. The interference pattern is imaged with the CCD array and analyzed off-line to provide accurate measurements of the vertical beam size. Figure 6 shows an example of such an interference pattern. This intensity pattern is given by

$$I(x) = I_0 \left[\frac{\sin \frac{2\pi wx}{f\lambda}}{\frac{2\pi wx}{f\lambda}} \right]^2 \left(1 + V \cos \frac{2\pi dx}{\lambda} \right), \qquad (11)$$

where w is the slit width, d is the slit spacing, λ is the frequency of the light, f is the distance from the grid to the image (about 1.5 m), and V is the "visibility" parameter, which is a measure of the ability of the system to determine the source size. This visibility parameter is given by

$$V = \exp\left[-2\left(\frac{\pi d\,\sigma_{\text{beam}}}{\lambda L}\right)^2\right],\tag{12}$$

where L denotes the distance of the source from the grid (about 5 m) and σ_{beam} is the RMS transverse size of the source.



Fig. 6. Example of an interference pattern produced with the interferometer

4 Control and Readback Electronics

The control and readback electronics of the system are mounted in half-height racks on the tunnel floor near 23E and 23W. The main parts of the system that need electronic control are the upper ("touchy") and lower ("control") mirrors in the vertical periscope, the eyepiece, the interferometer slits, the optical filters, and the CCD camera. Figure 7 shows a diagram of the local electronics rack at 23W. The functions for the various control parameters are given in Table 4. The control database mnemonics are also shown. These controls are found in the control system database under HEP TUNING/CSR DIAGNOSE. Figure 9 shows the corresponding entries in the database. The insertion switches for the optical filters and the interferometer slits are found in rack CRB.10 in the control room. A diagram of the connections in the patch panel on the bottom of the optics box at 23W is shown in Fig. 8. There is in addition a second flat cable feedthrough on the side of the optics box which carries control signals for the CCD.

5 Summary

The installation of the electron synchrotron-light apparatus at 23W took place during the four-month shutdown which ended in August, 2004. Mirror alignment and source-point measurements were performed during the weeks following



Fig. 7. Diagram of electronics control rack at $23\mathrm{W}$

	Element	Device	Purpose of	D (1)
	Label	Controlled	Element	Database mnemonic
v	raise	Top mirror	tilts mirror right	CSR SYLTOUCHY
Λ	lower	Top mintor	tilts mirror left	CSR SYLTOUCHY
v	raise	Bottom mirror	tilts mirror right	CSR SYLTE CON
1	lower	Dottom minor	tilts mirror left	CSR SYLTE CON
v	raise	Top mirror	tilts mirror up	CSR SYLTOUCHY
1	lower	100 111101	tilts mirror down	CSR SYLTOUCHY
v	raise	Bottom mirror	tilts mirror up	CSR SYLTE CON
1	lower	Dottom minor	tilts mirror down	CSR SYLTE CON
	Near	Eveniece	moves source point nearer	CSR SYLTE CON
	Far	Пусриссе	moves source point further	CSR SYLTE CON
	cw	Interferometer Slits	rotates slits clockwise	CSR SYLTE CON
	ccw	interferometer onto	rotates slits counterclockwise	CSR SYLTE CON
L	ocal/Remote	Optical Filters	toggles control to control room	
Inte	erferometer slits	Interferometer slits	inserts/removes slits	CSR SYLTFILT
	0.3	0.3 optical filter	inserts/removes filter	CSR SYLTFILT
	0.1	0.1 optical filter	inserts/removes filter	CSR SYLTFILT
	0.01	0.01 optical filter	inserts/removes filter	CSR SYLTFILT
	Signal		Output signal	
	Expo	CCD Camera	Exposure control	
	Clock		obsolete	
	TV	TV Camera	TV camera output signal	

Table 4: Local controls on the control rack at 23W shown in Fig. 7. Only the mirrors in the vertical periscopes are controlled. The corresponding control database entries can be found in the Fig. 9 and in the diagram of the optics box in Fig. 1. These controls are found in the control system database under HEP TUNING/CSR DIAGNOSE.



Fig. 8. Diagram of control cable patch panel on the bottom of the optics box viewed from below

re-commissioning of CESR operation. During the first couple of weeks following this startup, some significant motion of the electron synchrotron-light image was observed, requiring periodic readjustment of the mirrors in the vertical periscope. This apparent motion of the beam pipe stabilized on the time scale of a few weeks.

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	n 'CSR SYLT DIG' 18 20 18000000 82838701 8 0 0 0 4 0 15 0 11:
f	cmd wrraw-shi-msk wrmode stat tim xberrad str xbout-errtim 8h al6 2h
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6	e 0 0 6 F 4 0 0 0 ' - SYNLIT INTEG 'C17950 0! 2 CHCK appear
	e 0 0 0 ffff 0 0 0 0 'E- SYNLIT WORD ' C17950 0! 4 all UNSHARED 0 0 0 0 0 0 0 0 0 (
e	
•	
e e	= 0 0 0 0 0 0 0 0 0 0 ' ' 00000 0 10 = 0 0 0 3 4 0 0 0 ' E+ SYNLITWODE ' b17950 0 1 11
c	e 0 0 2 F 4 0 0 0 'E+ SYNLIT CLOCK ' B17950 01 12
6	e 0 0 0 fff 0 0 0 0 · * SYNLIT INFR0 · EI /950 0 1 13
c	e 0 0 0 0 0 0 0 0 ' ' 000000 0:20
r	n 'CSR SYLTFILT' 18 8 18000000 80838701 8 0 0 0 4 0 15 0 10!
9	c cmd wrraw-shf-msk wrmode stat tim xberrad xbout-errtim
6	e 0 0 F 1 0 0 0 0 C17068 0! 1
	e 00F10000C170690:2
	e 00F10000B16068015 00F10000B16068015
•	e 0 0 F 1 0 0 0 0 B1606A 0! 7
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<	c cmd old val rdraw-off-sca wrraw-shf-msk-llm-ulm-mode
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-	e 0 0 0 0 0 0.5 0 0 FFFFFFF -1000 1000 2 1 0 390 0 0 F 0 1 'E- HORZNTAL TILT' did516 0 did000 0! 1
	e 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	e 0 0 0 0 0 0.5 0 0 FFFFFFFF -1000 1000 2 1 0 390 0 0 F 0 1 'E+ HORZNTAL TILT' B16059 0 B17602 0! 4
r	n 'CSRSYLTE CON' 2 8 2000000 D3F7E7CF 8 0 0 5 4 11 15 0 25!
	cmd old val rdraw-ott-sca wrraw-sht-msk-llm-ulm-mode st in dly limd-bit cmdinc xberrad c rdmap strptr xbin-lim-out-errtim
f	f 5i f i 2h 2i h 4i 4h al6 4h
	s 5(0) 0.5 0 0 FFFFFFF -1000 1000 2 1 0 390 0 0 F 0 1 'E- VERTICAL TILT' didSic 0 did06 0! 2
	e 5(0) 0.5 0 0 FFFFFFF -1000 1000 2 1 0 390 0 0 F 0 1 'E FOCUSING ' dld51e 0 dld008 0! 3
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n	CSR SYNLT V' 1 2 2000000 93C7F9CF 8 0 0 5 6 11 16 0 22:
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C C f	end old val rdraw-off-sca wrraw-off-sca-lla-lade sts tin dly endinc Aberrad rdmap strptr xbin-out xberrtim Si f 2i f 6i 3h al6 3h
00400	cmd old val schwardf-sca wrraw-off-sca-lla-ula-mode sts tia dly omdine zberrar dnemp strpt robin-out zberrtim 51 f 21 f 43 hh 46 hh 53 f 21 g 64 zh 46 hh 54 g 10 g 0 -46 g 511 0 zh 40 (0) 1 *- cmt LLM 23* dl9fal d19702 0; 1 54 g 1.0 g 0 -46 g 511 0 zh 40 (0) 1 *- cmt LLM 23* dl9fal d19702 0; 1
004000	cmd old val draw-off-aca wrraw-off-sca-lla-ula-mode sts tia dly modine zberzaf dnap stptyr tobi-out zberrtim 51 f 21 f 61 ha 16 ha 50 0 1.0 0 1.0 1600 0 1 4(0) 1 '8- GRID ILDM 238' d1961a d19702 0: 1 5(0) 1.0 0 0 -4.0 511 0 1 4(0) 1 '8- GRID ILDM 238' d1961a d19702 0: 1 5(0) 1.0 0 0 -4.0 511 0 1 4(0) 1 '8- GRID ILDM 238' d1961a d19702 0: 1 '02802TM 200000 D128'0000 0 128'00'8 0 0 5.4 11 50 25:
	cmd cld val triaw-cff-aca wrraw-cff-sca-llm-ulm-mode sts tind ly modine Aberraf champ stript Abin-out Aberrin 5/ f 2/ f 6/ 3h al6 3h 5/01 1.0 0 0 1.0 1600 0.1 4(0) 1 '#- CRED TLTM 23#' d1961a d19702 0! 1 5/01 1.0 0 0 -4.0 5/10 1.4(0) 1 '#- CRED TLTM 23#' 0 0 d10702 0! 1 'CEREYLTP COM' 2 6 0800000D D19787CF# 0 0 5 4 11 15 0 25! cmd cld val draws-cff-acamet-llm-ulm-mode
	cmd old val draw-off-sca wrraw-off-sca-llm-ulm-mode sts tia dly mdine oberard admap strpt whin-out xherrin 51 f 21 f 61 h al6 h 50 j 10 0 0 -4. 0 511 0 1 4(0) 1 '%- GRD LIM 238' dl9fal dl9702 0; 1 5(0) 1.0 0 0 -4. 0 511 0 1 4(0) 1 '%- GRD LIM 238' dl9fal dl9702 0; 1 'CSRSYLTP CON' 2 6 0000000 D397870* 8 0 0 5 4 11 15 0 25; cmd old val draw-off-sca wrraw-nif-mak-llm-ulm-mode old val draw-off-sca wrraw-nif-mak-llm-ulm-mode 51 f 12 J 1 44 44 h al6 Aberrad c rambap strpt xhin-llm-out-exrtin
	cmd old val draw-off-aca wrraw-off-sca-lle-ulm-mode sts tia dly modine zberraf dnamp strptr zbho-out zberrtim 51 f 21 f 61 ha 16 hh 510 l.0 0 0 l.0 10000 0 14(0) 1 '8- GRID HLMP 238' d1961a d19702 0: 1 510 l.0 0 0 -4.0 5310 0 14(0) 1 '8- GRID HLMP 238' d1961a d19702 0: 1 'CGBSYTTP CONT 2 6 0 000000 D372TC 0 0 5 4 11 15 0 251 cmd old val draw-off-aca wrraw-shf-mak-lle-ulm-mode sts tia dly Hind-bit cmdine xberraf c ramap strptr xbin-llm-out-errtim 51 f 1 zh 21 h 41 ha 16 dh 51 (0 1.5 0 <i>preferer</i> 7 000 0000 21 0 390 0 0 <i>p</i> 0 1 '8- HXR20724 THLT' B16550 0 B17664 0: 1
	end old val draw-off-sea vrraw-off-sea-llm-ulm-mode sts isi di y mdine zkerna drampa strpt rabin-out zkernis 5 (1) (5 (0) (5 (2) (5 (
	<pre>cmd cld val chaw-off-sca vrraw-off-sca-lle-ul-mode sts tin dly omdine zberraf dnmp strpt rub sub-out zberrin Si f 21 f 61 h al6 h Si 0 1 a 0 61 a 0 61 a 14(0) 1 'z+ GRD TLM 23F' d1961 a d19702 0: 1 Si 0 1 a 0 6 a 0 6 51 a 0 14(0) 1 'z+ GRD TLM 23F' d1961 a d19702 0: 1 Si 0 1 a 0 6 a 0 6 51 a 0 14(0) 1 'z+ GRD TLM 23F' 0 401702 0: 1 Si 0 1 a 0 6 0 600000 D3F2F7CF 8 0 0 5 4 11 5 0 2 5: cmd cld val charse-off-sca wrraw-sht-mak-lle-ul-mode di val charse-off-sca wrraw-sht-mak-lle-ul-mode Si a 1 a 2 a 1 4 44 b al6 a kakerad c rub mga strpt xib-llm-out-errtim Si 1 a 12 b 14 44 b al6 kakerad c rub 0 0 0 0 0 1 'z+ GRD TLM 21F' 16655 0 817664 0: 1 Si 0 a 55 0 0 FFFFFFFF -1000 1000 1 a 0 30 0 0 7 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 0 FFFFFFFF -1000 1000 1 a 0 30 0 0 7 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 0 FFFFFFFF -1000 1000 2 1 a 0 30 0 0 7 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 0 FFFFFFFF -1000 1000 2 1 a 0 30 0 0 7 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 FFFFFFFF -1000 1000 2 1 a 0 30 0 0 0 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 FFFFFFFF -1000 1000 2 1 a 0 30 0 0 0 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 FFFFFFFF -1000 1000 2 1 a 0 30 0 0 0 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 FFFFFFFF -1000 1000 2 1 a 0 30 0 0 0 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 FFFFFFFF -1000 1000 2 1 a 0 30 0 0 0 0 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 FFFFFFFF -1000 1000 2 1 a 0 0 0 0 0 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 FFFFFFFF -1000 1000 2 1 a 0 0 0 0 0 0 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 FFFFFFFF -1000 1000 2 1 a 0 0 0 0 0 0 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 FFFFFFFF -1000 1000 2 1 a 0 0 0 0 0 0 0 1 'z+ FOCUSIAD' 'R16635 0 817664 0: 1 Si 0 a 55 0 FFFFFFF -1000 1000 2 1 a 0 80 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</pre>
	end old vol trans-off-sca vrraw-off-sca-lle-ul-mode sta isi dby vodine skorraw off-sca vlaw-out spectrum 1 (1) 1.0 (0) 1.0 (0) 1.0 (1400) 1 't+ GRID LIME 238' d1961a d19702 0: 1 (1) 1.0 (0) 0.0 -4.0 (511) 0 (1400) 1 't+ GRID LIME 238' d1961a d19702 0: 1 'CENSTLFF COM' 2 6 0000000 D1972/CF 8 0 0.5 4 11 15 0 25: cnd old vol drama-off-sca vrraw-hf-mak-lime-lime-dom sta isi d1y limet-bit cmline xherraw of c rdmap atrpit xhin-lim-out-errim 5 (0) 1.0 0 5 0 0 PFFFFFFF -1000 1000 1: 0 390 0 0 F 0 1 't+ GRID REGIN 0 116618 0 0 1664 0: 1 5 (0) 0.5 0 0 PFFFFFFF -1000 1000 1: 0 390 0 0 F 0 1 't+ GRID REGIN 0 116618 0 0 1664 0: 1 5 (0) 0.5 0 0 PFFFFFFF -1000 1000 1: 0 390 0 0 F 0 1 't+ GRID REGIN 0 116618 0 0 1664 0: 1 5 (0) 0.5 0 0 PFFFFFFF -1000 1000 1: 0 300 0 F 0 1 't+ GRID REGIN 0 116618 0 0 1664 0: 1 5 (0) 0.5 0 0 PFFFFFFF -1000 1000 1: 0 300 0 F 0 1 't+ GRID REGIN 0 10618 0 0 1664 0: 1 5 (0) 0.5 0 0 PFFFFFFF -1000 1000 1: 0 0 0 F 0 1 'tH SLT (LIMER)' 0 0 0 1760 0: 1 5 (0) 0.5 0 0 PFFFFFFF -1000 1000 1: 0 0 0 F 0 1 'tH SLT (LIMER)' 0 0 0 1660 0: 1 5 (0) 0.5 0 0 PFFFFFFF -1000 1000 1: 0 0 0 F 0 1 'tH SLT (LIMER)' 0 0 0 1660 0: 1 5 (0) 0.5 0 0 PFFFFFFF -1000 1000 1: 0 0 0 F 0 1 'tH SLT (LIMER)' 0 0 0 16 0 1 5 (0) 0.5 0 0 PFFFFFFFF -1000 1000 1: 0 0 0 F 0 1 'tH SLT (LIMER)' 0 0 0 0 F 0 1 'tH SLT (LIMER)' 0 0 0 F 0 1 'tH SLT (LIMER)' 0 0 0 F 0 1 'tH SLT (LIMER)' 0 0 0 F 0 1 'tH SLT (LIMER)' 0 0 0 F 0 1 'tH SLT (LIMER)' 0 0 0 F 0 0 'tH SLT (LIMER)' 0 0 0 F 0 0 'tH SLT (LIMER)' 0 0 0 F 0 0 'tH SLT (LIMER)'
	cmd old vol draws-off-scs wrraw-off-scs-llm-ulm-mode sts isid (y mdine zberraf dmap strpt rbin-out zberrin 51 f 21 f 61 h a6 h 51 f 21 f 61 h a16 h 51 f 21 f 21 f 61 h a16 h 51 f 21 f 21 f 61 h a16 h 51 f 21 f 21 f 61 h a16 h 51 f 21 f 21 f 61 h a16 h 51 f 21 f 21 f 61 h a16 h 51 f 21 f 21 f 61 h a16 h 51 f 21 f 21 f 61 h a16 h 51 f 21 f 21 f 61 h a16 h 51 f 21 f 21 f 61 h a16 h 51 f 21 f 21 h 41 4h a16 h 51 f 21 h 41 4h h 4h a16 h 51 f 21 h 41 4h a16 h 51 h 21 h 41 4h h 4h a16 h 51 h 21 h 41 4h h 4h a16 h 51 h 21 h 41 4h h 4h a16 h 51 h 21 h 41 4h h 4h a16 h 51 h 21 h 41 4h h 4h h 4h h 4h h 4h h 4h
	end old vol fnäss-off-sos wrraw-off-sos-lle-ul-mode st tis diy wodine skorar dahap stryte tabi-out skoraris 1 (10) 1.0 (0 0 1.0 (500 0 1.4(0) 1 't- GET LLM 238' di951s di972 0 (1 5(0 1.0 0 0 -4.0 (511 0 1.4(0) 1 't- GET LLM 238' di 951s di972 0 (1 'GENEVIE-COM' 2 6 0000000 D9787CF 8 0 0 5 4 (1 15 0 251 end old vol endevotion tabi tabi tabi tabi tabi tabi tabi tabi
	<pre>cmd cld val chas-off-sca vrraw-off-sca-llm-ulm-mode sts tim dly mdine zkerzen dnamp strpt rabin-out zkerzim 5 (1 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 ,</pre>
	<pre>cmd old val chase-off-scs -llm-ulm-mode sts tia di gy madine aberral rahmap strpt whin-out xerrim Si f 21 f 61 h ab h Si</pre>
	<pre>cmd cld vul trdss=off-scs vrrss-off-scs-lls=ul=-mode sts is di (y modin: abversi debag stript rabin-out Abversis is (10 1.0 0 0 1.0 1600 0 1.4(0) 1 '*+ GED LIM 23P' di961a di9702 0: 1 'CENSTLF COM' 2 6 0000000 DJ72CTS 8 0 0 5 4 11 15 0 25: 'CENSTLF COM' 2 6 0000000 DJ72CTS 8 0 0 5 4 11 15 0 25: 'CENSTLF COM' 2 6 0000000 DJ72CTS 8 0 0 5 4 11 15 0 25: 'CENSTLF COM' 2 6 0000000 DJ72CTS 8 0 0 5 4 11 15 0 25: 'CENSTLF COM' 2 6 0000000 DJ72CTS 8 0 0 5 4 11 15 0 25: 'CENSTLF COM' 2 6 000000 DJ72CTS 8 0 0 5 4 11 15 0 25: 'CENSTLF Li b 4 4 4 b 16 0 0 2 1 0 300 0 0 7 0 1 '*+ WESTCAL TLT' BLOGS 0 817660 0: 1 55 (0 1.5 0 0 FPFFFFF -1000 1000 1 1 0 390 0 F 0 1 '*+ WESTCAL TLT' BLOGS 0 817660 0: 1 55 (0 0.5 0 0 FPFFFFFF -1000 1000 1 1 0 390 0 F 0 1 '*+ VESTCAL TLT' BLOGS 0 817660 0: 3 55 (0 0.5 0 0 FFFFFFFF -1000 1000 1 1 0 300 0 F 0 1 '*+ VESTCAL TLT' BLOGS 0 817660 0: 3 55 (0 0.5 0 0 FFFFFFFF -1000 1000 1 1 0 300 0 F 0 1 '*+ VESTCAL TLT' BLOGS 0 817660 0: 3 55 (0 0.5 0 0 FFFFFFFF -1000 1000 1 1 0 300 0 F 0 1 '*+ VESTCAL TLT' BLOGS 0 817660 0: 3 55 (0 0.5 0 0 FFFFFFFF -1000 1000 1 1 0 300 0 F 0 1 '*+ VESTCAL TLT' BLOGS 0 817660 0: 3 55 (0 0.5 0 0 FFFFFFFF -1000 1000 1 1 0 300 0 F 0 1 '*+ VESTCAL TLT' BLOGS 0 817660 0: 3 55 (0 0.5 0 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 0 0 1 '*+ VESTCAL TLT' BLOGS 0 817660 0: 3 55 (0 0.5 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 0 0 0 F 0 1 '*+ VESTCAL TLT' BLOGS 0 817660 0: 3 55 (0 0.5 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 0 0 0 F 0 1 '*+ VESTCAL TLT' BLOGS 0 0 17660 0: 3 55 (0 0.5 0 FFFFFFFFF -1000 1000 1 1 0 0 0 0 0 0 0 0 F 0 1 '*+ VESTCAL TLT' BLOGS 0 0 17660 0: 3 55 (0 0.5 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 0 0 0 0 F 0 1 '*+ VESTCAL TLT' BLOGS 0 0 17660 0: 3 55 (0 0.5 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 0 0 0 0 0 0 0</pre>
	<pre>cmd old val chize-off-scs-llm-ulm-mode sts tia di y mdine zkerza damag stprit shi-out zkerzim 51 f 21 f 61 h a 64 51 f 21 h a 64 h a 64 51 h a 64 h a</pre>
	<pre>emd cld val triareoff-sca vrraw-off-sca-lle-ul-mode sts [is d) rds(v odin: skorrad rdsmp strptr tabl-out skorris 1 (i) 1.0 0 0 1.0 1600 0.1 4(0) 1 '* extD LLM 23W' d1961a d1972 0: 1 (CaserLTP COW' 2 6 000000 D3P2FCT 8 0 0.5 4(1) 15 0 25: cdd cld val (rds-off-sca - 11k-ul-m-mode sts [is d] lind-bit endinc skorrad c rdsmp strptr skin-llm-out-errtin 5 (0) 1.0 0 0 -4, 0 510 1 0 0.0 0 0 0 0 0 0 0 1 '* extD cld 23W 0 0 0 0 0 1 '* (CaserLTP COW' 2 6 000000 D3P2FCT 8 0 0.5 4(1) 15 0 25: cdd cld val (rds-off-sca - 11k-ul-m-mode sts [is d] lind-bit endinc skorrad c rdsmp strptr skin-llm-out-errtin 5 (0) 1.5 0 0 FPFFFFF - 1000 1000 2 1 0 390 0 0 0 0 1 '* extBerLAL TLT' B4655 0 817664 0: 1 5 (0) 0.5 0 0 FPFFFFFF - 1000 1000 2 1 0 390 0 0 0 1 '* extBerLAL TLT' B4655 0 817664 0: 1 5 (0) 0.5 0 0 FFFFFFFF - 1000 1000 2 1 0 0 0 0 0 0 1 '* extBerLAL TLT' B4655 0 817664 0: 1 5 (0) 0.5 0 0 FFFFFFFF - 1000 1000 2 1 0 0 0 0 0 0 1 '* extBerLAL TLT' B4655 0 817664 0: 1 5 (0) 0.5 0 0 FFFFFFFF - 1000 1000 2 1 0 0 0 0 0 0 1 '* extBerLAL TLT' B4655 0 817664 0: 1 5 (0) 0.5 0 0 FFFFFFFF - 1000 1000 2 1 0 0 0 0 0 0 1 '* extBerLAL TLT' B4655 0 817664 0: 1 5 (0) 0.5 0 0 FFFFFFFF - 1000 1000 2 1 0 0 0 0 0 0 1 '* extBerLAL TLT' B4655 0 817664 0: 1 5 (0) 0.5 0 0 FFFFFFFF - 1000 1000 2 1 0 0 0 0 0 0 1 '* extBerLAL TLT' B4655 0 817664 0: 1 5 (0) 0.5 0 0 FFFFFFFF - 1000 1000 2 1 0 0 0 0 0 0 1 '* extBerLAL TLT' B4655 0 817664 0: 1 5 (0) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</pre>
	<pre>cmd cld val chize-off-scs-lle-ul-mode sts tis di V mdin: aberral damps stptr tabi-out Aberris 5 (1) (5 (0) 10 (0) (-4) (-5) (-1) (-4) (-5) (-5) (-5) (-5) (-5) (-5) (-5) (-5</pre>
	<pre>emd cld vol trissectF-scs wrraw-off-scs-lle-ul-mode st Lis dly wodine skorta dhap strpt shin-out skortis 1 fol 1.0 & 0 i.0 i600 0.1 4(0) 1 'fr GET LIMP 23F' d1951a d1972 0:1 5(0 1.0 & 0 i.0 -4.0 510 1.0 4(0) 1 'fr GET LIMP 23F' d1951a d1972 0:1 'GESVITF COM' 2 i 0 000000 D97FCY 8 0 0.5 4(1) 15 0 251 'GESVITF COM' 2 i 0 000000 D97FCY 8 0 0.5 4(1) 15 0 251 'GESVITF COM' 2 i 0 000000 D97FCY 8 0 0.5 4(1) 15 0 251 'GESVITF COM' 2 i 0 000000 1000 21 0 000 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</pre>
	<pre>cmd cld val trias-off-sca varas-off-sca-lls-ul-mode tst tid (y modin: abcraft admsp strpt table-out scherins 1 1.0 (0 0 0 - 4.0 510 0 1.4(0) 1 '*- extD LLM 23W' disfici dis702 0: 1 'CEMBNIEF COM' 2 6 0000000 DaFACCE 0 0 0 10702 0: 1 'CEMBNIEF COM' 2 6 0000000 DaFACCE 0 0 5 4 11 15 0 25: cmd cld val trias-off-sca varas-shf-mak varas-shf mak varas-shf-mak varas-shf mak varas</pre>
	<pre>cmd cld val chize-off-sca -lle-ul-mode sts tia dly omdine zkerza dnamp stprir shi-out zkerzins 51 f 21 f 61 h a 6 h 51 f 61</pre>
	<pre>cmd cld vol trims-off-sca -lls-ul-mode sts tia dly modine skorrat dnamp strpt trims to 10 1.0 6 0 1.0 1600 0 1.4(0) 1 '*+ CHID LUM 23F'.d1961a d1972 0: 1 5(0) 1.0 0 0 -4.0 5(1) 0 1.4(0) 1 '*- CHID LUM 23F'.d1961a d1972 0: 1 'CHENTLF CCM' 2 6 000000 D1FFICT 8 0 0 5 4 11 15 0 25: cnd cld vul dly ind-bit cadino xkorrad c 'damag strpt xkin-lim-out-certim 5(6) 1.0 1 0 4 0 0 10 0 000 0 0 D17FICT 8 0 0 5 4 11 15 0 25: cnd cld vul dly ind-bit cadino xkorrad c 'damag strpt xkin-lim-out-certim 5(6) 1.0 1 0 4 0 0 10 0 0 0 0 0 0 1 0 390 0 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 1 5(0) 0.5 0 0 FFFFFFF -1000 1000 1 0 390 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 1 5(0) 0.5 0 0 FFFFFFFF -1000 1000 1 1 0 390 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 1 5(0) 0.5 0 0 FFFFFFFF -1000 1000 1 1 0 390 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 1 5(0) 0.5 0 0 FFFFFFFF -1000 1000 1 1 0 390 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 1 5(0) 0.5 0 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 1 5(0) 0.5 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 1 5(0) 0.5 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 4 5(0) 0.5 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 4 5(0) 0.5 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 4 5(0) 0.5 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 4 5(0) 0.5 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 4 5(0) 0 0 F 1 0 0 0 0 ' ' ' 0 0000 0 0 0 0 0 F 0 1 '*+ VHETICAL TLT' HE055 0 017664 0: 4 5(0) 0 F 1 0 0 0 0 ' ' ' 0 0 0 0 F 0 1 '*+ VHETICAL TLT' HE055 0 0 0 0 0 0 0 0 0 F 0 0 '*+ VHETICAL TLT' HE055 0 0 0 0 F 0 0 '*+ VHETICAL THT' HE055 0 0 0 0 F 0 0 '*+ VHETICAL THT' HE055 0 0 0 F 0 0 V TL 0 0 0 0 ' ' ' 0 00000 0 0 0 V 0 0 V 0 0 V 0 0 V 0 0 V 0 0 '*+ VHETICAL THT' HE055 0 0 0 V 1 0 0 0 0 ' '' 0 0 0 V 0 0 '*+ VHETICAL THT' HE055 0 0 0 V 1 0 0 0 0 '' 2HE F SL HTT HE '*+ H7022 0 0 S 0</pre>
	<pre>cmd cld val chize-off-sca-lle-ul-mode sts tia dly mdine zkernel admap stprit shi-out zkernis 5.6 (1.6 0.6 0.7 + 0.6 (1.6 - 0.6 + 0.6</pre>
	<pre>cmd cld vol trimsectF-sca vrraw-off-sca-ll=-ul=-mode sta tia dy wodine skorraw fahma stpty table-out skorris 15 (0 1.0 0 0 1.0 1600 0.1 4(0) 1 '* cmtD LLM 23W' 0.0 201 1 'CENSTLF COW' 2 6 000000 DPFFCT 8 0 0.5 4(1) 15 0 25: cmd cld vol dv classoft 1.1 110-138 'CENSTLF COW' 2 6 000000 DPFFCT 8 0 0.5 4(1) 15 0 25: cmd cld vol dv classoft 1.1 110-138 'CENSTLF COW' 2 6 000000 DPFFCT 8 0 0.5 4(1) 15 0 25: cmd cld vol dv classoft 1.0 100 000 0 1 0 100 0 0 0 0 1'* 'CENSTLF 1.0 14 40 4 af 5 000 0 1 0 100 0 0 0 0 0 1'* 'CENSTLF 1.0 14 40 4 af 5 000 0 1 0 100 0 0 0 0 0 1'* 'Statistic 1.1 110-14 110 110 110 110 110 110 110 110 110 1</pre>
	<pre>cmd cld vol trime-off-sca -lle-ul-mode sts tia dly mdine skoren damp stprir shi-out skorenis 5 10 1.6 6 0.0 400 11 ** ext: LIM-34* 0 0.0 400 20 1 5 10 1.6 0 0 0 *4.0 511 0 1400 11 ** ext: LIM-34* 0 0.0 10702 00 1 7 CEMENTER CCM* 2 6 0.000000 DAFRCE 0 0.5 4 11 15 0 25: cmd cld vul drame-off-sca vurre-whit-m-kt.ll=-ul-m-sda sts tia dly lim-5 bit sdalo 0 0 0.0 0 0 0 0 1 ** ext: Lu-ul-m-sda sts tia dly lim-5 bit sdalo 0 0 0 0 0 0 0 0 0 1 ** ext: Lu-ul-m-sda sts tia dly lim-5 bit sdalo 0 0 0 0 0 0 0 0 1 ** ext: Lu-ul-m-sda sts tia dly lim-5 bit sdalo 0 0 0 0 0 0 0 0 0 0 1 ** ext: Lu-ul-m-sda sts tia dly lim-5 bit sdalo 0 0 0 0 0 0 0 0 0 1 ** ext: Lim-3 ** dis50 0 0.7664 0 1 5 10 0.5 0 0 FFFFFFFF -1000 1000 1 0 30 0 0 F 0 1 ** exterior 1.11* 146658 0 0.17664 0 1 5 10 0.5 0 0 FFFFFFFF -1000 1000 1 0 30 0 0 F 0 1 ** exterior 1.11* 146658 0 0.17664 0 1 5 10 0.5 0 0 FFFFFFFF -1000 1000 1 0 30 0 0 F 0 1 ** exterior 1.11* 146658 0 0.17664 0 1 5 10 0.5 0 0 FFFFFFFF -1000 1000 1 0 30 0 0 F 0 1 ** exterior 1.11* 146658 0 0.17664 0 1 5 10 0.5 0 0 FFFFFFFF -1000 1000 1 0 30 0 0 F 0 1 ** exterior 1.11* 146658 0 0.17664 0 1 5 10 0.5 0 0 FFFFFFFF -1000 1000 1 0 0 0 0 0 F 0 1 ** exterior 1.11* 146658 0 0.17664 0 1 5 10 0.5 0 0 FFFFFFFF -1000 1000 1 0 0 0 0 0 F 0 1 ** exterior 1.11* 146658 0 0.17664 0 1 5 10 0.5 0 0 FFFFFFFF -1000 1000 1 0 0 0 0 F 0 1 ** exterior 1.11* 146658 0 0.17664 0 1 5 10 0.5 0 0 FFFFFFFF -1000 1000 1 0 0 0 0 F 0 1 ** exterior 1.11* 146619 0.01*664 0 1 5 10 0 0 0 *</pre>
	<pre>cmd cld vol trains-off-sca vrraw-off-sca-ll=-ul=mode st Lis d/y modine skorta dnamp strpt train-out skortis 1 fol 1.0 & 0 i.0 1400 0 1 4(0) 1 'r- entr LLM 23M' 0 0 10702 0; 1 'CENSVLTP COM' 2 i 0 000000 DyrrCr 8 0 5 411 15 0 25: 'CENSVLTP COM' 2 i 0 000000 DyrrCr 8 0 5 411 15 0 25: 'CENSVLTP COM' 2 i 0 000000 DyrrCr 8 0 5 411 15 0 25: 'CENSVLTP COM' 2 i 0 000000 DyrrCr 8 0 5 411 15 0 25: 'CENSVLTP COM' 2 i 0 000000 DyrrCr 8 0 5 411 15 0 25: 'CENSVLTP COM' 2 i 0 000000 DyrrCr 8 0 5 411 15 0 25: 'CENSVLTP COM' 2 i 0 000000 DyrrCr 8 0 5 411 15 0 25: 'CENSVLTP COM' 2 i 0 000000 DyrrCr 8 0 5 411 15 0 25: 'CENSVLTP COM' 2 i 0 000000 DyrrCr 8 0 5 7 1 'F+ VERTICAL TLT' H6655 0 01766 0; 1 5(0) 5 5 0 0 FFFFFFF -1000 1000 1 0 0 0 0 0 0 7 0 1 'F+ VERTICAL TLT' H6655 0 01766 0; 1 5(0) 5 5 0 0 FFFFFFF -1000 1000 1 0 0 0 0 0 0 7 0 1 'F+ VERTICAL TLT' H6655 0 01766 0; 1 5(0) 5 5 0 0 FFFFFFF -1000 1000 1 0 0 0 0 0 0 0 1 'F+ VERTICAL TLT' H6655 0 01766 0; 1 5(0) 0 5 0 0 FFFFFFF -1000 1000 1 1 0 0 0 0 0 0 1 'F+ VERTICAL TLT' H6655 0 01766 0; 1 5(0) 0 5 0 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 0 1 'F+ VERTICAL TLT' H6655 0 01766 0; 1 5(0) 0 5 0 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 0 1 'VE SLT (LVMRM)' 0 0 01766 0; 1 5(0) 0 5 0 0 FFFFFFFF -1000 1000 1 1 0 0 0 0 0 0 1 'VE SLT (VERMA)' 0 0 01766 0; 5 5(0) 0 5 0 0 0 0 ' ' ' 0 0000 0 0 2 1 0 0 0 0 1 1 VE SLT (VERMA)' 0 0 01766 0; 5 5(0) 0 5 0 0 0 0 ' ' ' 0 0000 0 0 1 1 (LMT)' CCN SUTL THT' 18 S 10 0 0 0 0 ' 1 (VE SUTL' VERTICAL THE' 'CEN SUTL' THT' 18 SLT SLT SLT SLT SLT SLT SLT SLT SLT SLT</pre>
	<pre>cmd cld vul trias-off-sca vurse-off-sca-lle-ul-mode sts tia d(y modin: Abrard mahap stprt shin-out Abrartis 5 (0 1.0 0 0 -4.0 510 0 1.4(0) 1 '*- GED LIM 238' d1961a d19720 0: 1 'CEMBNILF COM' 2 6 0000000 D372CC 9 0 0 5 4 11 5 0 25: cmd cld vul dv charg-off-sca vurse-wift-msk-lim-ul-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt xhin-lim-uur-mode sts tia dly limd-bit cmdinc Abrard c rdmsp stprt stprt xhin-lim-uur-mode xhin xhin xhin stprt xhin s</pre>

Fig. 9. Control database entries