

An example of the use of Performance History Database (PHD) software

Loudspeaker analysis of New Orleans Civic Cultural Association (NOCCA) Dance Theatre

Reference Distance:	1 meter
Frequency Band Centered at:	2000Hz
Narrowest Major Dimension:	11 meters
Interior Volume:	2,231 cubic meters
Interior Surface Area:	1,129 square meters
Sabine Average Absorption Coefficient:	0.172
Reverberation Time:	1.7 seconds
English Sabins:	2,100
Metric Sabins:	194

Seating Area (Only One)

Number of Points per side = "PTS":	5
Contour Interval = "CI":	3 dB
Contour Point Interval = "CPI":	10 degrees
Azimuth = "AZ":	0 degrees
Right Front = "RF":	1.52 meters
Left Front = "LF":	1.52 meters
Depth, right front to rear corners = "RD":	13.4 meters
Depth, left front to rear corners = "LD":	13.4 meters
Azimuth Line to Right Front corner = "RFC":	8.2 meters
Azimuth Line to Right Rear Corner = "RRC":	9.4 meters
Azimuth Line to Left Front Corner = "LFC":	-8.2 meters
Azimuth Line to Left Rear Corner = "LRC":	9.4 meters
Ear Height = "EH":	1.22 meters
Cluster Elevation to Right-Front Corner = "RFE":	-8.8 meters
Cluster Elevation to Right-Rear Corner = "RRE":	-7.3 meters

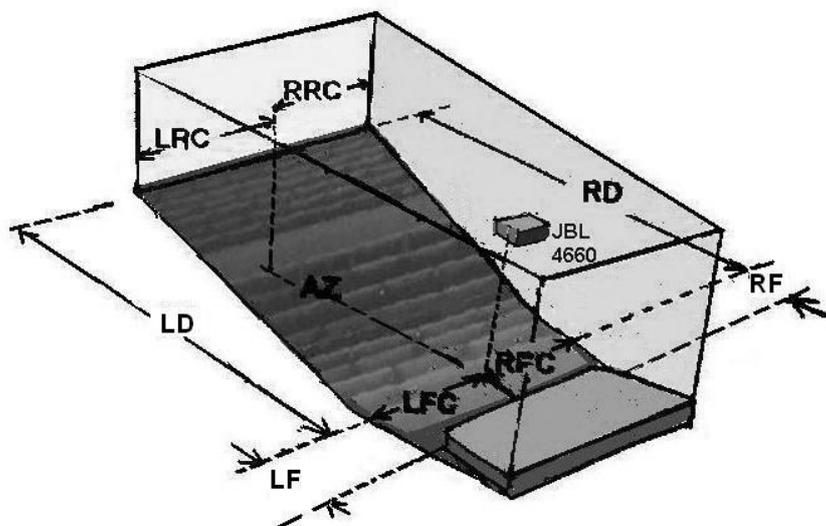


Figure 1 NOCCA Model in the PHD System

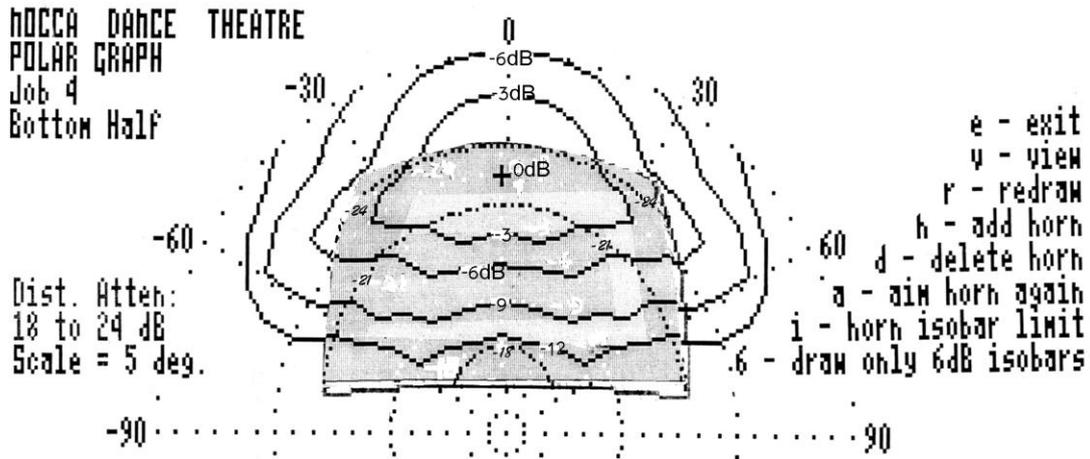


Figure 2 NOCCA PHD system “G” printout. 0 dB is loudspeaker axis projected on seating area, and strength contours to -12 dB are also shown, along with distance contours. Loudspeaker system, here JBL 4660 skewed coverage at 2000 Hz octave band, may be aimed using up, down, left, and right computer keys.

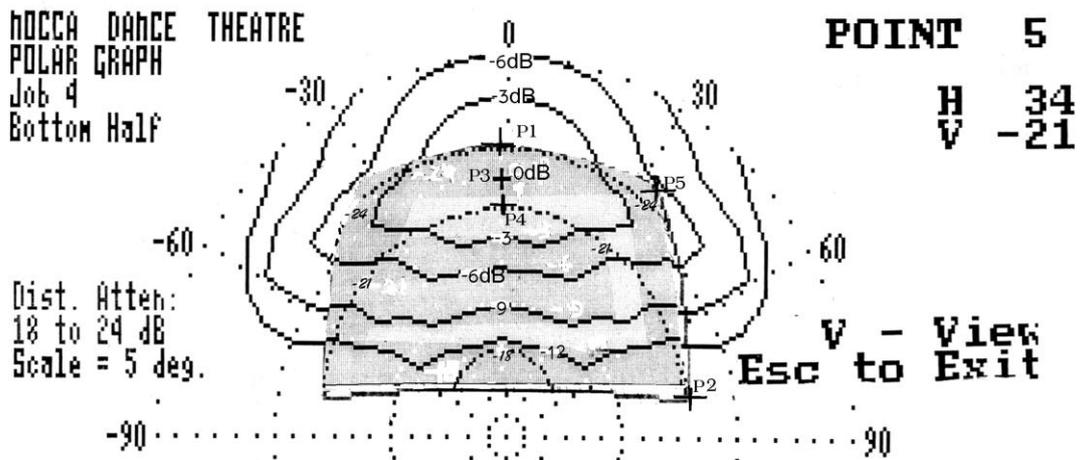


Figure 3 NOCCA PHD system point 5 printout. Any number of locations can be analyzed for direct and reverberant sound. The “H” horizontal angle and the “V” vertical angle are the angles from the azimuth line, 0° in this system, to the analyzed seat for point 5 analysis

POWER ANALYSIS

JBL 4660 loudspeaker, horizontal aim 0 deg., vertical -30 deg.

For speech levels of 75 dB re 10^{-5} Pa, 39.8 watts required, direct sound energy only, or 18.7 watts using the Eugene T. Patronis, Jr. method for direct and reverberant energy.

Loudspeaker capable of 111 dB level at maximum rated input power,

PERFORMANCE (INTELLIGIBILITY & COVERAGE) ANALYSIS

	point	point	point	point	point
distance contour, dB		-	-	-	-
V and H angles. Deg.	/	/	/	/	/
Distance fr talker	2.4m	10m	15m	11.5m	16.5m
Horn Atten. Contour	-8.0dB	-8.0dB	-2.0dB	0.0dB	-2.0dB
Max direct/Patronis	99/103dB	95.7/99dB	98.7/102dB	103.7/107dB	97.7/101dB
Deviation from goal	/	/	/	/	7.3/4.0
"ALCONS"		/			
"RASTI"					
"PAG"					dB
"NAG"					dB

If you power the system considering **only** direct sound, then:

The lowest direct sound is 99 dB
 The highest direct sound is 107 dB
 ALCONS -
 RASTI -

If you power the system using the Patronis method, then:

The lowest direct sound is 95.7 dB
 The highest direct sound is 103.7 dB
 ALCONS -
 RASTI -

In conclusion, we may regard the intelligibility performance of this system as good enough, not perfect, but satisfactory for a multi-use space, a dance theatre, without adjustable acoustics. The JBL 4660 loudspeaker system is an attempt to provide uniform coverage and intelligibility in rectangular rooms with good acoustics in an unobtrusive and economical package, with a vertically-skewed coverage high frequency horn and driver and a 300mm. low-frequency cone loudspeaker. Figure 10.24 shows an application at the Spring Hill United Methodist Church, Mobile, AL. The unit is still available on special order from JBL.