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**Occupant Evaluation of
Commercial Office Lighting:
Volume III, Data Archive and
Database Management System**

Gary Gillette
Marilyn Brown

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OCCUPANT EVALUATION OF COMMERCIAL OFFICE LIGHTING:
VOLUME III, DATA ARCHIVE AND DATABASE MANAGEMENT SYSTEM

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EDITOR'S FOREWORD

Electric lighting accounts for an estimated one-third of the energy use in commercial buildings. Along with recent advances in building envelope and equipment R&D, lighting research offers major untapped opportunities for energy savings.

Lighting energy standards and design guidelines are important determinants of energy use in buildings. Because of inadequate empirical data and analysis, these standards and guidelines have historically been based primarily upon professional judgment. Thus, there is little assurance that recommended lighting values provide higher user satisfaction and comfort, while requiring the lowest possible energy use.

In 1984, under the auspices of the U.S. Department of Energy, a major research project was initiated which involved occupant evaluations of commercial office lighting. The central aim of this research effort was to explore possible causal factors associated with successful lighting design, with particular interest in the relationship between connected lighting power load and subjective measures of lighting quality. In so doing, it was hoped that the project would provide an objective measurement base and analysis from which to assess lighting standards as well as results which will allow the building industry to make lighting system design decisions that are both energy efficient and effective. In 1986, the New York State Energy Research and Development Authority joined DOE in cosponsoring this research, enabling an expansion of the database and additional analyses.

This is the third in a series of four reports describing the project. The titles and principle authors of these reports are:

- "Occupant Evaluation of Commercial Office Lighting: Volume 1, Methodology and Bibliography," by Gary Gillette.
- "Occupant Evaluation of Commercial Office Lighting: Volume 2, Preliminary Statistical Analysis," by Robert W. Marans.
- "Occupant Evaluation of Commercial Office Lighting: Volume 3, Data Archive and Database Management System," by Gary Gillette.
- "Occupant Evaluation of Commercial Office Lighting: Volume 4, Conclusions and Research Recommendations," by Earle Kennett.

While substantial individual efforts have been made by these authors, it is important to note the considerable involvement of technical review committee members representing the professional, industrial, and research communities (see Acknowledgments).

For those wishing more information on the project or on the use of the database, contact Gary Gillette, project manager, at (301) 975-6456 or 6448.

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The Technical Review Committee provided professional input and helped define much of the direction. The committee members and the organizations they represented are as follows:

Harrison Fraker	American Institute of Architects
Harry Mahler	American Institute of Architects
Dan Nall	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
Fred Pearson	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
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The permanent archival database was built with the cooperation of the Lighting Group, Building Physics Division, National Bureau of Standards.

ABSTRACT

This report documents a database of measured lighting environmental data. The database contains four different types of data on more than 1,000 occupied work stations: 1) subjective data on attitudes and ratings of selected lighting and other characteristics, 2) photometric and other direct environmental data, including illuminances, luminances, and contrast conditions, 3) indirect environmental measures obtained from the architectural drawings and the work station photographs, and 4) descriptive characteristics of the occupants. The work stations were sampled from thirteen office buildings located in various cities in the United States. In the database, each record contains data on a single work station with its individual fields comprising characteristics of that work station and its occupant. The relational database runs on an IBM or IBM compatible personal computer using commercially available software. As a supplement to the database, an independent ASCII-8 bit data file is available.

DISCLAIMER

Reference to computer hardware and software vendors in this report does not constitute an endorsement, expressed or implied, by the United States Department of Energy, the New York State Energy Research and Development Authority, the Oak Ridge National Laboratory, the National Bureau of Standards, The American Institute of Architects Foundation, or any of their subcontractors.

1. INTRODUCTION

As part of a post-occupancy evaluation (POE) of existing office lighting environments, field measurements and occupant responses were collected in over 1,000 work stations in thirteen office buildings. These data have been compiled into a relational database for permanent archiving and subsequent analysis. A companion methodology report [1] describes the procedures used to collect the data, and another report presents a preliminary analysis of the data [2]; the following report discusses the data archive.

Five basic types of data were collected for each work station: 1) subjective data on attitudes and ratings of selected lighting and other characteristics, 2) photometric and other direct environmental data, including illuminances, luminances, and contrast conditions, 3) indirect environmental measures obtained from the architectural drawings and the work station photographs, 4) descriptive characteristics of the occupants, and 5) expert assessments of the work stations. All but the last type of data, the expert ratings, are contained in the database.

The database archiving effort had two objectives:

- to provide a permanent location and format for the data, and
- to provide a strategy which would allow the database to be accessed by others.

An enlarged data file was compiled and built into a PC-based database management system to serve as a permanent "home" for the database. An ASCII data file, representing data from thirteen buildings, was built at the National Bureau of Standards on the Bureau's Cyber mainframe computer using a magnetic tape of the data file as prepared by the University of Michigan, under the direction of Robert W. Marans. A short driver program was developed for working with this master database, and

using a PC-mainframe communications package the full data file was downloaded onto an IBM-PC/XT. An 8-bit ASCII file was prepared on diskettes and loaded into a commercial database management system.

2. DATABASE MANAGEMENT SYSTEM

2.1 SYSTEM REQUIREMENTS

The database and its supporting database management system (DBMS) run on an IBM-PC/XT/AT or compatible machine using MS-DOS 2.0 or greater. The hardware requirements include at least 512K bytes of random access memory and at least 10MB of disk storage (20MB or more is recommended). The software requirements include the six 5 1/2 inch low density diskettes that contain the database and its support structure, and the commercially available R:base System V database management package. The DBMS requires 3.8MB and the database requires an additional 2.2MB of disk storage.

2.2 THE DATABASE MANAGEMENT SOFTWARE

The data files must be loaded onto the R:base System V database management software,¹ which in turn runs the applications programs. As a fully relational DBMS, System V allows the processing and analysis of the data interactively. It also supports the application software that provides the menu windows into the database. In this way users who are not computer programmers can access the database successfully. The applications package has a limited amount of user friendly menus; these can be expanded as needed. Also, the DBMS has a data exporting feature which allows data to be downloaded onto files for other database management programs such as dBase III Plus and Lotus 123.

The data management approach currently resembles that of a Data Management System (DMS), since at present only a single application

¹ R:BASE System V, Microrim, Inc., 3925 159th Ave., N.E., P.O. Box 97022, Redmond, WA 98073-9722.

system has been prepared. Other applications can easily be added and data sharing features can easily be accommodated; these additions would make it a true relational database [3].

3. DATABASE DESIGN

The database makes primary use of a single flat file of fields and records. Each record represents a unique work station with each field serving as a given characteristic of the work station. In total there are 1,217 records in the database and several hundred individual fields organized into ten groups. Although the database contains data on 1,217 work stations, for various reasons not all work stations have data for all fields. There are 915 work stations with complete power density data. When data are missing in a particular field, default values are used: a series of 9's, 8's or null values. Also, each record has a unique work station identifier and a record identifier.

4. SUMMARY DESCRIPTION OF MEASURED DATA

In Appendix B a dictionary has been prepared covering many of the measured data in the database. The data have been organized into ten groups to make it easier to locate a particular characteristic, and each characteristic has been given an abbreviated name. The dictionary also contains a short description of the characteristic and an explanatory note of the contents.

The ten groups are as follows:

1. Work station descriptive characteristics
2. Lighting system characteristics
3. Lighting power density measures
4. Photometric and other direct environmental measures
5. Daylighting classifications
6. Work station evaluative measures
7. Improvement preferences
8. CRT evaluative measures
9. Building evaluative measures
10. Occupant descriptive characteristics

For a complete description of all the various measures, the methodology report [1] should be consulted.

5. ACCESSING THE DATABASE

5.1 DATABASE ACCESSING STRATEGY

The strategy is to make the database accessible to two types of "outside" groups. An ASCII file of the full data set allows researchers and others to load the tape onto their own system. Two media are available for the file: a magnetic tape of the source data for mainframe applications and a set of 5 1/2 inch diskettes. Those using the source data will need to have access to the data directly and will need to have their own programming support available for loading and accessing the data on their local system. Those using the diskettes (e.g., designers and architects/engineers) will be dealing with a "frozen" version of the database accessed via a PC-based database management system. The "frozen" data are those data that can be viewed, manipulated, and otherwise analyzed, but not changed. The aim is to provide this second group with an application system complete with user-friendly menus that will allow the database to be used as a learning tool. The operator can access the database and, to a limited degree, query it without knowing the structure or the complexity behind the design of the database. The application package along with data tables make up the complete database package, and will be the permanent form of the PC version of the database.

5.2 INSTALLATION AND EXECUTION OF THE PC-BASED DATABASE

The application package is menu driven, so running the program is quite straight forward. There are, however, a few preliminary steps that must be followed to prepare the database and the supporting software for program execution.

First, if the R:BASE System V files are not already copied onto the machine's hard disk, this must be done. The installation instructions provided with the program should be followed [4]. In general, they consist of four steps.

1. Insert the R:BASE Utilities Disk I into drive A:.
2. At the DOS system prompt type
A:\INSTALL [RETURN].
3. Follow the instructions as given by the program.
4. When complete, reboot the system by pressing the [Ctrl] [Alt] and [Del] keys simultaneously.

The above procedure automatically modifies the DOS CONFIG.SYS file and creates a sub-directory for the program files called C:RBFILS (assuming the root to the hard disk is assigned as C:\).

Next, a sub-directory on the hard disk with the name RBDATA needs to be set up to contain the contents of the six database disks. The sub-directory must be off the root directory in order to load the data, but once loaded, it can be relocated at will. A path² must be specified within the disk operating system to assist in locating the program files³ and the RBDATA sub-directory must be made current as follows:

Type

```
PATH C:\RBFILS [RETURN] (to create a path to the program
files)
MD\RBDATA [RETURN] (to create the sub-directory RBDATA)
CD\RBDATA [RETURN] (to make this directory current).
```

To copy the contiguous files from the six database disks, the DOS RESTORE command must be used (see note below). The COPY command will not

² For those unfamiliar with the DOS PATH and the RESTORE commands, consult the Disk Operating System Reference Manual under the section entitled "DOS Commands" [4].

³ It is advisable to include the PATH command in the AUTOEXEC.BAT file for convenience. If it is not, the PATH command must precede the RBASE -R command each time the program is executed. Refer to the Disk Operating System Manual for details on the use of AUTOEXEC.BAT [4].

work due to the size of several of the files. Since RESTORE is an external DOS command, a path to the RESTORE.COM file must be created⁴ (e.g. C:\SYS\RESTORE A: for DOS system files in a C:\SYS sub-directory, or C:\RESTORE A: for DOS system files in the root directory). Now with Disk 1 in drive A:, copy the data to the RBDATA sub-directory by typing

```
(d:path) RESTORE A: [RETURN] (loading disks sequentially)
```

where {d:path} is the drive and path to the DOS files. Follow the system prompts until all six disks are read. Assuming that the R:BASE files have been copied, the program installed as directed, and the database files copied to the RBDATA sub-directory, the program can be executed. Make the data sub-directory current and execute the program as follows:

```
CD\RBDATA [RETURN] (to make the data directory current)
RBASE -R [RETURN] (to execute the Rbase System V program)
```

The R:BASE program will be initialized and the main database menu should appear. From here the choices are shown. Appendix A shows the various menus and their options. Also, a help window has been provided for each menu to make the selection even easier. The dictionary should be kept nearby to assist in selecting the desired variable when prompted. Each menu, including the main menu, can be exited by pressing the escape key [ESC].

The lighting database package contains both a database structure and an application program to allow the database to be accessed. LTGDBMS (lighting database) is the name of the application (or accessing) program, QUEST is the database name, and the primary table with the archived

⁴ An alternative to using a path to the RESTORE.COM file is to copy that file to the RBDATA sub-directory and simply execute the command with

```
RESTORE A: [RETURN].
```

data has been given the name POEDATA. On the diskette the files QUEST1.RBF, QUEST2.RBF, and QUEST.RBF hold the contents of the database. The files LTGDBMS.APX, LTGDBMS.API, LTGDBMS.APP, and RBASE.DAT are the application files that run the menus and accessing scheme. The remaining files are used with the application program.

Although the user application program requires no knowledge of these files, it is quite limited in what it can do: serious users will want to begin using the database with the full relational and analytical resources of the master R:BASE System V database management system. For this, the initial command file RBASE.DAT should either be deleted or renamed to avoid automatic execution. Next, load the database QUEST into R:BASE just as you would any other database.

5.3 SYSTEM NETWORK

The full set of data has been stored as a single data file that can be loaded onto the Cyber 855 mainframe computer at the National Bureau of Standards (NBS). Once the file is loaded and prepared for accessing, sections (or all) of the data can be transferred to the different systems on the NBS network, which in turn, allows complete data access in several forms. Of immediate interest is the downloading to a micro-computer, but data plotting, graphing, and full-scale relational data management capabilities can also be made available on the mainframe, or optionally on a minicomputer (depending on the size of the file). The mainframe system will be the source for magnetic tapes for those wishing to gain access to the database in this form. A diagram of the system and software network is shown in Figure 1.

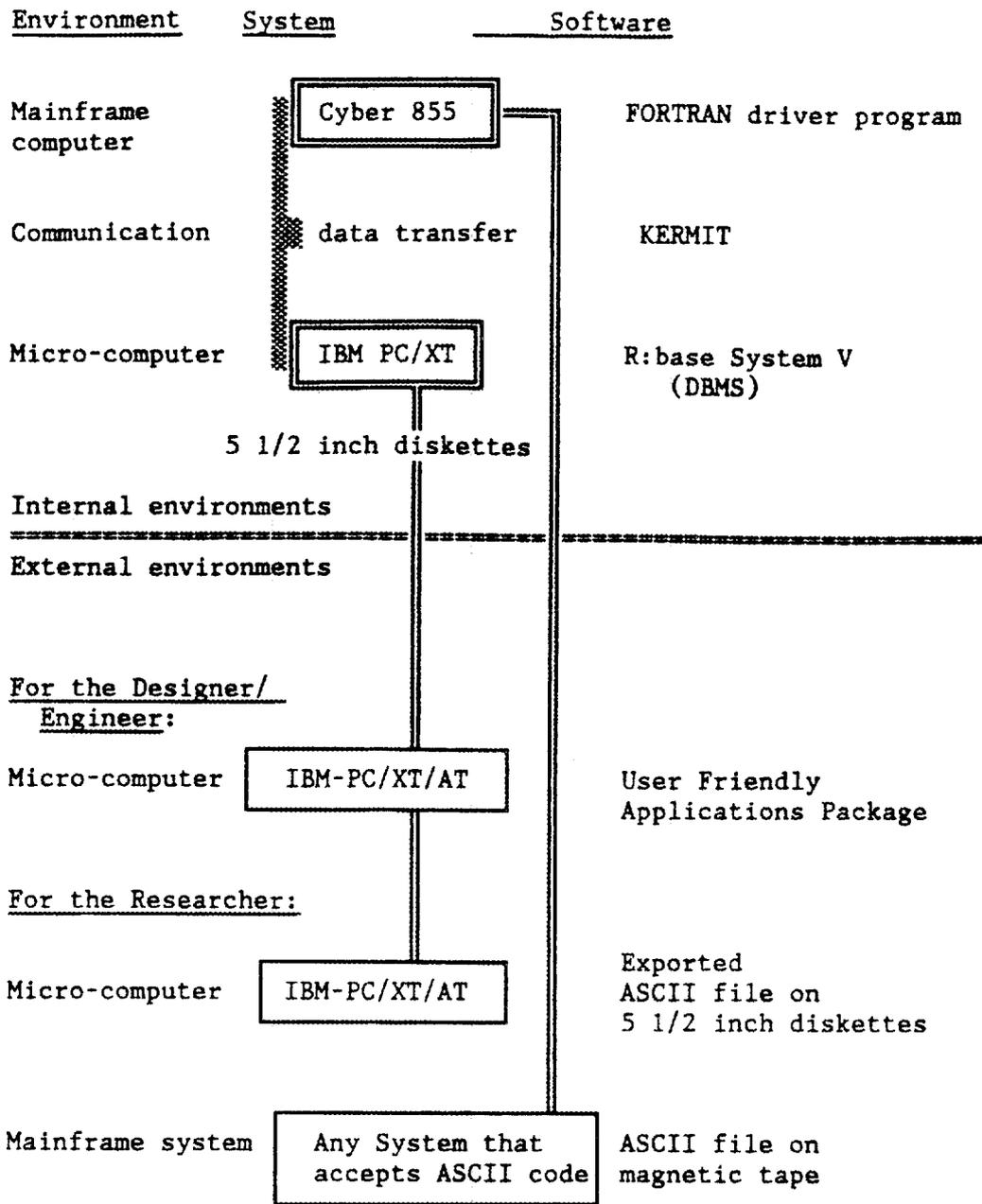


Figure 1. The database system and software network.

6. REFERENCES

1. Gillette, G., "Occupant Evaluation of Commercial Office Lighting: Volume I, Methodology and Bibliography," M. A. Brown (ed.), ORNL/TM-10264/VI, Oak Ridge, Tennessee: Oak Ridge National Laboratory, November, 1986.
2. Marans, R. W., "Occupant Evaluation of Commercial Office Lighting: Volume II: Preliminary Data Analysis," M. A. Brown (ed.), ORNL/TM-10264/V2, Oak Ridge, Tennessee: Oak Ridge National Laboratory, July, 1987.
3. "Guide for Choosing a Data Management Approach," Federal Information Processing Standards Publication, FIPS PUB 110, National Bureau of Standards, Gaithersburg, Maryland, December 11, 1986.
4. "Installation and Start Up Guide," R:Base System V, Version 1.0, Microrim Inc., July, 1986.
5. "Disk Operating System," Version 3.10, IBM Personal Computer Software, Boca Raton, Florida, 1985.
6. "User's Manual," R:Base System V, Version 1.0, Microrim Inc., July, 1986.

APPENDIX A: PC-BASED MENUS

Upon execution of the LTGDBMS program, the database should automatically be loaded and the first menu should be displayed as follows:

```

AIA Foundation POE Lighting Database  Press [F10] for help
(1) List variables in database
(2) Query the database (look at data contained in the database)
(3) Print reports (print predefined tables of data)
(4) Exit
  
```

This is the main menu. The options are to either list the names of the variables available, look at data in the database, or print out a report of select data. To control the number of menus, limited options are available. However, for those choices that may be desired which are not available, the master R:Base System V program can be used, allowing an almost infinite number of ways to view and analyze the data.

Upon entering the database, option (1) should always be selected at first to allow the database to be loaded and the password cleared. After this step is completed, the data are available for accessing. By pressing option (1) the List menu is generated:

```

POE Lighting Database List Menu  Press [F10] for help
(1) List available variables from database
(2) List tables (groups of data) from database
(3) Exit
  
```

Here, the options are to either display the full listing of the variable names, or just the tables. The table listing gives an overview of the few tables contained in the database. The table POEDATA is the most important of the measured data. Pressing either (1) or (2) will execute the command. Pressing either (3) or [ESC] will cause the main menu to reappear.

Returning to the main menu and pressing option (2) to query the database gives the Query menu:

```

POE Lighting Database Query Menu  Press [F10] for help
(1) Pull data from database by work station
(2) Compute general statistics on selected data
(3) Tally the number of occurrences for each value of a variable
(4) Exit
  
```

Selecting options (1), (2), or (3) generates the following separate menus.

Selecting the pull data option:

```

POE Lighting Database Pull Data Menu  Press [F10] for help
(1) Pull work station descriptive characteristics
(2) Pull lighting system characteristics
(3) Pull lighting power density measurements
(4) Pull photometric and other direct measures
(5) Pull work station & building evaluative measures
(6) Pull occupant descriptive characteristics
(7) Pull data using the prompt mode
(8) Exit

```

Using these menu options, virtually any set of data can be pulled from the database and displayed. The first six options are designed to make the process easy and require no additional information. Option (7) prompts the user for variable input. All of the menu options display the selected variables in columns. With the prompt option, the criterion variable is the variable that is tested and the operator is the test. For example, if data are to be displayed for all work stations where the UPDt (the total unit power density) is less than 1.5, the criterion variable is UPDt, the operator is LT (less than), and the last prompted value is 1.5. The available operators are:

```

EQ  -equal to
LT  -less than
GT  -greater than
NE  -not equal to
GE  -greater than or equal to
LE  -less than or equal to

```

Selecting the compute statistics option:

```

POE Lighting Database Compute Menu  Press [F10] for help
(1) Compute the average value for a variable
(2) Compute the maximum value for a variable
(3) Compute the minimum value for a variable
(4) Compute the standard deviation for a variable
(5) Compute the variance for a variable
(6) Exit

```

By choosing one of the first five options the user is prompted for a variable on which to compute the statistics. It should be cautioned that missing data code values such as 999 and 0 need to be considered when running some of these statistics. Variables can be tallied with the Tally option below to obtain the default values and these can be excluded at the criterion prompt.

Selecting the Tally option:

- ```
POE Lighting Database Tally Menu Press [F10] for help
(1) Display the number of work stations for each lighting system
(2) Display the number of work stations for each office type
(3) Display the number of work stations for each partition size
(4) Tally variable using the prompt mode
(5) Exit
```

The first three options provided allow the frequency distribution of three office characteristics, the lighting system type, office type (open with partitions, enclosed, etc.), and partition height. The fourth is for any variable of interest.

The last menu is the print menu, which is generated by selecting the print option within the main menu:

- ```
POE Lighting Database Print Menu Press [F10] for help
(1) Print lighting power density data by work station
(2) Print other data using the prompt mode
(3) Exit
```

All the above menus have their own help screens that can be accessed by pressing the [F10] function key. These short help screens can be used to provide quick assistance while running the program. It is also recommended that the data dictionary be available while using the program, since the coded response for the variables is not always obvious.

APPENDIX B: PC-BASED DATA DICTIONARY

Note: The variable code shown below lists how data are represented in the database. Code values of 9 or multiples of 9 (such as 999) represent missing or unrecorded data.

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
1. <u>Work Station Descriptive Characteristics:</u>		
ID	Reference identifier of record	Range from 1 to 1217
WS	Work station identifier second & third:study building	First digit:study number last four digits:work station
BLDG	Building number	Range from 1 to 13
WSTYPE	Work station type	1:open office w/ partition 2:open office no partition 3:conventional office
WSPANEL	Size of work station partitions	1:42" to 54" panels 2:60" to 64" panels 3:68" to 74" panels 4:open w/o panels 5:other; 0:N/A
TASKLT	If a task light exists at the desk	1:yes; 0:no
ONOFFLTS	If the task lights at the work station can be turned on and off	1:yes; 0:no
CTRAMTLT	If the amount of light on work can be controlled (once on)	1:yes; 0:no
CTRDIRLT	If the direction of the light on work can be controlled	1:yes; 0:no
CTRTEMP	If the air temperature can be controlled at the work station	1:yes; 0:no
CTRVENT	If the ventilation can be controlled at the work station	1:yes; 0:no
OTHERWS	If occupant has another work station in building	1:yes; 0:no
SHAREDSK	If occupant shares the desk with someone else	1:yes; 0:no

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
SHAREWS1	For open offices, if work station is shared with another occupant	1:yes; 0:no
SHAREWS2	For enclosed offices, if work station is shared with another	1:yes; 0:no
<u>2. Lighting System Characteristics:</u>		
LTGSYS	Type of lighting system	1:DRF-LV; 2:DRF-LN; 3:DF-SM; 4:IF-SM; 5:INDF-P; 6:DIF-P; 7:HID-P; 0:other
LTGSKTP	Type of task system	1:furniture integrated 2:desk movable; 3:other 0:no task lighting
DRF-LV	Direct recessed fluorescent units with louvers	1:present; 0:not present
DRF1x4LV	Direct recessed fluorescent in 1x4 units with louvers	1:present; 0:not present
DRF2x4LV	Direct recessed fluorescent in 2x4 units with louvers	1:present; 0:not present
DRF-LN	Direct recessed fluorescent units with prismatic lens	1:present; 0:not present
DRF1x4LN	Direct recessed fluorescent in 1x4 units with prismatic lens	1:present; 0:not present
DRF2x2LN	Direct recessed fluorescent in 2x2 units with prismatic lens	1:present; 0:not present
DRF2x4LN	Direct recessed fluorescent in 2x4 units with prismatic lens	1:present; 0:not present
DF-SM	Direct fluorescent surface mounted units	1:present; 0:not present
DIF-P	Direct/indirect fluorescent pendant mounted units	1:present; 0:not present
DIF-WMT	Direct/indirect fluorescent wall mounted units	1:present; 0:not present
INDF-P	Indirect fluorescent pendant mounted units	1:present; 0:not present
IF-FM	Indirect fluorescent furniture mounted units	1:present; 0:not present

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
IN-REC	Incandescent recessed units	1:present; 0:not present
IN-SMPM	Incandescent surface mounted or pendant mounted units	1:present; 0:not present
HID-IP	High intensity discharge metal halide indirect pendant units	1:present; 0:not present
HID-IFS	High intensity discharge metal halide indirect free standing units	1:present; 0:not present

3. Lighting Power Density Measures:

WSWATTS	Work station (task light) wattage	Power in watts
ZWATTS	Zone (room) wattage of all non task lighting units	Power in watts
WSAREA	Local defined work station area	Area in square feet
ZAREA	Zone area; room area enclosed by walls	Area in square feet
WSLPD	Work station (task) lighting power density	WSWATTS/WSAREA in watts/sq ft
ZLPD	Zone (room) lighting power	ZWATTS/ZAREA in watts/sq ft
LPD	Total lighting power density	WSLPD + ZLPD in watts/sq ft

4. Photometric and Other Direct Measures:

ILLUMPBS	Illuminance at primary work space w/ body shadow	Illuminance in footcandles
ILLUMPNS	Illuminance at primary work space w/ no body shadow	Illuminance in footcandles
ILLUMSBS	Illuminance at secondary work space w/ body shadow	Illuminance in footcandles
ILLUMSNS	Illuminance at secondary work space w/ no body shadow	Illuminance in footcandles
LUMBRCLN	Luminance of brightest ceiling area in field of view	Luminance in footlamberts
LUMBRLIT	Luminance of brightest light source in field of view	Luminance in footlamberts

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
LUMBTWLM	Luminance of darkest area between ceiling luminaires	Luminance in footlamberts
LUMDRKST	Luminance of darkest area in field of view	Luminance in footlamberts
LUMSUR	Luminance of immediate surround next to white paper task	Luminance in footlamberts
LUMTASKSK	Luminance of white paper task at primary work space	Luminance in footlamberts
CRF90	Contrast rendition factor normal to front of desk edge	CRF in percent
CRF45	Contrast rendition factor at 45 degrees to right of normal	CRF in percent
CRF135	Contrast rendition factor at 135 degrees to left of normal	CRF in percent
CRFMIN1	Minimum contrast rendition factor of the above three	CRF in percent
CRFMIN2	Minimum contrast rendition factor within hand span	CRF in percent
TEMPDB	Dry bulb temperature of room air	Degrees F
TEMPWB	Wet bulb temperature of room air	Degrees F
dBA	Ambient sound level	A-weighted decibels

5. Daylighting Classification:

DAYLIGHT	If daylighting affects the visual environment (window within view)	1:yes; 2:no
SEEOUTST	If from a sitting position it is possible to see outside	1:yes; 2:no
SEESKYST	If from a sitting position it is possible to see the sky	1:yes; 2:no
SEEOUTSD	If from a standing position it is possible to see outside	1:yes; 2:no
SEESKYSD	If from a standing position it is possible to see the sky	1:yes; 2:no

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
OUTDOORS	Classification of sky conditions as viewed from work station	1:clear; 2:partly cloudy 3:hazy; 4:overcast 5:not discernable
WINDOW	If a window is visible from the work station	1:yes; 0:no
CTRBLND	If the amount of direct sunlight on work can be controlled	1:yes; 0:no
CTRAMTDL	If the occupant can control the amount of daylight at work station	1:yes; 0:no
HORZBLND	If horizontal blinds are present as a window covering	1:yes; 0:no
VERTBLND	If vertical blinds are present as a window covering	1:yes; 0:no
FABRCURT	If fabric curtains are present as a window covering	1:yes; 0:no
SHADES	If shades are present as a window covering	1:yes; 0:no
OTHERCVR	If another shading device is present as a window covering	1:yes; 0:no
NOCVR	If no window covering or shading is present	1:yes; 0:no
CVRUSE	If window covering is in use	1:in use; 2:not in use; 3:both
GLASSTYP	Type of window glass	1:clear; 2:tinted or colored

6. Work Station Evaluative Measures:

Note: There are several different ranges of values for the qualitative scales, depending on the measure. For this reason the range is given in brackets and the code shows the relative meaning of the responses, such as low numbers for poor quality rating and high numbers for high quality rating (a value of 0 represents a non-response and 9 usually means not applicable).

WSVISBQ [1-5]	Work station visual quality index using a bracketed scale	Low numbers:poor quality high numbers:high quality
WSLTGQ [6-17]	Work station lighting quality	Low numbers:poor quality high number:high quality

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
LTADJEV [1-6]	Lighting adjustment evaluation	Low numbers:poor quality high numbers:high quality
WSSPCAMT	Rating of the amount of space available to occupant	1:poor; 2:fair; 3:good; 4:excellent
WSMATL	Rating of the materials used for desks, tables, and chairs	1:poor; 2:fair; 3:good; 4:excellent
AMTLTWRK	Rating of the amount of lighting for the work done	1:poor; 2:fair; 3:good; 4:excellent
AMYLITBRT	Rating of the amount of lighting available	1:too bright; 2:bit too bright; 3:just right; 4:bit too dim; 5:too dim
LOCCLNLT	Rating of the location of ceiling lights related to work area	1:poor; 2:fair; 3:good; 4:excellent
WALLCOLR	Rating of the colors of walls and partitions in work station	1:poor; 2:fair; 3:good; 4:excellent
STORAGE	Rating of the amount of space for storing things	1:poor; 2:fair; 3:good; 4:excellent
CONPRIV	Rating of the degree of conversational privacy	1:poor; 2:fair; 3:good; 4:excellent
VIEWOUT	Rating of the view outside from the work station	1:poor; 2:fair; 3:good; 4:excellent
COWORKER	Rating of the access to coworkers from work station	1:poor; 2:fair; 3:good; 4:excellent
ALLSPAC	Rating of the amount of wall space for hanging things	1:poor; 2:fair; 3:good; 4:excellent
FURNSTYL	Rating of the style of the furniture in work station	1:poor; 2:fair; 3:good; 4:excellent
ADJAMTLT	Rating of the ability to adjust the amount of light on work	1:poor; 2:fair; 3:good; 4:excellent
VISPRIV	Rating of the amount of visual privacy	1:poor; 2:fair; 3:good; 4:excellent
WRKSPACE	Rating of the amount of surface area for work	1:poor; 2:fair; 3:good; 4:excellent
CHAIR	Rating of the comfort of the chair	1:poor; 2:fair; 3:good; 4:excellent

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
AIRCIRC	Rating of the air circulation and ventilation in work station	1:poor; 2:fair; 3:good; 4:excellent
HEATING	Rating of the heating system's performance at the work station	1:poor; 2:fair; 3:good; 4:excellent
COOLING	Rating of the cooling system's performance at the work station	1:poor; 2:fair; 3:good; 4:excellent
AIRQUAL	Rating of the indoor air quality at the work station	1:poor; 2:fair; 3:good; 4:excellent
ADJDIRLT	Rating of the ability to adjust the direction of the light on work	1:poor; 2:fair; 3:good; 4:excellent
WSSAT	Rating of satisfaction of work station overall	1:not at all; 2:not very; 3:neither; 4:fairly; 5:very
WSLITSAT	Rating of satisfaction of work station lighting	1:not at all; 2:not very; 3:neither; 4:fairly; 5:very
LTREAD	Rating of lighting for reading at the work station	1:poor; 2:not very good; 3:neutral; 4:good; 5:excellent
LTWRITE	Rating of lighting for writing at the work station	1:poor; 2:not very good; 3:neutral; 4:good; 5:excellent
LTTYPE	Rating of lighting for typing at the work station	1:poor; 2:not very good; 3:neutral; 4:good; 5:excellent
LTDRAFT	Rating of lighting for drafting at the work station	1:poor; 2:not very good; 3:neutral; 4:good; 5:excellent
LTFILE	Rating of lighting for filing at work station	1:poor; 2:not very good; 3:neutral; 4:good; 5:excellent
LTOTHER1	Rating of lighting for other type of task (first mentioned)	1:poor; 2:not very good; 3:neutral; 4:good; 5:excellent

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
LTOTHER2	Rating of lighting for other type of task (second mentioned)	1:poor; 2:not very good; 3:neutral; 4:good; 5:excellent
GLRWKSF	Rating of how bothersome glare is reflected light off work surface	1:very bothersome; 2:fairly; 3:not very; 4:not at all
GLRCLNLT	Rating of how bothersome glare from ceiling lights is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
GLRTSKLT	Rating of how bothersome glare from task lights is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
GLRSUNLT	Rating of how bothersome glare from sunlight is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
BRTLIT	Rating of how bothersome bright lights are	1:very bothersome; 2:fairly; 3:not very; 4:not at all
HOTSUMR	Rating of how bothersome hot room temperatures in summer are	1:very bothersome; 2:fairly; 3:not very; 4:not at all
COLDSUMR	Rating of how bothersome cold room temperatures in summer are	1:very bothersome; 2:fairly; 3:not very; 4:not at all
HOTWTR	Rating of how bothersome hot room temperatures in winter are	1:very bothersome; 2:fairly; 3:not very; 4:not at all
COLDWTR	Rating of how bothersome cold room temperatures in winter are	1:very bothersome; 2:fairly; 3:not very; 4:not at all
HTSUNLT	Rating of how bothersome heat from sunlight is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
HTCLNLT	Rating of how bothersome heat from ceiling lights is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
HTTASKLT	Rating of how bothersome heat room task lights is	1:very bothersome; 2:fairly; 3:not very; 4:not at all

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
WSPLST [1-9]	Rating of the pleasantness of the work station	Low numbers:unpleasant high numbers:pleasant
WSBRT [1-9]	Rating of the brightness/dimness of the work station	Low numbers:dim high numbers:bright
WSSPAC [1-9]	Rating of the spaciousness of the work station	Low numbers:confined high numbers:spacious
WSATTR [1-9]	Rating of the attractiveness of the work station	Low numbers:unattractive high numbers:attractive
WSATMOS [1-9]	Rating of the atmosphere of the work station(tense/relaxed)	Low numbers:tense high numbers:relaxed
WSVIEW [1-9]	Rating of the attractiveness of the view from work station	Low numbers:unattractive high numbers:attractive
WSLTSOFT [1-9]	Rating of the lighting at the work station (harsh/soft)	Low numbers:harsh high numbers:soft
WSCOMFRT [1-9]	Rating of the degree of comfort of the work station	Low numbers:uncomfortable high numbers:comfortable
WSINTRST [1-9]	Rating of the degree of interest of the work station	Low numbers:uninteresting high numbers:interesting
WSQUIET [1-9]	Rating of the quietness of the work station	Low numbers:noisy high numbers:quiet

7. Improvement Preferences:

Note: These responses deal with preferences in improvements to the existing work station. The occupant was given a choice between ten of the following environmental characteristics and asked to choose the four that he/she would improve if given a chance, and to also identify the one most preferred improvement. To identify the preferred characteristic, each is given an identification number, shown in brackets.

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
WSIMVIEW [#1]	If better view outside is one of the four desired improvements	1:yes; 0:no
WSIMTEMP [#2]	If better office temperature is one of the four desired improvements	1:yes; 0:no
WSIMPRIV [#3]	If more privacy is one of the four desired improvements	1:yes; 0:no
WSIMCOLR [#4]	If space colors is one of the four desired improvements	1:yes; 0:no
WSIMLTG [#5]	If improved lighting is one of the four desired improvements	1:yes; 0:no
WSIMNOIS [#6]	If less noise is one of the four desired improvements	1:yes; 0:no
WSIMAIRC [#7]	If improved air circulation is one of the four desired improvements	1:yes; 0:no
WSIMLOC [#8]	If closeness to other people is one of the four desired improvements	1:yes; 0:no
WSIMDYLT [#9]	If more daylight is one of the four desired improvements	1:yes; 0:no
WSIMFURN [#10]	If more comfortable furnishings is one of the four desired improvements	1:yes; 0:no
WSIMPREF	Most preferred improvement	Range from 1-10 (see note)

8. CRT Evaluative Measures:

CRTINOFF	If a CRT terminal is located in occupant's office	1:yes; 0:no
CRTSEPKB	If the CRT terminal and the keyboard are separate	1:yes; 0:no

<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
LTWPCRT	Rating of lighting for word processing and CRT terminals	1:poor; 2:not very good; 3:neutral; 4:good; 5:excellent
CRTFLICK	Rating of how bothersome flicker on the CRT screen is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
CRTDSTSC	Rating of how bothersome distance to the CRT screen is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
CRTANGSC	Rating of how bothersome angle of screen is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
CRTGLARE	Rating of how bothersome glare on the CRT screen is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
CRTLRSZ	Rating of how bothersome the CRT letter size is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
CRTDSTKB	Rating of how bothersome the distance to the keyboard is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
CRTANGKB	Rating of how bothersome the angle of the keyboard is	1:very bothersome; 2:fairly; 3:not very; 4:not at all
CRTDSKHT	Rating of how bothersome the desk height is for CRT use	1:very bothersome; 2:fairly; 3:not very; 4:not at all
CRTSEAT	Rating of how bothersome the seating is for CRT use	1:very bothersome; 2:fairly; 3:not very; 4:not at all
CRTBRTSC	Rating of how bothersome the brightness of the CRT screen is	1:very bothersome; 2:fairly; 3:not very; 4:not at all

9. Building Evaluative Measures:

BLDGDSGN [1-7]	Rating of the building's overall design	low numbers:poor design high numbers:good design
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<u>Name</u>	<u>Description</u>	<u>Variable Code</u>
BLGLTBQ [1-5]	Building lighting quality index (combination of several questions)	low numbers:poor quality high numbers:high quality
BLDGINBQ [1-5]	Building interior quality index (combination of several questions)	low numbers:poor quality high numbers:high quality
BLGLTQ [1-22]	Building lighting quality (combination of several questions)	low numbers:poor quality high numbers:high quality
BLDINQ [1-22]	Building interior quality (combination of several questions)	low numbers:poor quality high numbers:high quality
RATTRAVL	Rating of how convenient it is to travel to building from home	1:very; 2:fairly; 3:not very; 4:not at all
ATLOBBY	Rating of attractiveness of lobby	1:poor; 2:not very good; 3:neutral; 4:good; 5:excel- lent
ARGMTWS	Rating of the arrangement of the offices spaces in the building	1:poor; 2:fair; 3:good; 4:excellent
LOOKWS	Rating of the way offices and other work spaces look	1:poor; 2:fair; 3:good; 4:excellent
BLDGATR [1-7]	Rating of the attractiveness of the building overall	low numbers:unattractive high numbers:attractive
EXTDSGN [1-7]	Rating of the quality of the building's exterior design	low numbers:poor design high numbers:good design
INTDSGN [1-7]	Rating of the quality of the building's interior design	low numbers:poor design high numbers:good design
LIGHTATR [1-7]	Rating of the attractiveness of the building's lighting	low numbers:unattractive high numbers:attractive
WELLIT [1-7]	Rating of the degree the spaces in the building are well lit	low numbers:poorly lit high numbers:well lit
BLDGMAN [1-7]	Rating of the quality of the building maintenance	low numbers:poorly maintained; high numbers: well maintained
BLDGPLST [1-7]	Rating of the pleasantness of of the building	low numbers:unpleasant high numbers:pleasant
BLDGSEC [1-7]	Rating of the building's security	low numbers:poor security high numbers:pleasant

<u>Name</u>	<u>Description</u>	<u>Varilable Code</u>
STIMUL [1-7]	Rating of the stimulation of the spaces within the building	low numbers:unstimulating high numbers:stimulating
FINDWAY [1-7]	Rating of the difficulty in finding way around building	low numbers:difficult high numbers:easy
<u>10. Occupant Descriptive Characteristics:</u>		
AGE	Age group of occupant	1:under 25; 2:from 25-34 3:from 35-44; 4:from 45-54 5:from 55-64; 6:from 65-74 7:over 75 years of age
SEX	Sex of occupant	1:female; 2:male
GLASSES	If occupant wears glasses	1:yes; 0:no
BIFOCALS	If occupant wears bifocals	1:yes; 0:no
CONTACTS	If occupant wears contacts	1:yes; 0:no
LONGWORK	Length of time occupant worked in current building	1:< 3 months; 2:3-6 months 3:6 months-1year; 4:1-2 years; 5:>2 years
TASKTYPE	Type of task activity which best describes occupant's work	1:reading/writing; 2:typing; 3:CRT or terminal; 4:drafting; 5:filing; 6:attend meetings; 7:talk on phone
HOWTRAVL	Mode of transportation to and from work	1:own car; 2:car pool; 3:public transportation; 4:walk; 5:other

APPENDIX C: ASCII FILE DATA DIRECTORY

Note: The following is a directory listing of the contents and location of the data elements in the ASCII file POEDATA.PC. The file is a contiguous, exclusively numeric data file organized into a matrix of rows and columns where the columns represent variables and the rows individual records for each work station. The data are not delimited, but can be mapped out by using the column location and width for each variable given on the following pages.

Where possible the variables are associated with responses in the evaluation forms. The code in parentheses next to the variable number gives the location of the data variable as reported on the occupant questionnaire and direct environmental measures forms. For example, code (Q4k) is the eleventh item under question four in the questionnaire. These codes make most sense if used in conjunction with the forms (found in Appendix B of the methodology report [1]).

The purpose of the directory is to allow the data from the ASCII tape to be interpreted once it has been loaded onto the machine of interest. The column position and width uniquely identifies each variable location. To use the data a data management strategy must be developed, but the directory is provided here for reference should such a task be desired.

<u>Variable #</u>	<u>Variable Description</u>	<u>Name</u>	<u>Col</u>	<u>Width</u>
v1	ID (internal use)		1	7
v2	Building number	BLDG	8	2
v177	Weight var-building (internal use)		19	3
v1011 (Q1)	How long work in building	LONGWORK	22	1
v1012 (Q2)	How travel to work	HOWTRAVL	23	1
v1013 (Q3)	How conven to travel to work	RATTRAVL	24	1
v1014 (Q5)	How attractive is lobby	ATLOBBY	25	1
v1015 (Q6)	Rate arrangement of work spaces	ARGMTWS	26	1
v1016 (Q7)	Rate look work spaces	LOOKWS	27	1
v1017 (Q4a)	Overall bldg attractiveness	BLDGATR	28	1
v1018 (Q4b)	Overall bldg exterior design	EXTDSGN	29	1
v1019 (Q4c)	Overall bldg interior maint	BLDGMN	30	1
v1020 (Q4d)	Overall bldg lighting attract	LIGHTATR	31	1
v1021 (Q4e)	Overall bldg interior design	INTDSGN	32	1
v1022 (Q4f)	Overall bldg pleasantness	BLDGPLST	33	1
v1023 (Q4g)	Overall bldg security	BLDGSEC	34	1
v1024 (Q4h)	Overall bldg stimulating spaces	STIMUL	35	1
v1025 (Q4i)	Overall bldg ability to find way	FINDWAY	36	1
v1026 (Q4j)	Overall bldg poor/well lit space	WELLIT	37	1
v1027 (Q4k)	Overall bldg design	BLDGDSGN	38	1
v1032 (Q5a)	Rate lighting in main lobby	RTLTLBY	43	1
v1033 (Q5b)	Rate lighting in cafeteria	RTLTCF	44	1
v1034 (Q5c)	Rate lighting conference room	RTLTCNF	45	1
v1035 (Q5d)	Rate lighting in hallways	RTLTHALL	46	1
v1036 (Q5e)	Rate lighting in rest rooms	RTLTRSTM	47	1
v1037 (Q8)	# days/wk at building	DYSWKBLG	48	1
v1038 (Q9)	Average hours/day at building	HRSDYBLG	49	1
v1039 (Q10)	Time spent at work space	TIMEWS	50	1
v1040 (Q11)	How long occupied work space	LONGSPAC	51	1
v1041 (Q12)	Previous type of work space	PREVWS	52	1
v1042 (Q14a)	# hours/day reading	HRSDYRED	53	1
v1043 (Q14b)	# hours/day writing	HRSDYWRT	54	1
v1044 (Q14c)	# hours/day typing	HRSDYTYP	55	1
v1045 (Q14d)	# hours/day using WP or CRT	HRSDYCRT	56	1
v1046 (Q14e)	# hours/day drafting or drawing	HRSDYDRF	57	1
v1047 (Q14f)	# hours/day filing	HRSDYFIL	58	1
v1050 (Q15a)	Rate lighting for reading	LTREAD	61	1
v1051 (Q15b)	Rate lighting for writing	LTWRITE	62	1
v1052 (Q15c)	Rate lighting for typing	LTTYPE	63	1
v1053 (Q15d)	Rate lighting for WP or CRT	LTWP CRT	64	1
v1054 (Q15e)	Rate lighting for drafting/draw	LTDRAFT	65	1
v1055 (Q15f)	Rate lighting for filing	LTFIL	66	1
v1058 (Q17)	How sat lighting at work space	WSLITSAT	69	1
v1059 (Q18a)	CRT probs flickering screen	CRTFLICK	70	1
v1060 (Q18b)	CRT probs distance to screen	CRTDSTSC	71	1
v1061 (Q18c)	CRT probs angle od screen	CRTANGSC	72	1
v1062 (Q18d)	CRT probs glare	CRTGLARE	73	1
v1063 (Q18e)	CRT probs size lettering	CRTLTRSZ	74	1
v1064 (Q18f)	CRT probs distance to keyboard	CRTDSTKB	75	1
v1065 (Q18g)	CRT probs angle of keyboard	CRTANGKB	76	1
v1066 (Q18h)	CRT probs height of desk	CRTDSKHT	77	1

<u>Variable #</u>	<u>Variable Description</u>	<u>Name</u>	<u>Col</u>	<u>Width</u>
v1067 (Q18i)	CRT probs seating	CRTSEAT	78	1
v1068 (Q19)	CRT/WP in use in office	CRTINOFF	79	1
v1069 (Q20)	CRT keyboard & screen separate	CRTSEPKB	80	1
v1070 (Q21a)	Have additional work space	OTHERWS	81	1
v1071 (Q21b)	Share work space	SHAREWS	82	1
v1072 (Q22a)	Bothered by ringing phones		83	1
v1073 (Q22b)	Bothered by co-work conversat'n		84	1
v1074 (Q22c)	Bothered by printer noise		85	1
v1075 (Q22d)	Bothered by equipment noise		86	1
v1076 (Q22e)	Bothered by vent system noise		87	1
v1077 (Q22f)	Bothered by corridor noise		88	1
v1078 (Q22g)	Bothered by ref glare wk surface	GLRWKSF	89	1
v1079 (Q22h)	Bothered by glare ceiling lights	GLRCLNLT	90	1
v1080 (Q22i)	Bothered by glare task lights	GLRTSKLT	91	1
v1081 (Q22j)	Bothered by glare sunlight	GLRSUNLT	92	1
v1082 (Q22k)	Bothered by bright lights	BRTLIT	93	1
v1083 (Q22l)	Bothered by hot temp in summer	HOTSUMR	94	1
v1084 (Q22m)	Bothered by cold temp in summer	COLDSUMR	95	1
v1085 (Q22n)	Bothered by hot temp in winter	HOTWTR	96	1
v1086 (Q22o)	Bothered by cold temp in winter	COLDWTR	97	1
v1087 (Q22p)	Bothered by drafts		98	1
v1088 (Q22q)	Bothered by stuffy air		99	1
v1090 (Q22r)	Bothered by heat from sunlight	HTSUNLT	101	1
v1091 (Q22s)	Bothered by heat from cln lts	HTCLNLT	102	1
v1092 (Q22t)	Bothered by heat from task lts	HTTSKLT	103	1
v1093 (Q22u)	Bothered by freq rearrang furn		104	1
v1094 (Q22v)	Bothered by people walk around		105	1
v1095 (Q23a)	Headache from building		106	1
v1096 (Q23b)	Dizziness from building		107	1
v1097 (Q23c)	Sleepiness from building		108	1
v1098 (Q23d)	Sore throat from building		109	1
v1099 (Q23e)	Nose irritation from building		110	1
v1100 (Q23f)	Eye irritation from building		111	1
v1101 (Q23g)	Trouble focus eyes from building		112	1
v1102 (Q23h)	Difficulty concentrating frm bldg		113	1
v1103 (Q23i)	Skin dryness from building		114	1
v1104 (Q24)	# days absent frm illness (6mo)		115	1
v1105 (Q25a)	Work station pleasantness	WSPLST	116	1
v1106 (Q25b)	Work station dim/bright	WSBRT	117	1
v1107 (Q25c)	Work station confined/spacious	WSSPAC	118	1
v1108 (Q25d)	Work station un/attractive	WSATTR	119	1
v1109 (Q25e)	Work station tense/relax atmos	WSATMOS	120	1
v1110 (Q25f)	Work station harsh/soft lighting	WSLTSOFT	121	1
v1111 (Q25g)	Work station un/comfortable	WSCOMFRT	122	1
v1112 (Q25h)	Work station un/interesting	WSINTRST	123	1
v1113 (Q25i)	Work station noisy/quiet	WSQUIET	124	1
v1114 (Q26a)	Pref for improved view out	WSIMVIEW	125	1
v1115 (Q26b)	Pref for improved temperature	WSIMTEMP	126	1
v1116 (Q26c)	Pref for improved privacy	WSIMPRIV	127	1
v1117 (Q26d)	Pref for improved color/furn	WSIMCLR	128	1
v1118 (Q26e)	Pref for improved lighting	WSIMLTG	129	1

<u>Variable #</u>	<u>Variable Description</u>	<u>Name</u>	<u>Col</u>	<u>Width</u>
v1119 (Q26f)	Pref for less noise	WSIMNOIS	130	1
v1120 (Q26g)	Pref for improved air circulation	WSIMAIRC	131	1
v1121 (Q26h)	Pref for being closer to people	WSIMLOC	132	1
v1122 (Q26i)	Pref for more daylight	WSIMDLT	133	1
v1123 (Q26j)	Pref for more comfort furnish	WSIMFURN	134	1
v1124 (Q27)	Most preferred improvement	WSIMPREF	135	2
v1125 (Q29a)	Rate amount of space available	WSSPCAMT	137	1
v1126 (Q29b)	Rate materials of desk furn	WSMATL	138	1
v1127 (Q29c)	Rate amount of light for work	AMTLTWRK	139	1
v1128 (Q29d)	Rate location of ceiling lights	LOCCLNLT	140	1
v1129 (Q29e)	Rate color walls & partitions	WALLCOLR	141	1
v1130 (Q29f)	Rate amount of ws storage space	STORAGE	142	1
v1131 (Q29g)	Rate degree of convers privacy	CONVPRIV	143	1
v1132 (Q29h)	Rate view outside	VIEWOUT	144	1
v1133 (Q29i)	Rate access to other coworkers	COWORKER	145	1
v1134 (Q29j)	Rate amount of wall space	WALLSPC	146	1
v1135 (Q29k)	Rate style of furniture	FURNSTYL	147	1
v1136 (Q29l)	Rate adjust amt light on work	ADJAMTLT	148	1
v1137 (Q29m)	Rate amount of visual privacy	VISPRIV	149	1
v1138 (Q29n)	Rate amount of space for work	WRKSPACE	150	1
v1139 (Q29o)	Rate the comfort of chair	CHAIR	151	1
v1140 (Q29p)	Rate vent & air circulation	AIRCIRC	152	1
v1141 (Q29q)	Rate the heating system	HEATING	153	1
v1142 (Q29r)	Rate the indoor air quality	AIRQUAL	154	1
v1143 (Q29s)	Rate adjust direction light on wrk	ADJDIRLT	155	1
v1144 (Q30)	See window from where work	WINDOW	156	1
v1145 (Q31)	Control sunlight on wrk w/blinds	BLINDS	157	1
v1146 (Q33)	Control temperature	CTRTEMP	158	1
v1147 (Q34)	Control ventilation	CTRVENT	159	1
v1148 (Q36)	Able to turn lights on & off	ONOFFLTS	160	1
v1149 (Q37)	Able to control amt of light	CTRAMTLT	161	1
v1150 (Q38)	Control direction of light	CTRDIRLT	162	1
v1151 (Q39)	Overall sat w/ work space	WSSAT	163	1
v1152 (Q40a)	Job interesting		164	1
v1153 (Q40b)	Job coworkers hear conversation		165	1
v1155 (Q40k)	Job develops special abilities		167	1
v1156 (Q40c)	Job is satisfying		168	1
v1157 (Q40e)	Job access to the materials needed		169	1
v1158 (Q40g)	Job req I remain in one place/day		170	1
v1159 (Q40l)	Job req I work very fast		171	1
v1160 (Q40h)	Job req much concentration		172	1
v1161 (Q40m)	Job coworkers do as much as can		173	1
v1162 (Q41)	Job status	JOBSTAT	174	2
v1163 (Q42)	Handedness	HANDED	176	1
v1166 (Q43)	Wear glasses	GLASSES	179	1
v1167 (Q44)	Wear contact lenses	CONTACTS	180	1
v1168 (Q45)	Wear bifocals	BIFOCALS	181	1
v1169 (Q46)	Sex	SEX	182	
lv1170 (Q47)	Age	AGE	83	1
v1176	Improvement mentioned first	IMP1ST	191	2
v1177	Improvement mentioned second	IMP2ND	193	2

<u>Variable #</u>	<u>Variable Description</u>	<u>Name</u>	<u>Col</u>	<u>Width</u>
v1178	Improvement mentioned third	IMP3RD	195	2
v1179	Improvement mentioned fourth	IMP4TH	197	2
v1181 (Q13)	Task that best describes work	TASKTYPE	201	1
v1182 (Q16)	Describe amt of light brightness	AMTLTBRT	202	1
v1183 (Q18j)	CRT probs screen brightness	CRTBRTSC	203	1
v1184 (Q23j)	Fatigue		204	1
v1185 (Q25j)	WS un/attractive view	WSVIEW	205	1
v1186 (Q28)	Why choose improvement #1		206	2
v1187 (Q29r)	Cooling	COOLING	208	1
v1188 (Q32)	Control amt of daylight	CTRAMTDL	209	1
v1189 (Q35)	Task light/lamp at desk	TASKLT	210	1
v1190 (Q40d)	Job work very accurate		211	1
v1191 (Q40f)	Job eyes tired if read 1 hr		212	1
v1192 (Q40i)	Job enough time to do work		213	1
v1193 (Q40j)	Job light hinders work		214	1
v1194 (Q40n)	Job satisfied with work quality		215	1
v1195 (Q40o)	Job probs meeting deadlines		216	1
v1196 (Q40p)	Job coworkers competent		217	1
v1197 (Q48)	Day of week form completed		218	1
v1198 (Q49)	Rating of sky condition		219	1
v1201	# hours per week at building		220	1
v1202	Amount time at ws		221	1
v1203	Job satisfaction index		222	9
v1204	Visual health index		231	1
v1205	RC more privacy		232	1
v1206	RC improved lighting		233	1
v1207	RC better view out		234	1
v1208	RC better office temperature		235	1
v1209	RC more daylight		236	1
v1210	RC less noise		237	1
v1211	RC improved air		238	1
v1212	RC change color		239	1
v1213	WS visual quality		240	9
v1214	Overall building quality		249	9
v1215	Lighting quality of building		258	9
v1216	Bracket v1213 WS visual quality		267	1
v1217	Lighting evaluation for read/write		268	1
v1218	Amount read/write		269	1
v1219	Glasses w/ bifocals		270	1
v1220	Contacts w/ glasses		271	1
v1221	Predominant task		272	1
v1223	Equipment noise problems		273	1
v1224	Conversational privacy		274	1
v1225	WS space evaluation		275	9
v1226	Furniture evaluation		284	9
v1227	Lighting adjustment evaluation		293	1
v1228	Heat from lights		294	1
v1303	Alt job satisfaction index		295	2
v1304	Alt visual health index		297	2
v1305	Alt pref more privacy		299	1

<u>Variable #</u>	<u>Variable Description</u>	<u>Name</u>	<u>Col</u>	<u>Width</u>
v1306	Alt pref improved lighting		300	1
v1307	Alt pref better view		301	1
v1308	Alt pref better temperature		302	1
v1309	Alt pref more daylight		303	1
v1310	Alt pref less noise		304	1
v1311	Alt pref air circulation		305	1
v1312	Alt pref color furniture		306	1
v1313	Alt WS visual quality	WSVISQ	307	2
v1314	Alt overall building quality		309	2
v1315	Alt building lighting quality	BLDGLTQ	311	2
v1317	Alt lighting eval read/write	LTEVRDWT	313	1
v1318	Alt amount read/write		314	1
v1319	Alt glasses w/ bifocals		315	1
v1320	Alt contacts w/ glasses		316	1
v1323	Alt equipment noise probs		317	2
v1325	Alt WS space evaluation	WSSPEV	319	2
v1326	Alt furniture quality		321	2
v1327	Alt lighting adjustment evaluation	LTADJEV	323	2
v1329	Alt pref closer to people		325	1
v1330	Alt pref comfort of furniture		326	1
v1331	Alt building interior quality	BLDGINQ	327	2
v1332	Alt conversational probs		329	2
v1333	Alt WS lighting quality	WSLTGQ	331	2
v3011 (D1.0a)	Contrast 90 deg at primary ws	CONST90	649	3
v3012 (D1.0b)	Contrast 45 deg at primary ws	CONST45	652	3
v3013 (D1.0c)	Contrast 135 deg at primary ws	CONST135	655	3
v3014 (D1.0d)	CRF 90 deg at primary ws	CRF90	658	3
v3014 (D1.0e)	CRF 45 deg at primary ws	CRF45	661	3
v3015 (D1.0f)	CRF 135 deg at primary ws	CRF135	664	3
v3017 (D2)	Daylighting affects visual environ	DAYLIGHT	667	1
v3018 (D3a)	Daylighting see out sitting	SEEOUTST	668	1
v3019 (D3b)	Daylighting see sky sitting	SEESKYST	669	1
v3020 (D4a)	Daylighting see out standing	SEEOUTSD	670	1
v3021 (D4b)	Daylighting see sky standing	SEESKYSD	671	1
v3022 (D5)	Outdoor conditions	OUTDOORS	672	1
v3023 (D6a)	Window cvr-horizontal blinds	HORZBLND	673	1
v3024 (D6b)	Window cvr-vertical blinds	VERTBLND	674	1
v3025 (D6c)	Window cvr-fabric curtains	FABRCURT	675	1
v3026 (D6e)	Window cvr-shades	SHADES	676	1
lv3027 (D6f)	Window cvr-other	OTHERCVR	677	1
v3028 (D6g)	Window cvr-none	NOCVR	678	1
v3029 (D7)	Window covering in use	CVRUSE	679	1
v3030 (D8)	Type of window glass	GLASSTYP	680	1
v3031(D11a/10b)	Work space assigned or not	WSASSIGN	681	1
v3032 (D10)	Work station open or enclosed		682	1
v3033(D10a/11c)	Work station panels	WSPANEL	683	1
v3034 (D10c)	Open space private or shared	SHAREWS1	684	1
v3035 (D11b)	Enclosed space private or shared	SHAREWS2	685	1
v3036(D10/11d)	# additional work stations		686	1
v3037(D10/11e)	Other ws assigned or not		687	1
v3038(D10/11f)	Other ws in use or not		688	1

<u>Variable #</u>	<u>Variable Description</u>	<u>Name</u>	<u>Col</u>	<u>Width</u>
v3039 (D12a)	Furnishings wood		689	1
v3040 (D12b)	Furnishings metal		690	1
v3041 (D12c)	Furnishings fabric		691	1
v3042 (D12e)	Furnishings other		692	1
v3043 (D13a)	Walls wood		693	1
v3044 (D13b)	Walls metal		694	1
v3045 (D13c)	Walls fabric		695	1
v3046 (D13d)	Walls dry wall/plaster		696	1
v3047 (D13e)	Walls brick/block		697	1
v3048 (D13f)	Walls demountable ceiling hgt part		698	1
v3049 (D13g)	Walls vinyl wall covering		699	1
v3050 (D13h)	Walls glass		700	1
v3051 (D13i)	Walls other		701	1
v3052 (D16)	Type of office chair		702	1
v3053 (D14)	# of colors in work station		703	2
v3054 (D15a)	Dominant color #1		705	5
v3055 (D15b)	Dominant color #2		710	5
v3056 (D15c)	Dominant color #3		715	5
v3057 (D17a)	Air diffuser modified		720	1
v3058 (D17b)	Makeshift blinds on window		721	1
v3059 (D18a)	Desk or floor plants		722	1
v3060 (D18b)	Pictures on wall		723	1
v3061 (D18c)	Mementos on desk or tack surf		724	1
v3062 (D18d)	Radio, TV, or tape recorder		725	1
v3063 (D18e)	Fan		726	1
v3064 (D18f)	Space heater		727	1
v3065 (D19a)	CRT/WP in work station	CRTATWS	728	1
v3066 (D19b)	CRT reflected window light		729	1
v3067 (D19c)	CRT reflected electric light		730	1
v3068 (D19d)	CRT keyboard raised/lowered		731	1
v3069 (D19e)	CRT screen raised/lowered/tilted		732	1
v3070 (D20a)	Sup task light at primary location		733	1
v3071 (D21a)	Sup task lamp type at primary loc		734	1
v3072 (D22a)	Sup task fixture type at primary		735	1
v3073 (D23a)	Sup task light direction		736	1
v3074 (D24a)	Sup task height above desk surface		737	2
v3075 (D25a)	Sup task lamp cover primary		739	1
v3076 (D26a)	Sup task switch control primary		740	1
v3077 (D20b)	Sup task light at secondary loc		741	1
v3078 (D21b)	Sup task lamp type at secondary		742	1
v3079 (D22b)	Sup task fixture type at secondary		743	1
v3080 (D23b)	Sup task light direction		744	1
v3081 (D24b)	Sup task height above desk surface		745	2
v3082 (D25b)	Sup task lamp cover secondary		747	1
v3083 (D26b)	Sup task switch control secondary		748	1
v3084 (D27)	Other free standing fixtures		749	1
v3085 (D28)	# free standing fixtures		750	1
v3086 (D29a)	Fluorescent free standing lamp		751	1
v3087 (D29b)	Incandescent free standing lamp		752	1
v3088 (D29c)	Other free standing lamp		753	1
v3089 (D1c)	Number of work surfaces		754	1

<u>Variable #</u>	<u>Variable Description</u>	<u>Name</u>	<u>Col</u>	<u>Width</u>
v3090 (D1d)	Red dot visible		755	1
v3091 (D1e)	Blue dot visible		756	1
v3092 (D1f)	Illuminance prim w/ body shadow	ILLUMPBS	757	3
v3093 (D1g)	Illuminance prim w/o body shadow	ILLUMPNS	760	3
v3094 (D1h)	Illuminance sec w/ body shadow	ILLUMSBS	763	3
v3095 (D1i)	Illuminance sec w/o body shadow	ILLUMSNS	766	3
v3096 (D1j.1)	Luminance task at primary location	LUMTASK	769	5
v3097 (D1j.2)	Luminance immediate surround task	LUMSUR	774	5
v3098 (D1j.3)	Luminance ceiling btwn luminaires	LUMCBWL	779	5
v3099 (D1j.4)	Luminance brightest lgt source	LUMBRLIT	784	5
v3100 (D1j.5)	Luminance brightest cln area	LUMBRCLN	789	5
v3101 (D1j.6)	Luminance darkest area in view	LUMDRKST	794	5
v3102 (D1j.7)	Luminance wall straight ahead	LUMWSRT	799	5
v3103 (D1j.8)	Luminance wall right	LUMWRGT	804	5
v3104 (D1j.9)	Luminance wall left	LUMWLFT	809	5
v3105 (D1k.1)	Luminance of window A	LUMWINA	814	5
v3106 (D1k.2)	Window A orientation		819	2
v3107 (D1k.3)	Luminance of window B	LUMWINB	821	5
v3108 (D1k.4)	Window B orientation		826	2
v3109 (D1k.5)	Luminance of window C	LUMWINC	828	5
v3110 (D1k.6)	Window C orientation		833	2
v3111 (D1k.7)	Luminance of window D	LUMWIND	835	5
v3112 (D1k.8)	Window D orientation		840	2
v3113 (D30.a)	Intrusive telephones		842	1
v3114 (D30.b)	Intrusive coworker conversation		843	1
v3115 (D30.c)	Intrusive computer printer		844	1
v3116 (D30.d)	Intrusive other office equipment		845	1
v3117 (D30.e)	Intrusive vent system noise		846	1
v3118 (D30.f)	Intrusive outside noise		847	1
v3119 (D30.g)	Intrusive music		848	1
v3120 (D32.a)	Temperature- dry bulb	TEMPDB	849	2
v3121 (D32.b)	Temperature- wet bulb	TEMPWB	851	2
v3122	Noise PNC curve	PNC	853	2
v3125 (D33)	Noise dBA weighted	dBA	862	2
v3128	Minimum contrast at primary wkst	CNSTMIN	873	9
v3129	Minimum CRF at primary wkst	CRFMIN1	882	3
v3136	Task luminance ratio I		889	5
v3137	Ceiling luminance ratio I		894	5
v3138	Field luminance ratio I		899	7
v3139	Supplemental light location		906	1
v3140	Maximum outside luminance		907	6
v3142	Field luminance ratio II		913	7
v3143	Field luminance ratio III		920	6
v3144	Ceiling luminance ratio II		926	5
v3145	Minimum contrast w/in hand span	CNSTMIN2	931	3
v3146	Minimum CRF w/in hand span	CRFMIN2	934	3
v3147	Rate major lighting system		937	1
v3148	Lighting source		938	1
v3375	Work station view		969	1
v4003	Type of work station	WSTYPE	970	1
v4004	Work station area	WSAREA	971	3

<u>Variable #</u>	<u>Variable Description</u>	<u>Name</u>	<u>Col</u>	<u>Width</u>
v4005	Work station occupancy density		974	2
v4008	Adjacent to exterior window		978	1
v4009	Adjacent to atrium		979	1
v4013	Straight line distance to window		983	3
v4015	Straight line distance to atrium		987	3
v4502	Direct rec fluorescent w/louvers	DRF-LV	1016	1
v4503	Direct rec fluorescent w/2x2 lens	DRF2X2LN	1017	1
v4504	Direct rec fluorescent w/2x4 lens	DRF2X4LN	1018	1
v4505	Direct/indirect fluor pendants	tDIF-P	1019	1
v4506	Indirect fluorescent pendant	INDF-P	1020	1
v4507	Furniture mounted indirect fluor	IF-FM	1021	1
v4508	Recessed incandescent	IN-REC	1022	1
v4509	Surface or pendant mount incand	IN-SMPM	1023	1
v4510	HID free standing indirect	HID-FS	1024	1
v4511	Local Wattage	WATTSL	1025	3
v4512	Zone wattage	WATTSG	1028	5
v4513	Zone Area	ZAREA	1033	5
v4514	Dir/indir fluor wall mounted	DIFWMT	1038	1
v4515	Wall wash fluorescent	FWW	1039	1
v4516	Direct fluorescent Surface mounted	DF-SM	1040	1
v4521	Direct rec fluor 2X4 louvers	DRF2X4LV	1060	1
v4522	Direct fluorescent 1X4 lens	DRF1X4LN	1061	1
v4523	HID pendant mounted indirect	HID-PI	1062	1
v4528	Direct rec fluor 1X4 louver	DRF1X4LV	1079	1
v4529	Direct rec fluorescent w/ lens	DRF-LN	1080	1
v9313	Bracket visual quality	WSVISBQ	1114	1
v9315	Bracket bldg lighting quality	BLDGLTBQ	1115	1
v9326	Bracket furniture evaluation	FURNBEV	1116	1
v9327	Bracket lighting adj evaluation	LTADJBEV	1117	1
v9331	Bracket bldg interior quality	BLDGINBQ	1118	1

APPENDIX D: PC-BASED DATA EXPORTING

The database management software allows complete exporting of all or part of the database. Data can be exported into files that can be used by dBASE II, dBASE III, dBASE III Plus, Lotus 123, Symphony, Visicalc, Multiplan, or any program using DIF, SYLK, or ASCII files.

The full instructions for exporting data using the R:BASE Filegateway utility are given in the chapter 5 of the R:BASE System V User's Manual [6]. It would be helpful knowing how the R:BASE System V program works, but it is not necessary. Instead of executing the R:BASE program with the RBASE -R command, type RBSYSTEM along with a carriage return from the RBDATA sub-directory. The R:BASE logo and main menu should appear. From here, select the Filegateway option. When requested for a database, choose QUEST, and when a table is requested, choose POEDATA. If only partial files are exported, select the variables as requested using the dictionary in Appendix A for variable names. If the full table is exported, the fields will be exported according to the sequence given with the R:BASE LIST ALL command (executable from the R:BASE Prompt mode). However, due to the sheer size of the database, few PC-based programs can handle the full data file which has close to 400 fields; thus, it is recommended that selected fields be exported without an initial attempt at exporting the full database.

R:BASE allows five file formats for exporting:

- 1) ASCII delimited field
- 2) ASCII fixed field
- 3) WKS (Lotus 123, versions 1 and 2, and Symphony 1.0)
- 4) DIF (Data Interchange Format, for Visicalc)
- 5) SYLK (Symbolic Link Format, for Multiplan)

The ASCII formats are the most generalized. Several programs can handle either or both forms. The WKS format is used by the Lotus programs shown and can be translated with the Lotus translate utilities software to the most recent versions of Lotus 123, Symphony, and Jazz, all products of Lotus Development Corporation. Translation to DIF and SYLK files has not been tested, but the R:BASE translator provides such options.

The dBASE III Plus program can import files in DIF, SYLK, or ASCII formats, but if major sections of the database are to be imported from the database, the ASCII delimited format is suggested due to the number of fields involved. Because dBASE III Plus is limited to 128 imported fields, the maximum number of variables that can be exported at one time to a dBASE III file is 128. When prompted by the R:BASE Gateway utility, the delimiter must be either a comma or a blank, and a carriage return and line feed must be included at the end of each record.

To keep the integrity of the data, a "Lock" has been put around the data. The data are fully accessible and analysis of the data can be made, but the contents of the data cannot be changed or modified.

Exporting the data moves the data outside this protective shell; therefore, care should be made to maintain data integrity once the data are exported.

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