BUILDING ENERGY CONSERVATION INSPECTION AND QUALITY MEASUREMENT

CONTENTS

1. GENERAL

1.01 Building energy conservation may be defined as those efforts exerted on an ongoing basis in implementing and administering measures necessary to minimize the amount of energy consumed in telephone locations.

1.02 This section replaces AT&T Section 770-200-110. It is issued to set forth the building energy conservation inspection guidelines for Southwestern Bell. Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 This section outlines a procedure for inspecting and evaluating the quality of the building energy conservation measures taken. It is intended to serve as an aid to those supervisory personnel responsible for the administration of this function within the building operation organizations.

1.04 It is intended that inspections will be made by personnel qualified to recognize and evaluate the physical condition of the building and to recommend corrective measures if the quality of the work or methods employed require them. The plan for inspection outlined herein does not supersede day-to-day supervisory observation and correction of defective building energy conservation items, but should supplement them.

1.05 All references made herein were current at the time of this issue. Subsequent changes in reference data should be researched by the user.

1.06 Frequency of Inspection: Building energy conservation inspections are scheduled at such intervals as local conditions may require. It is recommended, however, that this inspection format be used as part of an operational review and by local management to complete a building inspection at least annually at each location. Performing inspection during the heating and cooling season, where such conditions exist, is desirable.

2. INSPECTION FORM AND CHECKLIST

2.01 For the purpose of inspection, building energy conservation is divided into the following ten classifications:

(1) Ventilation
(2) Heating and Cooling
(3) Infiltration, Transmission
(4) Lighting
(5) Domestic Hot and Cold Water
(6) Elevators, Escalators
(7) Electric Power Systems
(8) Computer Facilities
(9) Conditioned Space Utilization
(10) Controls

2.02 An inspection report, Form SW-6427, shall be used for guidance and rating in making an inspection.

2.03 Form SW-6427 is available through hard copy requisition procedures. The minimum order through these procedures is 500 copies of the form.

2.04 A copy of this form completed for a typical inspection, along with example checklists, is shown in Exhibit 1. The form provides a list of the classifications as well as space for general information regarding the building under inspection. Part two of the form contains a checklist and space for notes. Typical conditions to be observed are contained in paragraphs 5.01 through 14.02 of this section and in the checklist.

2.05 For ease of identification, notes made referring to items requiring attention should be referenced by the classification number to which they pertain with specifics as to the exact location.

2.06 The form also includes a table for evaluating results. Numerical values from 0 through 10 are established for each of the ten classifications and each is then multiplied by its assigned weighting factor. The inspection plan thus indicates whether a balanced job is being done and, if not, where attention is necessary to bring all classifications to the desired level. This may be accomplished by additional or redirected effort, more supervisory attention, or other action.

2.07 The conditions observed under each classification are initially considered in terms of Within the Objective Band (10.0--9.0), Lower Than Objective Band (8.9--7.0), and Unsatisfactory Band (6.9--0) with the appropriate quality rating number assigned. For example, a lighting system without any defects (such as excessive foot candle levels, dirty lenses, or reflectors turned "off" when the space is unoccupied) and in apparent perfect condition is rated the highest possible, theoretically 100 percent. Therefore, the figure 10 is entered in the Quality Rating (Q.R.) column. This figure is then multiplied by the weighting factor of 1.5 and the resultant figure (15) is entered in the Quality Value (Q.V.) column for lighting. If the conservation quality is anything less than 10.0, the number that best represents the quality is assigned before applying the weighting factor. Further definition of the bands is as follows:

(O) Within the Objective Band--within service demands and cost effective.

(L) Lower Than Objective Band--less than satisfactory, service level needs improvement.

(U) Unsatisfactory Band--unsatisfactory service level, immediate attention required.

2.08 Care should be exercised in assigning quality values to the various classifications. They should be assigned on an impartial basis and should be based on conditions that exist at the time of the inspection. In the case of room temperatures, consideration should be given to the existence of special energy conservation systems (such as heat recovery, economy cycles, etc) and conditions such as high heat load areas.

2.09 A factor that will influence the total quality value is the absence of one or more classifications in a particular building. For example, if an equipment building does not have elevators or computer facilities, the letters N/A (not applicable) would be entered in the column adjacent to these classifications. The absence of a quality rating in the missing classifications would reflect a total quality value lower than if they were included. This is compensated for by dividing the total quality value by the total weighting factor.

2.10 A single form may be used for one building. In the case of a large multistory building, several floors may be selected as representative of the entire building. On subsequent inspections, other floors should be considered for inspection. The selected floors should be noted on the form. A quality result for the entire building is determined from the conditions observed on the selected floors as well as the common systems such as heating and cooling. If a more detailed report is desired or the size of the building warrants, each floor may be entered on separate forms. These can be averaged and consolidated on a single form to establish an overall quality index for the building.

3. PRELIMINARY PROCEDURE

3.01 Before starting the actual inspection, fill in the data on the inspection form, i.e., the date, building name, address, city and state, geographic location code, sector and zone, building square footage, population, clearance group, average BER, and percentage of BER change versus the previous year.

3.02 The population includes all company and non-company employees regularly housed in the building.

4. INSPECTION--GENERAL

4.01 The inspection is performed by observation of all items shown in the following paragraphs and of any others observed while walking around and through the building from roof to basement.

4.02 The items listed in subsequent paragraphs under headings corresponding to the subdivisions on the inspection form are those points that should be considered in rating the quality of the energy conservation job being performed.

4.03 It should be noted that the following list is by no means complete, but will serve as a base for evaluating the energy conservation job that is performed. Other items requiring attention that become evident during the inspection should be noted for future reference to the appropriate party. These items should not influence the quality rating assigned to a particular classification.

4.04 The checklist contains two columns adjacent to the principal conditions to be observed. The first is for indicating the condition and should be noted [✔(deviation), OK, N/A (Not Applicable)], and the second is for notes made on items requiring attention. These notes may be used for reference in preparing annual budgets for building equipment repair and rearrangement work related to energy conservation.

5. VENTILATION--CLASSIFICATION NO. 1

5.01 General -- Air-handling equipment has a significant impact on a building's total energy consumption. Each cubic foot of air brought into the building must be either heated or cooled and, in some cases, humidified or dehumidified. It is generally agreed that many building codes demand an amount of ventilation in excess of that actually required to provide for the safety and comfort of building occupants. Because many building code officials also recognize this, they may be willing to allow changes which will drop CFM rates below those normally required, providing that such changes are reversible. This is especially true in the case of telephone equipment buildings which have a much lower population density than office buildings.

5.02 Outdoor Air:

- Reduced to minimum required to balance exhaust requirements and maintain a slightly positive pressure.
- Not used excessively for odor control.

5.03 Dampers:

- Maintained as airtight as possible when closed.
- Position indicators in proper adjustment.
- Opposed blade type in use.
- Gasketed type in use.

5.04 Air-Handling Equipment:

- No leakage in ductwork.
- Ductwork insulation adequate and in good condition.
- Inside duct surfaces clean.
- Proper operation of dampers and linkage.

. Air valves in dual duct mixing boxes seating properly.

. Filters cleaned or replaced on a regular basis--draft gauges in use.

. Filters installed with proper flow direction.

. Coils kept in clean and efficient condition.

. No leakage around edges of coils.

. Room air outlets clean and free of obstructions.

. Variable air-volume boxes operating precisely--preventing overheating or overcooling.

5.05 Fans -- Exhaust and Supply:

. Exhaust air quantities reduced as far as practical in areas such as toilet rooms, kitchens, etc.

. Gravity or motor operated dampers in use for periods when exhaust fans are shut down.

. Demand cycling of exhaust fans considered.

. Exhaust hoods not oversized.

. Complete shutdown of exhaust fans considered.

. Inlet and discharge screens free of dirt and debris.

. Fan blades clean and balanced.

. Drive belts matched and tensioned properly.

5.06 Miscellaneous:

. Baffles to prevent wind from blowing directly into outside air intake considered.

. Plenum and access doors properly gasketed and tight-fitting.

6. HEATING AND COOLING--CLASSIFICATION NO. 2

6.01 General -- Heating and cooling together usually consume the largest single "block" of energy utilized by a building during the course of a year. In most cases, however, the heating/cooling system was designed with initial costs of primary concern. As a result, the energy efficiency of the system was seldom a design criterion. Many systems were designed to meet extreme conditions which possibly could occur, but which seldom do or to accommodate future growth or equipment additions. Accordingly, many are oversized and therefore perform in an inefficient manner.

6.02 Heating (where required):

(1) Room temperatures within limits of guidelines. (Reference -- GL 74-04-079, GL 74-01-155, GL 77-02-025, and GL 78-02-025)

(2) Humidity level within limits of guidelines.
(Reference -- GL 74-01-155)

(3) Boilers:

. Tubes clean and unobstructed for maximum efficiency.

. Combustion air inlets unobstructed.

. Combustion efficiency tests (logs to indicate tests are being performed).

. Firing rate proper.

. Condition of fire proper.

. Barometric dampers in proper adjustment.

. Insulation -- pipes and boilers insulated for low heat loss.

. Steam traps maintained.

. Modulating fire adjustment smooth.

. Blowdown frequency not excessive.

. Boiler water treatment in use where conditions warrant.

(4) Central Furnaces:

. Heat exchanger surfaces clean.

. Filters clean (changed in accordance with draft gauge readings).

(5) Radiators--Convectors:

. Baseboard and finned tube units not obstructed, air movement not restricted.

. Vents installed at high points of hydronic units to prevent air locks which cause poor circulation.

. Heat transfer surfaces clean.

(6) Electric Heating Units:

. Heat transfer surfaces clean and unobstructed.

. Heating elements in proper operating condition.

. Cleanliness and proper beam direction of infrared units.

6.03 Cooling--Refrigeration Equipment:

(1) Room temperatures within limits of guidelines. (Reference -- GL 74-01-079, GL 74-01-155, GL 77-02-025, and GL 78-02-025)

(2) Humidity within limits of guidelines. (Reference -- GL 74-01-155)

(3) Refrigeration Circuit and Controls:

. Checked for leaks on regular basis.

. Liquid line strainers checked for restriction (temperature differential, frost, etc).

. Gauges and operating pressures checked regularly.

. Insulation on suction and liquid lines adequate and in good repair.

. Expansion valves checked for proper adjustment (super heat).

(4) Compressor--Chillers:

. Checked for unusual operation, such as continuous running, frequent stopping and starting, running lightly loaded, all of which may indicate inefficient operation.

. Outside air temperature compressor lockouts considered in connection with economizer cycle.

(5) Air-Cooled Condenser:

. Fan belt drive and motor properly adjusted and lubricated.

. Condenser coil face clean to permit proper air flow.

. Hot air not bypassed from fan outlet to coil inlet.

(6) Water-Cooled Condenser:

. Tubes clean.

. Check water temperature differential.

(7) Cooling Towers:

. Water treatment in use where conditions warrant.

. Proper water level in basin.

. Fan belt drive and motor properly adjusted and lubricated (check for excessive vibration).

. Pump inlet screen clean.

. Bleed rate not excessive.

. Air not bypassed from tower outlet to inlet.

. Water spray checked for proper distribution.

. Water temperature proper cooling range.

6.04 Humidification equipment:

. Air dampers, fan parts, spray chamber and diffuser, control starter, and eliminator free of dust and dirt.

. Carry-over not excessive.

. Nozzles clean and spraying properly.

6.05 Pumps:

- No excessive noise or vibration, bearing condition good, properly lubricated.

6.06 Hot and Chilled Water Piping:

- No leakage at joints.
- Proper flow.
- Insulation adequate and in good condition.
- Strainers cleaned on regular basis.
- Heat exchangers in good condition, proper temperature differential range, proper control valve operation.
- Vents not clogged.

6.07 Steam Piping:

- Insulation adequate and in good repair.
- Zone shutoff valves closing properly.
- Steam traps operating properly, steam not blowing by, no evidence of steam at condensate tank vents, etc.
- Pressure reducing and regulating valves in proper working condition.
- Condensate or vacuum pumps in good working order, no leaks in vacuum side of lines causing unnecessary running of pump.
- Condensate return temperature not excessive.
- Proper control valve operation.

6.08 Operating Procedures:

- Late startup and early shutdown considered.
- Lower centrifugal compressor condenser temperatures considered.
- Dual Units--operating one fully loaded rather than two partially loaded.
- Supply chilled water at highest temperature possible that will maintain required room temperature and humidity.
- Supply steam at lowest pressure possible and hot water at lowest temperature possible.

7. INFILTRATION, TRANSMISSION--CLASSIFICATION NO. 3

7.01 General -- Unwanted outside air infiltrates a building through inadvertent openings in the building envelope. Since outdoor air, regardless of source, must be heated, cooled, or otherwise treated, infiltration adds another significant load on the heating and cooling system. Likewise, transmission through the building envelope in either direction adds still another load to these systems.

7.02 Windows and glass walls:

- No broken or cracked panes.
- No worn or broken weather stripping.
- Caulking around window frames in good condition.
- No misaligned windows.
- Storm windows or thermal glass in use.
- Windows not blocked open.

7.03 Doors:

- No worn, broken or missing weather stripping.
- No misaligned doors.
- Caulking around door frames in good condition.
- Automatic door closers operating properly.
- Gasketing on garage doors in good repair.
- Doors not blocked open.

7.04 Exterior Surfaces:

- Caulking, sealing of all exterior joints in good condition.
- Caulking or sealing of openings for piping, etc, in good condition.
- Covering for window or through wall package units used.

7.05 Transmission/Glazing:

- Preferential treatment given to those windows most exposed to direct sunlight.
- Use of drapes, shades, etc.

8. LIGHTING--CLASSIFICATION NO. 4

8.01 General -- Because the lighting systems of many existing buildings were designed within the restrictions of initial cost economies and without the knowledge of final use and ultimate subdivision requirements, there exists significant potential for energy savings in lighting system operations.

8.02 Usage Patterns:

- Planned program to turn lights on when and where needed in force.
- Personnel assigned, trained, and made responsible for administering same.
- Moving of work stations to take greater advantage of lighting considered.
- Use of timer controls, photocell considered.
- Task lighting considered.

8.03 Illumination Levels:

- Levels reduced to recommended requirements. (Reference -- RL 79-08-366)

. Delamped fixtures so marked.

. Ballasts removed or disconnected from nonrequired fixtures.

. Considered use of light wall and ceiling colors for improvement.

8.04 Lamps:

. Replacement of lamps with lower wattage considered.

. Lens changing or lowering of fixtures considered.

8.05 Maintenance:

. Cleaning of lenses and lamps performed on regular basis.

. Frequent cleaning of windows, walls, and ceilings to improve reflective qualities considered.

. Reminder signs posted at switches.

. Change to more efficient light sources considered.

9. DOMESTIC HOT AND COLD WATER--CLASSIFICATION NO. 5

9.01 General -- Domestic hot water often consumes from 2 to 4 percent of the total energy used in large office buildings. Cold water, provided in drinking fountains, also is a factor in total building energy consumption.

9.02 Supply System:

. Inspection and repair of all system leaks, particularly those at faucets, performed.

. Testing and repairing of hot water control performed.

. Insulation of pipes and storage tanks adequate and in good repair.

. Timer controls on circulating pumps considered.

9.03 Temperature Levels:

. Hot water temperatures reduced to recommended level (110°) measured at end of line.

. Hot water for kitchens boosted locally.

. Drinking fountains not blocked on.

. Cold water mixing valves on hot water systems eliminated.

. Condensers clean on drinking water coolers.

10. ELEVATORS, ESCALATORS--CLASSIFICATION NO. 6

10.01 General -- Constant running escalators and the misuse and poor programming of elevators tend to waste energy. Elevators also cause indirect waste due to stack effects created by the shaft and infiltration around cabs.

10.02 Operation and Usage:

- Use of stairways for short trips encouraged.
- Traffic reviews for determination of proper programming considered.
- Time-out and shutdown not too rapid (idle should be long enough that power consumption is equal to that of start-up).
- Escalators--shutdown of all down units during periods of light traffic or at all times considered.

11. ELECTRIC POWER SYSTEMS--CLASSIFICATION NO. 7

11.01 General -- Numerous elements of building systems which utilize electricity have been discussed throughout this section. Additional guidelines for reduction of electrical energy consumption and losses are as follows:

11.02 Demand Management and Control and Power Factor Improvement:

- Demand control by load shedding considered.
- Demand control by sequence starting of equipment considered.

11.03 Miscellaneous:

- Employees urged to turn off electric equipment when not in use, such as portable fans, typewriters, etc.
- Restricted use of electric heaters and coffeepots.
- Restricted use of window displays, etc.

12. COMPUTER FACILITIES--CLASSIFICATION NO. 8

12.01 General -- Recent research shows that buildings with significant computer installations frequently consume as much as 50 percent more than the amount of energy consumed by buildings without such installations. While the computer itself obviously consumes energy, it is felt that the primary reason for the high energy consumption rate is the extent to which the computer support facilities are in use. Typically computer operations extend into periods when the building otherwise would be unoccupied.

12.02 Temperature and Humidity Levels--Controlled at a manufacturer's minimum and maximum recommendations. (Reference GL 76-11-067)

12.03 Lighting -- Levels adjusted to minimum required.

12.04 Miscellaneous:

- Shutdown of machines after hours policed.

13. CONDITIONED SPACE UTILIZATION--CLASSIFICATION NO. 9

13.01 General -- The way in which conditioned building space is utilized by occupants can have a pronounced effect on

energy utilization as well as on business productivity. Some of the potentially beneficial modifications which should be considered are as follows:

13.02 Considerations:

- Unused areas, rooms closed off and air supply shut down.
- Where practical, all heat-producing equipment placed in same area.
- Wall hangings, displays, and furniture located away from air supply and return grills.

14. CONTROLS--CLASSIFICATION NO. 10

14.01 General -- The controls in most existing buildings probably were designed more in light of initial costs than for their ability to conserve energy. In addition, lack of proper maintenance can cause controls to go out of calibration and become less sensitive. Preventive maintenance of temperature control system is essential.

14.02 Miscellaneous:

- Controls adjusted to recommended settings at time of testing, adjusting, and balancing of all heating and cooling systems.
- Routine scheduled for followup adjustment and calibration of controls.
- Locking or tamper-proof covers on thermostats in use.
- Controls adjusted to prevent simultaneous operation of heating and cooling systems.
- Use of reheat limited.
- Use of night setback and morning startup controls considered.
- Air-handling systems controlled by timers and/or demand controllers (thermostats).
- Automatic shut-off of heaters interlocked with garage doors in use.

15. SUMMARY

15.01 The following is a summary of the overall inspection and quality measurement process.

- Fill in the general data regarding the building on Form SW-6427.
- Walk through the building, noting all deviations on the checklist.
- Review the checklist, completing all spaces. (Ensure that no items are missed.)
- Enter numerical ratings in the Quality Rating (Q.R.) column for all classifications rated.
- Multiply each Q.R. by the assigned Weighting Factor (WF) and enter the resultant figure in the Quality Value (Q.V.) column.

. Total the individual Q.V.'s and enter in the Total Q.V. space.

. Add the WF's of all classifications rated and enter in the Total W.F. space.

. Divide the Total Q.V. by the Total W.F. and enter the result in the Quality Index space.

. Enter in the Band space the alphabetical band (H, O, L, or U) which corresponds to the numerical Quality Index.

. Note any unusual conditions.

EXHIBIT 1

Southwestern Bell

SW/6427
(1-84)

Retain 1 year, until superceded
(REF. B.S.P. 770-200-903SW)

BUILDING ENERGY CONSERVATION INSPECTION

Date 1-27-84

Building Name SANDY VALLEY #2ESS
Address 123 OAK STREET
City & State ANYTOWN, USA
Geo. Loc. Code XX0000
Sector/Zone 1/WEST
Bldg. ⌀ 5084
Population 3 Cl. Grp. 2

	Building	Area	State	Company
AVG. BER (*)	14.8	11.4	10.5	10.2
% CHANGE BER VERSUS PREV. YR.	1.9	-2.1	-2.5	-3.8

(*) AVG. BER = CUMULATIVE BTU'S (1000) DIVIDED BY CUMULATIVE SQ. FT. OF FLOOR SPACE

H	O	L	U
Higher Than Objective	Objective Band	Lower Than Objective	Unsatisfactory Band
	10.0—9.0	8.9—7.0	6.9—0

	Classification	Q.R.	W F	Q.V.
1	Ventilation	9.3	2.0	18.6
2	Heating And Cooling	8.9	2.0	17.8
3	Infiltration, Transmission	9.4	1.5	14.1
4	Lighting	8.2	1.5	12.3
5	Domestic Hot And Cold Water	8.9	.5	4.5
6	Elevators, Escalators	N/A	.5	N/A
7	Electric Power Systems	9.0	.5	4.5
8	Computer Facilities	9.5	.5	4.8
9	Conditioned Space Utilization	9.2	.5	4.6
10	Controls	8.5	.5	4.3
	Total Q.V.			85.5
	Total W.F.	9.5		

Q.R.—Quality Rating (Use Tenths)
Q.V.—Quality Value (Use Hundredths)
W.F.—Weighting Factor

Quality Index = $\frac{\text{Total Q.V.}}{\text{Total W.F.}}$ = 9.0 Band O

Note Any Unusual Conditions Below

#2 ROOM TEMP. NOT WITHIN GUIDELINES
#4 LIGHTING CONSERVATION PROGRAM NOT IN USE
#5 DOMESTIC HOT WATER AT 122°
#10 THERMOSTAT SET ON 68°

EXHIBIT 1 (cont'd)

BUILDING ENERGY CONSERVATION CHECKLIST

Check Items As Indicated
Status (✓ Dev., OK, N/A)

Part II

Bldg. SANDY VALLEY #2 ESS Floor 1

1. VENTILATION	STATUS	LOCATION, NOTES, ETC.
.02 Outdoor Air		
Reduced To Minimum, W/Pos. Press.	OK	
No Excessv. Use For Odor Cntrl.	OK	
.03 Dampers		
Airtight, Indctrs., Proper Adjst.	OK	
Opposed Blade Type In Use	OK	
Gasketed Type In Use	OK	
.04 Air-Handling Equipment		
No Air Leaks, Insul. Good Cond.	OK	
Inside Of Ducts Clean	OK	
Linkage & Dampers Adj. Proper	OK	
Air Valves Seating Proper	OK	
Filters Clean, Gauges Used, Flow Proper	✓	#1 UNIT - FILTERS DIRTY, GAUGE FLUID EMPTY
Coils Clean, No Leakage	OK	
Air Outlets Clean, No Obstructions	OK	
Var. Vol. Boxes Oprn. Proper	OK	
.05 Fans-Exhaust & Supply		
Exhst. Air Reduced In Toil. & Kitchen	✓	VENTILATION FAN IN MEN'S ROOM RUNNING CONTINUOUSLY
Gravity Or Motor Operated Dampers Used	OK	
Demand Cycling Of Fans Considered	OK	
Exhst Hoods Not Oversized	OK	
Exh. Fan Shutdown Considered	OK	
Inlet And Discharge Screens Clean	OK	
Fan Blades Clean & Balanced	OK	
Belts Matched & Adjstd.	OK	
.06 Miscellaneous		
O.S. Air Intakes Baffled	OK	
Plenum Doors Tight & Gsktd	✓	#2 UNIT - DOOR LATCH BROKEN
2. HEATING AND COOLING	**STATUS**	
.02 Heating (Where Required)		
Temperature Guidelines		
Temp. Guidelines Followed	✓	DIST. MGR. OFFICE - 71°
Humidity Guidelines		
Humidity Guidelines Followed	OK	
Boilers		
Boiler Tubes Clean	OK	
Combustion Air Inlets Clear	OK	
Combustion Eff. Tested. Logged	✓	NO ENTRY IN LOG SINCE 3/12/79. SEE (1).
Fire Rate, Cond. Proper	OK	
Barometric Dmprs. Adj. Proper	OK	
Boiler & Pipe Insul. Good Cond.	OK	
Steam Traps Maintained Proper	OK	
Fire Modul. Adj. Smooth	OK	
Blowdown Freq. Not Excessive	OK	
Boiler Water Trmnt. In Use	OK	

NOTES:

(1) COMBUSTION EFFICIENCY TEST SCHEDULED FOR 2/18/84.

EXHIBIT 1 (cont'd)

.02 Heating (Cont.)	STATUS	LOCATION, NOTES, ETC.
Central Furnaces		
Heat Exch. Surfaces Clean	N/A	
Filters Clean-Changed Reg.	"	
Radiators-Convectors		
Radiators Not Obstructed	N/A	
Air Vents At High Points	"	
Heat Transfer Surfaces Clean	"	
Electric Heating Units		
Elect. Transfer Surfaces Clean	N/A	
Heat Elements Oper. Prop.	"	
Infrared Clean & Proper Beam	"	
.03 Cooling-Refrig. Equip.		
Temperature Guidelines		
Temp. Guide. Followed	N/A	SEE (1).
Humidity Guidelines		
Humidity Guide. Followed	N/A	
Refrig. Circuit & Controls		
Check For Ref. Leaks Regular	✓	NOT DONE
Liquid Line Strainers, OK	OK	
Gauges & Oper. Pressure, OK	OK	
Insul. On Refrg. Lines Adequate	OK	
Expan. Valves Adjust., OK	OK	
Compressor-Chillers		
Compressor. Chiller Opr. Eff.	N/A	SEE(1).
Out. Air Temp. Lockout Considered	"	
Air-Cooled Condenser		
Air-Cool. Condr. Belt & Motor Adj.	OK	
Air C. Cond. Coil Clean	OK	
A.C.C. Hot Air Not Bypassed	OK	
Water-Cooled Condenser		
Water-Cooled Condr. Tubes Cln.	N/A	
Check Water Temp. Differential	"	
Cooling Towers		
C. Tower Water Treat. In Use	N/A	
C.T. Proper Water Level	"	
C.T. Fan Belt And Motor Adj.	"	
C.T. Clean Pump. Screen	"	
C.T. Bleed Rate Proper Control	"	
C.T. Air Not Bypassed	"	
C.T. Proper Water Spray	"	
C.T. Basin Water Temp. Proper	"	
.04 Humidification Equipt.		
Dampers. Fans. Spray Diffuser OK	OK	
Starter & Eliminators Clean	OK	
Carry-Over Not Excessive	OK	
Nozzles Clean And Proper	OK	
.05 Pumps		
Noise. Vibration. Bearings OK	OK	

NOTES:

(1) NO COOLING IS OCCURRING IN THE BUILDING.

EXHIBIT 1 (cont'd)

	STATUS	LOCATION, NOTES, ETC.
.06 Hot & Chilled Water Piping		
No Leaks At Joints	OK	
Proper Flow	OK	
Insula. Adequate-Good Cond.	OK	
Strainers Clean-Reg. Basis	✓	NOT DONE
Heat Exch.-Good Cond.-Proper Temp. Diff.	OK	
Vents Not Clogged	OK	
.07 Steam Piping		
Insul. Adequate-Good Cond.	N/A	
Zone Shutoff Valves Close Proper	"	
Steam Traps Operating Proper	"	
Press. Valves Working Proper	"	
Condensate-Vac.-Pumps-Working Properly	"	
Condensate Ret. Temp. Not Excess	"	
Control Valve-Proper Oprn.	"	
.08 Operating Procedures		
Late Startup, Early Shutdown Consid.	✓	NOT DONE
Lower Centrif. Comp. Cond. Temp. Consid.	N/A	
Dual Units-Full Load vs 2 Part. Loaded	"	
Supply C.W. At High Temp. Possible	OK	
Supply Steam/Low Pres.-H.W./Low Temp.	OK	
3. INFILTRATION, TRANSMISSION	STATUS	
.01 General		
No Openings In Bldg. Envelope	OK	
.02 Windows & Glass Walls		
No Broken Or Cracked Glass	OK	
No Worn Or Broken Weather Stripping	OK	
Caulking, Window Frame Good Cond.	OK	
No Misaligned Windows	OK	
Storm Windows/Therm. Glass In Use	OK	
Windows Not Blocked Open	OK	
.03 Doors		
No Worn, Broken, Missing Weather Stripping	OK	
No Misaligned Doors	✓	WEST DOOR ALLOWS AIR LEAKAGE
Caulking-Door Frames Good Cond.	OK	
Auto. Door Closers Oper. Proper	OK	
Gasket-Garage Doors Good Cond.	N/A	
Doors Not Blocked Open	OK	
.04 Exterior Surfaces		
Caulk/Seal Ext. Joint Good Cond.	OK	
Caulk/Seal Pipe Openg. Good Cond.	OK	
Covers For Window Units Used	OK	

NOTES:

EXHIBIT 1 (cont'd)

	STATUS	LOCATION, NOTES, ETC.
3.05 Transmission/Glazing		
Prefer. Tretmt. For Windows Exposed	N/A	
Use Of Drapes, Shades, Etc. OK	OK	
4. LIGHTING	STATUS	
.02 Usage Patterns		
Planned Light Usage Used	✓	NOT DONE
Personnel To Administr. Program I.D.'d	✓	NOT DONE
Moving For Advantageous Light Consid.	✓	NOT DONE
Use Of Timers/Photocells OK	✓	NOT DONE
Task Lighting Considered	OK	
.03 Illumination Levels		
Levels At Recommended Guidelines	✓	LOUNGE AT 65fc
Delamped Fixtures Marked	✓	NOT DONE
Ballasts Removed, Unused Fixtures	✓	NOT DONE
Use Of Light Wall & Ceiling Color Consid.	OK	
.04 Lamps		
Replace W/Low Watt Lamps Consid.	✓	NOT DONE
Lens Change/Lowering Of Fixtures Consid.	✓	NOT DONE
.03 Maintenance		
Clean Lens & Lamps Routine Basis	✓	NOT DONE
Freq. Cleang, Wndws, Walls, Ceilings	✓	NOT DONE
Reminder Signs On Switches	OK	
Chng.-Effic. Light Source Considered	✓	NOT DONE
5. DOMESTIC H.W. & C.W.	STATUS	
.01 General		
Hot Water Use Limited	OK	
.02 Supply System		
Insp. & Repr. Leaks In Faucets Reg. Basis	OK	
Test H.W./Control Reg. Basis	OK	
Insulation-Pipes & Tanks Adequate	OK	
Timers/On Circulatg. Pumps Used	N/A	
.03 Temperature Levels		
H.W. Temp. 110° At End Of Line	✓	122°
H.W. For Kitchen Boosted Locally	N/A	
Drinking Fountains Not Blocked On	OK	
C.W. Mix Valves Not On H.W. Systm.	N/A	
Condensers On Water Coolers Clean	OK	

NOTES:

EXHIBIT 1 (cont'd)

6. ELEVATORS, ESCALATORS	STATUS	LOCATION, NOTES, ETC.
.02 Operation And Usage		
Use Of Stairs Encouraged	N/A	
Review For Prop. Programming	"	
Time-Out, Shtdwn, Not Too Rapid	"	
Escl. Shtdwn Out Of Hrs.	"	
7. ELEC. POWER SYSTEMS	STATUS	
.02 Demand, Power Factor		
Demand Cntrl. By Load Shed. Cond.	✓	NOT DONE
Sequenced Starting Considered	✓	NOT DONE
.03 Miscellaneous		
Emp. Turn Off Equip. Not In Use	OK	
Heaters, Coffee Makers Restricted	OK	
Window Displays Restricted	OK	
8. COMPUTER FACILITIES	STATUS	
.02 Temp., Humidity Levels		
Control At Mfr. Max./Min. Levels	OK	
.03 Lighting		
Levels Adj. To Guidelines	OK	
.04 Miscellaneous		
Mach. Shtdwn. After Hrs.	OK	
9. SPACE UTILIZATION	STATUS	
.02 Considerations		
Air In Unused Area Shutdown	✓	CLOSED BUSINESS OFFICE BEING HEATED
Heat-Prod. Equip. Cent. Located	OK	
Wall Mounted Equip. Unobstr.	OK	
Displays Not Obstr. Air Supply	OK	
Furn. Loc. Away From Vents	OK	
10. CONTROLS	STATUS	
.02 Miscellaneous		
Cntrls. Adj.-HVAC Balnced.	OK	
Cntrls. Adj. & Cal. On Sched. Basis	✓	DIST. MGR. THERMOSTAT SET AT 68° - READING 71°
Thermostat And Controls Locked	OK	
Prevent Simult. Heat. & Cool.	OK	
Use Of Reheat Limited	N/A	
Night Setback & Timers Used	✓	NOT DONE
Garage Heat/Door Intlkd. Auto. Cntrl.	N/A	

NOTES: