ZONE–HEAT–SOURCE — identifies the heat source for the zone heating coils (reheat coils) in central air handler systems. See HEAT–SOURCE for the applicable code-words, and Appendix F for default values.

PREHEAT–SOURCE — identifies the heat source for the preheat coils. See HEAT–SOURCE for the applicable code-words, and Appendix F for default values.

BASEBOARD–SOURCE — identifies the heat source for the baseboard heaters. See HEAT–SOURCE for the applicable code-words, and Appendix F for default values. BASEBOARD–SOURCE defaults to GAS–HYDRONIC for the Packaged Total Gas Solid Desiccant (PTGSD) system; it should not be changed nor applied to any other system type.

HUMIDIFIER–TYPE — defines the source of heat used to provide humidification in those SYSTEM–TYPEs that allow MIN–HUMIDITY to be specified. It takes one of the standard heat source code-words: HOT–WATER (default), ELECTRIC or FURNACE. Use the furnace source with caution since the same HIR and part-load functions are used as for other furnaces specified in the same system.

SIZING–RATIO — is used to deliberately oversize or undersize all equipment in the system.

ZONE–NAMES — is a list of zone names (enclosed in parentheses) of the ZONEs that are assigned to this SYSTEM. This data entry, with the u-name of at least *one ZONE*, is required. If the SYSTEM being simulated is the type that serves both a central zone and one or more subzones (i.e., SZRH, PSZ and RESYS), the u-name of the control ZONE must be listed *first*.
Example: ZONE–NAMES=(ZONE–1,ZONE–2)

MAX–COND–RCVRY — enables recovery of condenser heat from packaged single zone units (PSZ). The input is the fraction of recoverable heat from the condenser for reheating.

REHEAT–DELTA–T — is the maximum increase in temperature for supply air passing through the zone (or subzone) reheat coils. The value specified here applies to all zones in the system.

MIN–CFM–RATIO — is the minimum allowable supply air flow rate, expressed as a decimal fraction of design flow rate. This keyword applies only to variable-volume type systems. (This keyword appears also under the ZONE command. The value specified here in the SYSTEM command applies to all zones in the system that do not have an overriding specification at the zone level in the

ZONE command.) A low value for MIN–CFM–RATIO can result in reducing the flow of air below that set by MIN–OUTSIDE–AIR, thus simulating the system operation below minimum ventilation criteria.

HEATING-CAPACITY   is **required** for the PTGSD system and is input as a minus value; **you must size it.**

PLANT–ASSIGNMENT

The PLANT–ASSIGNMENT command is used to identify both the system or group of systems that compose the PLANT, and also the "building resources", which are sources of energy that do not contribute to the space heating or cooling loads.* In the following, the type of fuel (natural gas, oil, etc.) associated with fuel-related keywords (INT–FUEL–BTU/HR, etc.) is specified with the ENERGY–RESOURCE command in PLANT (p.4.16).

SYSTEM–NAMES   Is a list of the u-names of all systems that make up this particular plant assignment.

INT–FUEL–BTU/HR   Is the consumption in Btu/hr of fuel that is consumed in the interior of the building, but that does not contribute to the space cooling load. See "Building Resources in SYSTEMS" in the *Supplement (2.1E)*, p.3.13.

INT–FUEL–SCH   Identifies the schedule that is used to specify the building-level fuel use as a function of time. Schedule inputs are fractions of the quantity given by the keyword INT–FUEL–BTU/HR. If INT–FUEL–SCH is not input, the schedule values will all default to zero and no fuel usage will occur, regardless of the value specified for INT–FUEL–BTU/HR.

EXT–FUEL–BTU/HR   Is the consumption in Btu/hr of fuel that is consumed exterior to the building. Decorative gas torches and pool heaters are examples.

EXT–FUEL–SCH   Schedule of exterior fuel use.

INT–ELEC–KW   Is electricity consumed in kW within the building that does not contribute to space conditioning loads. Included in this category are elevators and escalators.

INT–ELEC–SCH   Schedule that corresponds to INT–ELEC–KW.

EXT–ELEC–KW   Is electricity consumed in kW outside of the building. Power for fountains, pool pumps, and exterior lighting is included in this category.

EXT–ELEC–SCH   Schedule of exterior electricity use.

DHW–GAL/MIN   Is the supply flow of building-level domestic hot water (gallons per minute). This flow is multiplied hourly by the DHW–SCH schedule value. This is *in addition* to that specified with SOURCE–TYPE = HOT–WATER in SPACE–CONDITIONS in LOADS, and does not contribute to

---

* Prior to DOE-2.1E, these were specified in the BUILDING-RESOURCE command in LOADS.

space thermal loads. The hot water demand calculated from this and the following DHW– keywords is passed to PLANT where it is satisfied by a domestic hot water heater or boiler.

DHW–SCH — Is the schedule of building-level domestic hot water use. It multiplies DHW–GAL/MIN.

DHW–SUPPLY–T — Is the building-level domestic hot water supply temperature (°F); the default is 140°F.

DHW–INLET–T–SCH — Is the schedule of building-level domestic hot water inlet temperature (°F). The default is the monthly ground temperature from the weather tape.

PROCESS–HW–BTU/HR — Is a process hot water load in Btu/hr. This load increases the total plant heating load as shown in report SS–D, and is passed on to the boilers or other heating equipment in PLANT. A manufacturing process which uses hot water is an example of a process hot water load.

PROCESS–HW–SCH — Is the schedule for the process hot water load.

PROCESS–CHW–BTU/HR — Is a process chilled water load in Btu/hr. This load increases the total plant cooling load as shown in report SS–D, and is passed on to the chillers or other cooling equipment in PLANT. A computer room which has computers directly cooled by chilled water is an example of a process cooling load. (The electricity consumed by these computers should be input using the INT–ELEC–KW keyword.)

PROCESS–CHW–SCH — Is the schedule for the process chilled water load.

SYSTEMS–REPORT

This instruction defines which SYSTEMS reports will be output. Users can select from *verification* reports and *summary* reports. Verification reports echo user-input; summary reports show calculation results, usually monthly and annually.

Format:

SYSTEMS-REPORT   VERIFICATION = (code-word list)
                      SUMMARY = (code-word list) ..

Example:

SYSTEMS-REPORT   VERIFICATION = (SV–A)
                      SUMMARY = (SS–A, SS–O) ..

will print verification report SV–A, "System Design Parameters", and summary reports SS–A, "System Monthly Loads Summary", and SS–O, "Temperature Scatter Plot".

A definition of the basic SYSTEMS reports, with corresponding code-words, is given in Appendix C.