

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
LOAD-RANGE	L-R	P — LOAD-ASSIGNMENT	39		V.52	2.0-2/15/79
•LOADS-REPORT	L-R	L	17		III.123	2.0-2/15/79
LOCATION	LOC	L — EXTERIOR-WALL or ROOF	11		III.102	2.0-2/15/79
		L — INTERIOR-WALL	15		III.113	2.1-5/15/80
		L — TROMBE-WALL-V or -NV	12			2.1B-1/15/83
		L — UNDERGROUND-WALL or -FLOOR	16		III.119	2.1-5/15/80
LONGITUDE	LON	L — BUILDING-LOCATION	2		III.30	2.0-2/15/79
LOWER-VENT-AREA	L-V-A	L — WALL-PARAMETERS	5	2.8,2.61		2.1B-1/15/83
LOW-SPEED-RATIOS	L-S-R	S — SYSTEM-FANS	24		IV.227	2.1-5/15/80
MAINTENANCE	M	P — PLANT-EQUIPMENT	32		V.14	2.0-2/15/79
MAINTENANCE-EXP	M-E	P — PLANT-COSTS	40			2.1B-1/15/83
MAINTENANCE-REF	M-R	P — REFERENCE-COSTS	40		V.94	2.0-2/15/79
MAJ-OVHL-COST	MAJ-O-C	E — COMPONENT-COST	44		V.8	2.0-2/15/79
MAJ-OVHL-CST-EXP	MAJ-O-C	P — PLANT-COSTS	40			2.1B-1/15/83
MAJ-OVHL-CST-REF	MAJ-O-C	P — REFERENCE-COSTS	40		V.95	2.0-2/15/79
MAJ-OVHL-INT	MAJ-O-I	E — COMPONENT-COST	44		V.8	2.0-2/15/79
MAJ-OVHL-INT-EXP	MAJ-O-I	P — PLANT-COSTS	40			2.1B-1/15/83
MAJ-OVHL-INT-REF	MAJ-O-I	P — REFERENCE-COSTS	40		V.95	2.0-2/15/79
MAJOR-OVHL-COST	MAJ-O-C	P — PLANT-EQUIPMENT	32		V.14	2.0-2/15/79
MAJOR-OVHL-INT	MAJ-O-I	P — PLANT-EQUIPMENT	32		V.14	2.0-2/15/79
MAKEUP-WTR-T	M-W-T	P — PLANT-PARAMETERS	34		V.24,V.30	2.0-2/15/79
•MATERIAL	MAT	L	4		III.73	2.0-2/15/79
MATERIAL	MAT	L — LAYERS	5		III.76	2.0-2/15/79
MATERIALS-INFLTN	M-I	P — PLANT-COSTS	40		V.91	2.0-2/15/79
MAX-COND-RCVRY	M-C-R	S — SYSTEM-EQUIPMENT	26		IV.249	2.1-5/15/80
MAX-COOL-RATE	MAX-C-R	S — ZONE	22		IV.200	2.0-2/15/79
MAX-FAN-RATIO	MAX-F-R	S — SYSTEM-FANS	24	3.31	IV.227	2.0-2/15/79
MAX-FLUID-T	MAX-F-T	S — SYSTEM-FLUID	25		IV.235	2.0-2/15/79

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
MAX-GLARE	M-G	L — SPACE-CONDITIONS	9	2.34,2.49		2.1B-1/15/83
MAX-HEAT-RATE	MAX-H-R	S — ZONE	22		IV.199	2.0-2/15/79
MAX-HP-SUPP-T	M-SUPP-T	S — SYSTEM-EQUIPMENT	26	3.15		2.1C-5/15/84
MAX-HUMIDITY	MAX-H	S — SYSTEM-CONTROL	23	3.23,3.31	IV.208	2.0-2/15/79
MAX-NUMBER-AVAIL	M-N-A	P — PLANT-EQUIPMENT	32		V.11.1	2.0-2/15/79
MAX-OA-FRACTION	M-O-F	S — SYSTEM-AIR	23		IV.217	2.1-5/15/80
MAX-RATIO	MAX-R	P — PART-LOAD-RATIO	33	4.18,4.21	V.18	2.0-2/15/79
MAX-SOLAR-SCH	M-S-SCH	L — WINDOW	13	2.34,2.53		2.1B-1/15/83
MAX-SUPPLY-T	MAX-S-T	S — SYSTEM-CONTROL	23	3.15	IV.203	2.0-2/15/79
MAX-VENT-RATE	M-V-R	S — SYSTEM-AIR	23	3.33,3.34		2.1D-6/30/89
MINOR-OVHL-COST	MIN-O-C	P — PLANT-EQUIPMENT	32			2.0-2/15/79
MINOR-OVHL-INT	MIN-O-I	P — PLANT-EQUIPMENT	32			2.0-2/15/79
MIN-AIR-SCH	M-A-SCH	S — SYSTEM-AIR	23	3.22,3.31	IV.215	2.0-2/15/79
MIN-CFM-RATIO	M-C-R	S — SYSTEM-TERMINAL	25		IV.231	2.0-2/15/79
		S — ZONE	22		IV.200	2.1-5/15/80
MIN-CFM-SCH	M-C-SCH	S — ZONE	22	3.22		2.1B-1/15/83
MIN-COND-AIR-T		P — PLANT-PARAMETERS	35		V.22,V.23	2.1-5/15/80
MIN-FAN-RATIO	MIN-F-R	S — SYSTEM-FANS	24	3.31	IV.227	2.0-2/15/79
MIN-FLOW-RATIO		S — SYSTEM-TERMINAL		3.31		2.0-2/15/79
MIN-FLUID-T	MIN-F-T	S — SYSTEM-FLUID	25		IV.234	2.0-2/15/79
MIN-HGB-RATIO	M-H-R	S — SYSTEM-EQUIPMENT	26		IV.248	2.1-5/15/80
MIN-HP-T	M-H-T	S — SYSTEM-EQUIPMENT	26	3.15	IV.251	2.1-5/15/80
MIN-HUMIDITY	MIN-H	S — SYSTEM-CONTROL	23		IV.208	2.0-2/15/79
MIN-LIGHT-FRAC	M-L-F	L — SPACE-CONDITIONS	9	2.34,2.47		2.1B-1/15/83
MIN-MONTHLY-CHG	M-M-C	E — ENERGY-COST	42	5.3		2.0-2/15/79
MIN-OUTSIDE-AIR	M-O-A	S — SYSTEM-AIR	23	3.31	IV.214	2.0-2/15/79
		P — PLANT-EQUIPMENT			V.14	2.0-2/15/79
MIN-OVHL-COST	MIN-O-C	E — COMPONENT-COST	44		V.18	2.0-2/15/79
MIN-OVHL-CST-EXP	MIN-O-C	P — PLANT-COSTS	40			2.1B-1/15/83

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MIN-OVHL-CST-REF	MIN-O-C	P — REFERENCE-COSTS	40		V.94	2.0-2/15/79
MIN-OVHL-INT	MIN-O-I	E — COMPONENT-COST P — PLANT-EQUIPMENT	44		VI.8 V.14	2.0-2/15/79 2.0-2/15/79
MIN-OVHL-INT-EXP	MIN-O-I	P — PLANT-COSTS	40			2.1B-1/15/83
MIN-OVHL-INT-REF	MIN-O-I	P — REFERENCE-COSTS	40		V.94	2.0-2/15/79
MIN-POWER-FRAC	M-P-F	L — SPACE-CONDITIONS	9	2.34,2.47		2.1B-1/15/83
MIN-RATIO	MIN-R	P — PART-LOAD-RATIO	33	4.18,4.21	V.18	2.0-2/15/79
MIN-SUPPLY-T	MIN-S-T	S — SYSTEM-CONTROL	23		IV.206	2.0-2/15/79
MIN-TRACK-LOAD		P — PLANT-PARAMETERS	36	4.2		2.1C-5/15/84
MIN-TWR-WTR-T		P — PLANT-PARAMETERS	35		V.23,V.28	2.1-5/15/80
MIN-UNLOAD-RATIO	M-U-R	S — SYSTEM-EQUIPMENT	26		IV.248	2.1-5/15/80
MOTOR-PLACEMENT	M-P	S — SYSTEM-FANS	24		IV.225	2.0-2/15/79
MULTIPLIER	M	L — DOOR	14		III.110	2.1-5/15/80
		E — ENERGY-COST			V.88	2.0-2/15/79
		L — EXTERIOR-WALL or ROOF	11		III.102	2.0-2/15/79
		L — SPACE	10	2.81	III.94	2.0-2/15/79
		L — TROMBE-WALL-V or -NV	12			2.1B-1/15/83
		L — UNDERGROUND-WALL or -FLOOR	16		III.119	2.0-2/15/79
		L — WINDOW	13		III.107	2.0-2/15/79
		S — ZONE	22		IV.199	2.0-2/15/79
NAME		LS — FUNCTION	17	1.3		2.1D-6/30/89
NATURAL-VENT-AC	N-V-A	S — SYSTEM		3.34		2.0A-6/15/79
		S — SYSTEM-AIR	23	3.34	IV.217	2.1-5/15/80
NATURAL-VENT-SCH	N-V-SCH	S — SYSTEM		3.34		2.0A-6/15/79
		S — SYSTEM-AIR	23	3.34	IV.217	2.1-5/15/80
NEUTRAL-LEVEL	N-L	L — SPACE-CONDITIONS	9	2.74,3.34		2.1C-5/15/84
NEUTRAL-ZONE-HT	N-Z-H	L — SPACE-CONDITIONS	9		III.51	2.0-2/15/79
NEXT-TO	N-T	L — INTERIOR-WALL	15		III.114	2.0-2/15/79
NIGHT-CYCLE-CTRL	N-C-C	S — SYSTEM		3.31		2.0A-6/15/79

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		S — SYSTEM-FANS	24	3.5	IV.228	2.1—5/15/80
NIGHT-VENT-CTRL	N-V-C	S — SYSTEM-FANS	24	3.19		2.1B—1/15/83
NIGHT-VENT-DT	N-V-D	S — SYSTEM-FANS	24	3.19		2.1B—1/15/83
NIGHT-VENT-RATIOS	N-V-R	S — SYSTEM-FANS	24	3.20		2.1B—1/15/83
NIGHT-VENT-SCH	NT-V-SCH	S — SYSTEM-FANS	24	3.19		2.1B—1/15/83
NUMBER	N	P — LOAD-ASSIGNMENT	39		V.53	2.0—2/15/79
NUMBER-OF-PEOPLE	N-O-P	L — SPACE-CONDITIONS	7		III.43	2.0—2/15/79
NUMBER-OF-UNITS	N-O-U	E — COMPONENT-COST	44		VI.6	2.0—2/15/79
OA-CFM/PER	O-CFM/P	S — ZONE-AIR	21		IV.190	2.0—2/15/79
OA-CHANGES	O-C	S — ZONE-AIR	21		IV.190	2.0—2/15/79
OA-CONTROL	O-CTRL	S — SYSTEM-AIR	23		IV.215	2.0—2/15/79
OPEN-CENT-CAP-FT		P — EQUIPMENT-QUAD	37		V.41	2.1—5/15/80
OPEN-CENT-COND-PWR		P — PLANT-PARAMETERS	34		V.23,V.26	2.1—5/15/80
OPEN-CENT-COND-TYPE		P — PLANT-PARAMETERS	34		V.23,V.26	2.1—5/15/80
OPEN-CENT-EIR-FPLR		P — EQUIPMENT-QUAD	37		V.42	2.1—5/15/80
OPEN-CENT-EIR-FT		P — EQUIPMENT-QUAD	37		V.42	2.1—5/15/80
OPEN-CENT-MOTOR-EFF		P — PLANT-PARAMETERS	34		V.23,V.26	2.1—5/15/80
OPEN-CENT-UNL-RAT		P — PLANT-PARAMETERS	34		V.23,V.26	2.1—5/15/80
OPEN-REC-CAP-FT		P — EQUIPMENT-QUAD	37		V.42	2.1—5/15/80
OPEN-REC-COND-PWR		P — PLANT-PARAMETERS	34		V.23,V.27	2.1—5/15/80
OPEN-REC-COND-TYPE		P — PLANT-PARAMETERS	34		V.23,V.27	2.1—5/15/80
OPEN-REC-EIR-FPLR		P — EQUIPMENT-QUAD	37		V.42	2.1—5/15/80
OPEN-REC-EIR-FT		P — EQUIPMENT-QUAD	37		V.42	2.1—5/15/80
OPEN-REC-MOTOR-EFF		P — PLANT-PARAMETERS	34		V.23,V.27	2.1—5/15/80
OPEN-REC-UNL-RAT		P — PLANT-PARAMETERS	34		V.23,V.27	2.1—5/15/80
OPEN-SHADE-SCH	O-S-SCH	L — WINDOW	13	2.31,2.34		2.1C—5/15/84
OPEN-VENT-SCH	O-V-SCH	S — SYSTEM-AIR	23	3.33,3.34		2.1D—6/30/89

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OPERATING-RATIO	O-R	P — PART-LOAD-RATIO	33	4.21	V.18	2.0-2/15/79
OPERATIONS-COST	O-C	E — BASELINE	44		VI.9	2.0-2/15/79
OPERATION-MODE	O-M	P — LOAD-ASSIGNMENT	39		V.54	2.0-2/15/79
OPSTRT		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
OPTION	O	LS — HOURLY-REPORT	17,30		III.127	2.0A-6/15/79
OUTPUT-MAX		SP — CURVE-FIT	19	3.21		2.1B-1/15/83
OUTPUT-MIN		SP — CURVE-FIT	19	3.21		2.1B-1/15/83
OUTPUT-UNITS		L — INPUT-LOADS	1			2.1B-1/15/83
		P — INPUT-PLANT	31			2.1B-1/15/83
		S — INPUT-SYSTEMS	19			2.1B-1/15/83
		PARAMETRIC-INPUT		1.27		2.1B-1/15/83
		ECONOMICS	42			2.1B-1/15/83
		LOADS	1			2.1B-1/15/83
		PLANT	31			2.1B-1/15/83
		SYSTEMS	19			2.1B-1/15/83
OUTSIDE-AIR-CFM	O-A-CFM	S — ZONE-AIR	21			2.0-2/15/79
OUTSIDE-FAN-KW	O-F-KW	S — SYSTEM-EQUIPMENT	26		IV.249	2.1-5/15/80
OUTSIDE-FAN-MODE	O-F-M	S — SYSTEM-EQUIPMENT	26		IV.249	2.1-5/15/80
OUTSIDE-FAN-T	O-F-T	S — SYSTEM-EQUIPMENT	26		IV.249	2.1-5/15/80
OUTSIDE-HI	O-H	S — DAY-RESET-SCH	20		IV.177	2.0-2/15/79
OUTSIDE-HI-R		S — DAY-RESET-SCH		1.29		2.1D-metric
OUTSIDE-LO	O-L	S — DAY-RESET-SCH	20		IV.177	2.0-2/15/79
OUTSIDE-LO-R		S — DAY-RESET-SCH		1.29		2.1D-metric
OVERHANG-A	OH-A	L — DOOR	14	2.65		2.1B-1/15/83
		L — WINDOW	13	2.65		2.1B-1/15/83
OVERHANG-ANGLE	OH-ANG	L — DOOR	14	2.66		2.1B-1/15/83
		L — WINDOW	13	2.66		2.1B-1/15/83
OVERHANG-B	OH-B	L — DOOR	14	2.65		2.1B-1/15/83
		L — WINDOW	13	2.65		2.1B-1/15/83
OVERHANG-D	OH-D	L — DOOR	14	2.65		2.1B-1/15/83
		L — WINDOW	13	2.65		2.1B-1/15/83

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OVERHANG-W	OH-W	L — DOOR	14	2.65		2.1B-1/15/83
		L — WINDOW	13	2.65		2.1B-1/15/83
OVER-BLOCK-RANGE	O-B-R	E — CHARGE-ASSIGNMENT	43	5.5		2.1C-5/15/84
PANEL-0Z		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
PANEL-1		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
PANEL-LOSS-RATIO	P-L-R	S — ZONE	22		IV.200	2.0-2/15/79
PANES	P	L — GLASS-TYPE	6		III.87	2.0-2/15/79
•PARAMETER		LSPE	2,19 31,42		II.20	2.0-2/15/79
•PARAMETRIC-INPUT						
•ECONOMICS		E			II.15,II.16	2.1-5/15/80
•LOADS		L			II.15,II.16	2.1-5/15/80
•PLANT		P			II.15,II.16	2.1-5/15/80
•SYSTEMS		S			II.15,II.16	2.1-5/15/80
•PART-LOAD-RATIO	P-L-R	P	33		V.18	2.0-2/15/79
PEOPLE-HEAT-GAIN	P-H-G	L — SPACE-CONDITIONS	7		III.43	2.0-2/15/79
PEOPLE-HG-LAT	P-H-L	L — SPACE-CONDITIONS	7		III.44	2.0-2/15/79
PEOPLE-HG-SENS	P-H-S	L — SPACE-CONDITIONS	7		III.44	2.0-2/15/79
PEOPLE-SCHEDULE	P-SCH	L — SPACE-CONDITIONS	7		III.43	2.0-2/15/79
PIU-0		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
PIU-1		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
•PLANT-ASSIGNMENT	P-A	S	29		IV.267,V.98	2.0-2/15/79
•PLANT-COSTS	P-C	P	40		V.91	2.0-2/15/79
•PPLANT-EQUIPMENT	P-E	P	32		V.9	2.0-2/15/79
PLANT-EQUIPMENT	P-E	P — LOAD-ASSIGNMENT	39		V.53	2.0-2/15/79
•PLANT-PARAMETERS	P-P	P	34,35, 36	4.1,4.8, 4.13	V.22	2.0-2/15/79
•PLANT-REPORT	P-R	P	40		V.100	2.0-2/15/79

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PLENUM-NAMES	P-N	S — SYSTEM	27	3.31	IV.264	2.0-2/15/79
POWER-FACT-CORR	P-F-C	E — COST-PARAMETERS	44	5.8		2.1C-5/15/84
PRED-LOAD-RANGE	P-L-R	P — LOAD-MANAGEMENT	39		V.60	2.0-2/15/79
PREHEAT-SOURCE	PREHEAT	S — SYSTEM	27		IV.260,IV.262	2.0-2/15/79
PREHEAT-T	P-T	S — SYSTEM-CONTROL	23			2.0-2/15/79
PROJECT-LIFE	P-L	P — PLANT-COSTS	40			2.0-2/15/79
PTAC-0		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
PTAC-1Z		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
PTAC-2		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
QREGPL-FWB1WB6	QRPL-FWB	S — SYSTEM-EQUIPMENT	27	3.31		2.1D-6/30/89
QREG-FWB1WB6	QR-FWB	S — SYSTEM-EQUIPMENT	27	3.31		2.1D-6/30/89
RADIATIONS		LSP — DAY-SCHEDULE		1.28		2.1D-metric
RATED-CCAP-FCFM	R-CC-FC	S — SYSTEM-EQUIPMENT	26		IV.246	2.1-5/15/80
RATED-CEIR-FCFM	R-CE-FC	S — SYSTEM-EQUIPMENT	26		IV.246	2.1-5/15/80
RATED-CFM	R-CFM	S — SYSTEM-AIR	23		IV.214	2.1-5/15/80
		S — ZONE-AIR	21		IV.189	2.1-5/15/80
RATED-HCAP-FCFM	R-HC-FC	S — SYSTEM-EQUIPMENT	26		IV.250	2.1-5/15/80
RATED-HEIR-FCFM	R-HE-FC	S — SYSTEM-EQUIPMENT	26		IV.251	2.1-5/15/80
RATED-SH-FCFM	R-S-FC	S — SYSTEM-EQUIPMENT	26		IV.246	2.1-5/15/80
RATE-LIMITATION	R-L	E — ENERGY-COST	42	5.3		2.1C-5/15/84
RECOVERY-EFF	REC-E	S — SYSTEM-AIR	23		IV.215	2.0-2/15/79
RECVR-HEAT/BLOW	R-H-B	P — PLANT-PARAMETERS	34		V.24,V.30	2.0-2/15/79
•REFERENCE-COSTS	R-C	P	40		V.94	2.0-2/15/79
REFG-AUX-HEAT		S — ZONE	22	3.7		2.1C-5/15/84
REFG-AUX-KW		S — ZONE	22	3.7		2.1C-5/15/84
REFG-AUX-SCH		S — ZONE	22	3.7		2.1C-5/15/84

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REFG-COMP-CAP		S — SYSTEM	28	3.8		2.1C—5/15/84
REFG-COMP-EER		S — SYSTEM	28	3.9		2.1C—5/15/84
REFG-COMP-GROUP		S — SYSTEM	28	3.9		2.1C—5/15/84
REFG-COND-TYPE		S — SYSTEM	28	3.10		2.1C—5/15/84
REFG-DEF-CTRL		S — ZONE	22	3.8		2.1C—5/15/84
REFG-DEF-EFF		S — ZONE	22	3.8		2.1C—5/15/84
REFG-DEF-MECH		S — ZONE	22	3.8		2.1C—5/15/84
REFG-DISCHARGE-T		S — ZONE	22	3.7		2.1C—5/15/84
REFG-EVAP-T		S — ZONE	22	3.7		2.1C—5/15/84
REFG-FAN-KW		S — SYSTEM	28	3.9		2.1C—5/15/84
REFG-FAN-T		S — SYSTEM	28	3.10		2.1C—5/15/84
REFG-HTREC-GROUP		S — SYSTEM	28	3.10		2.1C—5/15/84
REFG-HTREC-T		S — SYSTEM	28	3.10		2.1C—5/15/84
REFG-HTREC-UNITS		S — SYSTEM	28	3.10		2.1C—5/15/84
REFG-KW-FPLR		S — SYSTEM-EQUIPMENT	26	3.11		2.1C—5/15/84
REFG-KW-FTCOND		S — SYSTEM-EQUIPMENT	26	3.11		2.1C—5/15/84
REFG-LAT-SCH		S — ZONE	22	3.7		2.1C—5/15/84
REFG-MAX-HTREC		S — SYSTEM	28	3.10		2.1C—5/15/84
REFG-MIN-COND-T		S — SYSTEM	28	3.10		2.1C—5/15/84
REFG-PUMP-KW		S — SYSTEM	28	3.10		2.1C—5/15/84
REFG-SENS-SCH		S — ZONE	28	3.7		2.1C—5/15/84
REFG-SIZING-RAT		S — SYSTEM	28	3.8		2.1C—5/15/84
REFG-ZONE-DES-RH		S — ZONE	22	3.7		2.1C—5/15/84
REFG-ZONE-DES-T		S — ZONE	22	3.6		2.1C—5/15/84
REFG-ZONE-LOAD		S — ZONE	22	3.6		2.1C—5/15/84
REFG-ZONE-SHR		S — ZONE	22	3.6		2.1C—5/15/84
REHEAT-DELTA-T	R-D-T	S — SYSTEM-TERMINAL	25		IV.231	2.0—2/15/79
		S — SYSTEM				
		S — ZONE	22	3.4		2.1C—5/15/84

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
REPLACE--COST	R-C	E — BASELINE	44		VI.9	2.0—2/15/79
•REPORT-BLOCK	R-B	LSPE	17,30,41		II.30,III.130, IV.275,V.105	2.0—2/15/79
REPORT-BLOCK	R-B	LSP — HOURLY-REPORT	17,30		III.127,IV.273,V.103	2.0—2/15/79
REPORT-FREQUENCY	R-F	ECONOMICS-REPORT	45			2.1C—5/15/84
		LOADS-REPORT	17	1.25		2.1C—5/15/84
		PLANT-REPORT	40	1.25		2.1C—5/15/84
		SYSTEMS-REPORT	29	1.25		2.1C—5/15/84
REPORT-SCHEDULE	R-SCH	HOURLY-REPORT	17,30		III.127,IV.273 V.103	2.0—2/15/79
•RESET-SCHEDULE	R-SCH	S	20		IV.176	2.0—2/15/79
RESISTANCE	RES	L — MATERIAL	4		III.74	2.0—2/15/79
RESOURCE	R	E — CHARGE-ASSIGNMENT	43	5.4		2.1C—5/15/84
		E — ENERGY-COST	42	5.2		2.0—2/15/79
		P — ENERGY-RESOURCE	39	4.14		2.1C—5/15/84
RESYS-0		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
RESYS-1Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
RESYS-2Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
RESYS-3Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
RESYS-4Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
RESYS-5		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
RES-INF-COEF	R-I-C	L — SPACE-CONDITIONS	9		III.50	2.0A—6/15/79
RES-INF-CST		L — SPACE-CONDITIONS		1.29		2.1D—6/30/89
RES-INF-WND		L — SPACE-CONDITIONS		1.29		2.1D—6/30/89
RES-INF-TEMP		L — SPACE-CONDITIONS		1.29		2.1D—6/30/89
RETURN-AIR-PATH	R-A-P	S — SYSTEM	27	2.72,3.31	IV.262	2.0—2/15/79
RETURN-CFM	R-CFM	S — SYSTEM-AIR	23		IV.214	2.0—2/15/79
RETURN-DELTA-T	RET-D-T	S — SYSTEM-FANS	24		IV.226	2.1—5/15/80
RETURN-EFF	R-E	S — SYSTEM-FANS	24		IV.227	2.0—2/15/79
RETURN-KW	R-KW	S — SYSTEM-FANS	24		IV.226	2.1—5/15/80

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
RETURN-STATIC	R-S	S — SYSTEM-FANS	24		IV.227	2.0—2/15/79
RFACT-CFM-EXPONENT		P — PLANT-PARAMETERS	35		V.23,V.28	2.1—5/15/80
RIGHT-FIN-A	R-F-A	L — DOOR	14	2.67		2.1B—1/15/83
		L — WINDOW	13	2.67		2.1B—1/15/83
RIGHT-FIN-B	R-F-B	L — DOOR	14	2.67		2.1B—1/15/83
		L — WINDOW	13	2.67		2.1B—1/15/83
RIGHT-FIN-D	R-F-D	L — DOOR	14	2.67		2.1B—1/15/83
		L — WINDOW	13	2.67		2.1B—1/15/83
RIGHT-FIN-H	R-F-H	L — DOOR	14	2.67		2.1B—1/15/83
		L — WINDOW	13	2.67		2.1B—1/15/83
ROUGHNESS	RO	L — CONSTRUCTION	5		III.84	2.0—2/15/79
•RUN-PERIOD		L	2		III.21	2.0—2/15/79
•SAVE-FILES		LS	18,30		II.34	2.1—5/15/80
•SCHEDULE	SCH	LSPE	4,20, 32,42	1.7	II.29	2.0—2/15/79
SDSF-0		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
SDSF-1		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
SEASON	S	E — CHARGE-ASSIGNMENT	43	5.5		2.1C—5/15/84
SETBACK	SETB	L — DOOR	14		III.110	2.1—5/15/80
		L — WINDOW	13		III.107	2.0—2/15/79
•SET-DEFAULT	SET	L	2		II.22	2.0—2/15/79
SHADE-GND-REFL	S-G-R	L — BUILDING-SHADE	6	2.44		2.1B—1/15/83
		L — FIXED-SHADE	6	2.44		2.1B—1/15/83
SHADE-SCHEDULE	S-SCH	L — BUILDING-SHADE	6	2.67		2.1B—1/15/83
		L — FIXED-SHADE	6	2.67		2.1B—1/15/83
SHADE-VIS-REFL	S-V-R	L — BUILDING-SHADE	6	2.34,2.44		2.1B—1/15/83
		L — FIXED-SHADE	6	2.34,2.44		2.1B—1/15/83
SHADING-COEF	S-C	L — GLASS-TYPE	6	2.77	III.88	2.0—2/15/79
SHADING-DIVISION	S-D	L — DOOR	14		III.110	2.1—5/15/80

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
		L — EXTERIOR-WALL or ROOF	11		III.102	2.0—2/15/79
		L — TROMBE-WALL-V or -NV	12			2.1B—1/15/83
		L — WINDOW	13		III.107	2.0—2/15/79
SHADING-SCHEDULE	S-SCH	L — WINDOW	13		III.107	2.0—2/15/79
SHADING-SURFACE	S-S	L — EXTERIOR-WALL or ROOF	11	2.67		2.1B—1/15/83
		L — TROMBE-WALL-V or -NV	12			2.1B—1/15/83
SHAPE		L — SPACE	10		III.97	2.0—2/15/79
SHIELDING-COEF	S-COEF	L — BUILDING-LOCATION	2	2.74,3.34		2.1B—1/15/83
SINGLE-SPACED		LSPE — DIAGNOSTIC	1			2.1B—1/15/83
SITE-FACTOR	S-F	P — PLANT-COSTS	40		V.92	2.0—2/15/79
SIZE		P — PLANT-EQUIPMENT	32		V.11	2.0—2/15/79
SIZE-REF	S-R	P — REFERENCE-COSTS	40		V.94	2.0—2/15/79
SIZING-OPTION	S-O	S — SYSTEM	27		IV.262	2.1—5/15/80
		S — ZONE	22		IV.201.1	2.1B—1/15/83
SIZING-RATIO	S-R	S — SYSTEM	27		IV.262	2.0—2/15/79
SKY-FORM-FACTOR	S-F-F	L — DOOR	14		III.110	2.1—5/15/80
		L — EXTERIOR-WALL or ROOF	11		III.100	2.0—2/15/79
		L — TROMBE-WALL-V or -NV	12			2.1B—1/15/83
		L — WINDOW	13		III.107	2.0—2/15/79
SOLAR-FRACTION	S-F	L — EXTERIOR-WALL or ROOF	11		III.103	2.1—5/15/80
		L — INTERIOR-WALL	15		III.114	2.1—5/15/80
		L — TROMBE-WALL-V or -NV	12			2.1B—1/15/83
		L — UNDERGROUND-WALL or -FLOOR	16		III.119	2.1—5/15/80
SOL-TRANS-SCH	S-T-SCH	L — WINDOW	13	2.4		2.1C—5/15/84
SOURCE-BTU/HR	S-B	L — SPACE-CONDITIONS	7		III.48	2.0—2/15/79
SOURCE-LATENT	S-L	L — SPACE-CONDITIONS	7		III.49	2.0—2/15/79
SOURCE-SCHEDULE	S-SCH	L — SPACE-CONDITIONS	7		III.48	2.0—2/15/79
SOURCE-SENSIBLE	S-S	L — SPACE-CONDITIONS	7		III.49	2.0—2/15/79
SOURCE-SITE-EFF	S-S-E	P — ENERGY-RESOURCE	39	4.14		2.0A—6/15/79
SOURCE-TYPE	S-T	L — SPACE-CONDITIONS	7		III.47	2.0—2/15/79

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
•SPACE	S	L	10	1.4,2.81	III.94	2.0—2/15/79
•SPACE-CONDITIONS	S-C	L	7,9	2.3,2.45 2.69	III.42	2.0—2/15/79
SPACE-CONDITIONS	S-C	L — SPACE	10		III.97	2.0—2/15/79
SPECIFIC-HEAT	S-H	L — MATERIAL	4		III.73	2.0—2/15/79
SSBASB		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
SSFCOR		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
SS-FLOW-SCH	SS-F-SCH	S — ZONE-AIR	21	2.12		2.1C—metric
SS-FLOW-T-SCH		S — ZONE-AIR	21	2.12		2.1C—5/15/84
SS-VENT-CST	S-V-CST	S — ZONE-AIR	21	2.11		2.1C—5/15/84
SS-VENT-KW	S-V-KW	S — ZONE-AIR	21	2.12		2.1C—5/15/84
SS-VENT-LIMIT-T	S-V-L-T	S — ZONE-AIR	21	2.12		2.1C—5/15/84
SS-VENT-SCH	S-V-SCH	S — ZONE-AIR	21	2.11		2.1C—5/15/84
SS-VENT-TEMP	S-V-TEMP	S — ZONE-AIR	21	2.11		2.1C—5/15/84
SS-VENT-T-SCH	S-V-T-SCH	S — ZONE-AIR	21	2.11		2.1C—5/15/84
SS-VENT-WND	S-V-WND	S — ZONE-AIR	21	2.11		2.1C—5/15/84
STM-BOILER-HIR		P — PLANT-PARAMETERS	34		V.24,V.30	2.1—5/15/80
STM-BOILER-HIR-FPLR		P — EQUIPMENT-QUAD	37		V.45	2.1—5/15/80
STM-PRES		P — PLANT-PARAMETERS	36		V.25,V.32	2.0—2/15/79
STM-SATURATION-T		P — PLANT-PARAMETERS	36	4.8	V.25,V.32	2.0—2/15/79
•STOP		L	18,30, 41,45		II.35	2.0—2/15/79
STURB-ENTH-FPIX		P — EQUIPMENT-QUAD	38	4.11		2.1C—5/15/84
STURB-EXH-PRES		P — PLANT-PARAMETERS	36		V.24,V.31	2.0—2/15/79
STURB-I/O-FPLR		P — EQUIPMENT-QUAD	38	4.11	V.47	2.1—5/15/80
STURB-MECH-EFF		P — PLANT-PARAMETERS	36	4.8		2.1C—5/15/84
STURB-PRES		P — PLANT-PARAMETERS	36		V.24,V.32	2.0—2/15/79
STURB-T		P — PLANT-PARAMETERS	36		V.25,V.32	2.0—2/15/79
STURB-WTR-RETURN		P — PLANT-PARAMETERS	36		V.25,V.32	2.0—2/15/79

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
SUMMARY	S	E — ECONOMICS-REPORT	45		VI.12	2.0—2/15/79
		L — LOADS-REPORT	17		III.123	2.0—2/15/79
		P — PLANT-REPORT	40		V.100	2.0—2/15/79
		S — SYSTEMS-REPORT	29		IV.269	2.0—2/15/79
•SUBR-FUNCTIONS		S	1.5			2.1D—6/30/89
SUM-1		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
SUM-2Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
SUM-3Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
SUM-4Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
SUM-5		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
SUNSPACE	SUNSP	L — SPACE-CONDITIONS	9	2.3		2.1C—5/15/84
SUN-CTRL-PROB	S-C-P	L — WINDOW	13	2.34,2.53		2.1B—1/15/83
SUPPLY-1	S-1	P — HEAT-RECOVERY	38		V.66	2.0—2/15/79
SUPPLY-2	S-2	P — HEAT-RECOVERY	38		V.66	2.0—2/15/79
SUPPLY-5	S-5	P — HEAT-RECOVERY	38		V.66	2.0—2/15/79
SUPPLY-CFM	S-CFM	S — SYSTEM-AIR	23	3.25	IV.213	2.0—2/15/79
SUPPLY-DELTA-T	SUP-D-T	S — SYSTEM-FANS	24	3.31	IV.223	2.1—5/15/80
SUPPLY-EFF	S-E	S — SYSTEM-FANS	24		IV.225	2.0—2/15/79
SUPPLY-FLOW	S-F	S — SYSTEM-AIR	23	3.31		2.1D—6/30/89
SUPPLY-HI	S-H	S — DAY-RESET-SCH	20		IV.176	2.0—2/15/79
SUPPLY-HI-R		S — DAY-RESET-SCH		1.29		2.1D—metric
SUPPLY-KW	S-KW	S — SYSTEM-FANS	24		IV.224	2.1—5/15/80
SUPPLY-LO	S-L	S — DAY-RESET-SCH	20	1.29	IV.177	2.0—2/15/79
SUPPLY-LO-R		S — DAY-RESET-SCH		1.29		2.1D—metric
SUPPLY-MECH-EFF	S-M-E	S — SYSTEM-FANS	24		IV.224	2.0—2/15/79
SUPPLY-STATIC	S-S	S — SYSTEM-FANS	24		IV.224	2.0—2/15/79
•SYSTEM	SYST	S	27,28	3.8,3.19	IV.257	2.0—2/15/79
•SYSTEM-AIR	S-A	S	23		IV.213	2.0—2/15/79
SYSTEM-AIR	S-A	S — SYSTEM	27		IV.259	2.0—2/15/79

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
•SYSTEM-CONTROL	S-C	S	23		IV.203	2.0-2/15/79
SYSTEM-CONTROL	S-C	S — SYSTEM	27		IV.258	2.0-2/15/79
•SYSTEM-EQUIPMENT	S-EQ	S	26,27	3.15,3.26	IV.237	2.1-5/15/80
SYSTEM-EQUIPMENT	S-EQ	S — SYSTEM	27		IV.259	2.1-5/15/80
•SYSTEM-FANS	S-FANS	S	24	3.5,3.17 3.19	IV.221	2.0-2/15/79
SYSTEM-FANS	S-FANS	S — SYSTEM	27		IV.259	2.0-2/15/79
•SYSTEM-FLUID	S-FLU	S	25		IV.234	2.0-2/15/79
SYSTEM-FLUID	S-FLU	S — SYSTEM	27		IV.259	2.0-2/15/79
SYSTEM-NAMES	S-N	S — PLANT-ASSIGNMENT	29		IV.267	2.0-2/15/79
•SYSTEM-TERMINAL	S-T	S	25		IV.231	2.0-2/15/79
SYSTEM-TERMINAL	S-T	S — SYSTEM	27		IV.259	2.0-2/15/79
SYSTEM-TYPE	S-TYPE	S — SYSTEM	27		IV.257	2.0-2/15/79
•SYSTEMS-REPORT	S-R	S	29		IV.269	2.0-2/15/79
SZCI-0		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
SZCI-1Z		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
SZCI-2		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
T8PL-FWB1WB6	TPL-FWB	S — SYSTEM-EQUIPMENT	27	3.31		2.1D-6/30/89
T8-FWB1WB6	T-FWB	S — SYSTEM-EQUIPMENT	27	3.31		2.1D-6/30/89
TABLE		LS — ASSIGN		1.8		2.1D-6/30/89
TASK-LIGHTING-KW	T-L-KW	L — SPACE-CONDITIONS	7		III.46	2.0-2/15/79
TASK-LIGHT-SCH	T-L-SCH	L — SPACE-CONDITIONS	7		III.46	2.0-2/15/79
TASK-LT-W/SQFT	T-L-W	L — SPACE-CONDITIONS	7		III.46	2.0-2/15/79
TC-CHLR-CAP-FT		P — EQUIPMENT-QUAD	37		V.45	2.1A-5/15/81
TDVPIU-0		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
TDVPIU-1		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
TEMDEV-0		S — SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89

•COMMAND or Keyword	Abbrev	Subprogram -- Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program -- year Version -- added
TEMDEV-1		S -- SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
TEMDEV-2		S -- SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
TEMDEV-3		S -- SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
TEMPERATURE	T	L -- SPACE-CONDITIONS	7		III.43	2.0-2/15/79
TEMPERATURES		LSP -- DAY-SCHEDULE		1.28		2.1D-metric
TERMINAL-TYPE	TER--TYPE	S -- ZONE	22	3.3		2.1C-5/15/84
TERRAIN-PAR1	T-P1	L -- BUILDING-LOCATION	2	2.75,3.34		2.1B-1/15/83
TERRAIN-PAR2	T-P2	L -- BUILDING-LOCATION	2	2.75,3.34		2.1B-1/15/83
THERMOSTAT-TYPE	T-TYPE	S -- ZONE-CONTROL	20		IV.195	2.0-2/15/79
THICKNESS	TH	L -- LAYERS	5		III.77	2.0-2/15/79
		L -- MATERIAL	4		III.73	2.0-2/15/79
41 THROTTLING-RANGE	T-R	S -- ZONE-CONTROL	20	3.21	IV.196	2.0-2/15/79
TILT		L -- BUILDING-SHADE	6		III.35	2.0-2/15/79
		L -- EXTERIOR-WALL or ROOF	11		III.102	2.0-2/15/79
		L -- FIXED-SHADE	6			2.1B-1/15/83
		L -- INTERIOR-WALL	15		III.115	2.1-5/15/80
		L -- TROMBE-WALL-V or -NV	12			2.1B-1/15/83
		L -- UNDERGROUND-WALL or -FLOOR	16		III.120	2.1-5/15/80
TIME-ZONE	T-Z	L -- BUILDING-LOCATION	2		III.30	2.0-2/15/79
•TITLE		LSPE	1,19, 31,42		II.19	2.0-2/15/79
TRANSMITTANCE	TR	L -- BUILDING-SHADE	6		III.35	2.0-2/15/79
		L -- FIXED-SHADE	6			2.1B-1/15/83
•TROMBE-WALL-NV	T-W-NV	L	12	2.60		2.1B-1/15/83
•TROMBE-WALL-V	T-W-V	L	12	2.60		2.1B-1/15/83
TROM-VENT-SCH	T-V-SCH	S -- ZONE	22	2.61		2.1B-1/15/83
TSOLVE-0		S -- SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
TSOLVE-1		S -- SUBR-FUNCTIONS	29	1.5		2.1D-6/30/89
TWR-APP-FRFACT		P -- EQUIPMENT-QUAD	37		V.45	2.1-5/15/80
		S -- SYSTEM-EQUIPMENT	27	3.11		2.1C-5/15/84

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
TWR-CELL-MAX-GPM		P — PLANT-PARAMETERS	35		V.23,V.28	2.1-5/15/80
TWR-DESIGN-WETBULB		P — PLANT-PARAMETERS	35		V.23,V.28	2.1-5/15/80
TWR-FAN-CONTROL		P — PLANT-PARAMETERS	35		V.24,V.28	2.1-5/15/80
TWR-FAN-ELEC-FTU		P — EQUIPMENT-QUAD	37		V.45	2.1-5/15/80
TWR-FAN-LOW-CFM		P — PLANT-PARAMETERS	35		V.24,V.28	2.1-5/15/80
TWR-FAN-LOW-ELEC		P — PLANT-PARAMETERS	35		V.24,V.28	2.1-5/15/80
TWR-FAN-OFF-CFM		P — PLANT-PARAMETERS	35		V.24,V.28	2.1-5/15/80
TWR-IMPELLER-EFF		P — PLANT-PARAMETERS	35		V.24,V.28	2.1-5/15/80
TWR-MOTOR-EFF		P — PLANT-PARAMETERS	35		V.24,V.28	2.1-5/15/80
TWR-PUMP-HEAD		P — PLANT-PARAMETERS	35		V.24,V.28	2.1-5/15/80
TWR-RFACT-FAT		P — EQUIPMENT-QUAD	37		V.45	2.1-5/15/80
TWR-RFACT-FRT		P — EQUIPMENT-QUAD	37		V.45	2.1-5/15/80
		S — SYSTEM-EQUIPMENT	27	3.11		2.1C-5/15/84
TWR-TEMP-CONTROL		P — PLANT-PARAMETERS	35		V.24,V.29	2.1-5/15/80
		S — SYSTEM-EQUIPMENT				2.1C-5/15/84
TWR-WTR-SET-POINT		P — PLANT-PARAMETERS	35		V.24,V.29	2.1-5/15/80
TWR-WTR-THROTTLE		P — PLANT-PARAMETERS	35		V.24,V.29	2.1-5/15/80
TYPE		E — CHARGE-ASSIGNMENT	43	5.5		2.1C-5/15/84
		SP — CURVE-FIT	19		IV.181	2.1-5/15/80
		P — LOAD-ASSIGNMENT	39		V.52	2.0-2/15/79
		P — PART-LOAD-RATIO	33		V.18	2.0-2/15/79
		P — PLANT-EQUIPMENT	32		V.11	2.0-2/15/79
		P — REFERENCE-COSTS	40		V.94	2.0-2/15/79
U-EFFECTIVE	U-EFF	L — UNDERGROUND-WALL or -FLOOR	16		III.120	2.1A-5/15/81
•UNDERGROUND-WALL or -FLOOR	U-W	L	16	2.10,2.55	III.69,III.118	2.0-2/15/79
UNIFORM-CHARGE	U-C	E — CHARGE-ASSIGNMENT	43	5.5		2.1C-5/15/84
UNIFORM-COST	U-C	E — ENERGY-COST	42	5.2		2.0-2/15/79

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
UNIT	U	E — ENERGY-COST	42	5.2		2.0—2/15/79
UNITH-0		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
UNITH-1Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
UNITH-2Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
UNITH-3		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
UNITV-0		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
UNITV-1Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
UNITV-2		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
UNIT-NAME	U-N	E — COMPONENT-COST	44		VI.6	2.0—2/15/79
UPPER-VENT-AREA	U-V-A	L — WALL-PARAMETERS	5	2.8,2.61		2.1B—1/15/83
U-NAME-		LSPE — PARAMETER	2			2.1—5/15/80
U-VALUE	U	L — CONSTRUCTION	5		III.80	2.0—2/15/79
VALUES		LSP — DAY-SCHEDULE		1.28		2.0—2/15/79
VARIABLE-LIST	V-L	LSPE — REPORT-BLOCK	17,30,41		III.130,IV.275,V.105	2.0—2/15/79
VARIABLE-TYPE	V-T	LSPE — REPORT-BLOCK	17,30,41		III.130,IV.275,V.105	2.0—2/15/79
VARVOL-0		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
VARVOL-1Z		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
VARVOL-2		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
VARVOL-3		S — SUBR-FUNCTIONS	29	1.5		2.1D—6/30/89
VENT-METHOD	V-M	S — SYSTEM-AIR	23	3.33		2.1D—6/30/89
VENT-TEMP-SCH	V-T-SCH	S — SYSTEM-AIR	23	3.20,3.34	IV.217	2.1—5/15/80
VERIFICATION	V	E — ECONOMICS-REPORT	45		VI.12	2.0—2/15/79
		L — LOADS-REPORT	17		III.123	2.0—2/15/79
		P — PLANT-REPORT	40		V.100	2.0—2/15/79
		S — SYSTEMS-REPORT	29		IV.269	2.0—2/15/79
VERT-TRANS-KW	V-T-KW	L — BUILDING-RESOURCE	16		III.40	2.0A—6/15/79
VERT-TRANS-SCH	V-T-SCH	L — BUILDING-RESOURCE	16		III.40	2.0A—6/15/79
VERT-VENT-SEP	V-V-S	L — WALL-PARAMETERS	5	2.8,2.61		2.1B—1/15/83

•COMMAND or Keyword	Abbrev	Subprogram -- Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program -- year Version -- added
VIEW-AZIMUTH	V-AZ	L -- SPACE-CONDITIONS	9	2.34,2.49		2.1B--1/15/83
VIS-TRANS	V-T	L -- GLASS-TYPE	6	2.34,2.45		2.1B--1/15/83
VIS-TRANS-SCH	V-T-SCH	L -- WINDOW	13	2.34,2.52		2.1B--1/15/83
VOLUME	V	L -- SPACE	10		III.97	2.0--2/15/79
•WALL-PARAMETERS	W-P	L	5	2.6,2.60		2.1B--1/15/83
WALL-PARAMETERS	W-P	L -- CONSTRUCTION	5			2.1B--1/15/83
WARNINGS		L -- DIAGNOSTIC	1			2.1D--6/30/89
•WEEK-SCHEDULE	W-SCH	LSPE	3,19, 32,42		II.27	2.0--2/15/79
WEIGHTING-FACTOR	W-F	L -- SPACE-CONDITIONS	7		III.53	2.1--5/15/80
WIDTH	W	L -- BUILDING-SHADE	6		III.35	2.0--2/15/79
		L -- DOOR	14		III.110	2.1--5/15/80
		L -- FIXED-SHADE	6			2.1B--1/15/83
		L -- EXTERIOR-WALL or ROOF	11		III.102	2.0--2/15/79
		L -- INTERIOR-WALL	15		III.113	2.1--5/15/80
		L -- SPACE	10		III.97	2.0--2/15/79
		L -- TROMBE-WALL-V or -NV	12			2.1B--1/15/83
		L -- UNDERGROUND-WALL or -FLOOR	16		III.119	2.1--5/15/80
		L -- WINDOW	13		III.108	2.0--2/15/79
•WINDOW	WI	L	13	1.4,2.4,2.31, 2.52,2.55,2.65	III.107	2.0--2/15/79
WINDOW-SPEC-FN		L -- WINDOW	13	1.4		2.1C--5/15/84
WIND-DIR	W-D	L -- DESIGN-DAY	3		III.27	2.0--2/15/79
WIND-SPEED	W-S	L -- DESIGN-DAY	3		III.27	2.0--2/15/79
WIN-SHADE-TYPE	W-S-T	L -- WINDOW	13	2.34,2.52		2.1B--1/15/83
WS-HEIGHT	W-H	L -- BUILDING-LOCATION	2	2.75,3.34		2.1B--1/15/83
WS-HEIGHT-LIST	W-H-L	L -- BUILDING-LOCATION	2			2.1D--6/30/89
WS-TERRAIN-PAR1	W-T-P1	L -- BUILDING-LOCATION	2	2.75,3.34		2.1B--1/15/83
WS-TERRAIN-PAR2	W-T-P2	L -- BUILDING-LOCATION	2	2.75,3.34		2.1B--1/15/83

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
X		L — BUILDING—SHADE	6		III.35	2.0—2/15/79
		L — DOOR	14		III.110	2.1—5/15/80
		L — EXTERIOR—WALL or ROOF	11		III.102	2.0—2/15/79
		L — INTERIOR—WALL	15	2.3		2.1C—5/15/84
		L — SPACE	10		III.97	2.0—2/15/79
		L — TROMBE—WALL—V or —NV	12			2.1B—1/15/83
		L — WINDOW	13		III.107	2.0—2/15/79
X—REF		L — BUILDING—LOCATION	2	2.63,2.64		2.1B—1/15/83
		L — FIXED—SHADE	6			2.1B—1/15/83
45 Y		L — BUILDING—SHADE	6		III.35	2.0—2/15/79
		L — DOOR	14		III.110	2.1—5/15/80
		L — EXTERIOR—WALL or ROOF	11		III.102	2.0—2/15/79
		L — INTERIOR—WALL	15	2.3		2.1C—5/15/84
		L — SPACE	10		III.97	2.0—2/15/79
		L — TROMBE—WALL—V or —NV	12			2.1B—1/15/83
		L — WINDOW	13		III.107	2.0—2/15/79
Y—REF		L — BUILDING—LOCATION	2	2.63,2.64		2.1B—1/15/83
		L — FIXED—SHADE	6			2.1B—1/15/83
Z		L — BUILDING—SHADE	6		III.35	2.0—2/15/79
		L — EXTERIOR—WALL or ROOF	11		III.102	2.0—2/15/79
		L — INTERIOR—WALL	15	2.3		2.1C—5/15/84
		L — SPACE	10		III.97	2.0—2/15/79
		L — TROMBE—WALL—V or —NV	12			2.1B—1/15/83
	•ZONE	Z	S	22	3.3,3.6	IV.198
•ZONE—AIR	Z—A	S	21		IV.188	2.0—2/15/79
ZONE—AIR	Z—A	S — ZONE	22		IV.199	2.0—2/15/79
•ZONE—CONTROL	Z—C	S	20		IV.193	2.0—2/15/79

•COMMAND or Keyword	Abbrev	Subprogram — Command	BDL Summ (2.1D)	Supp (2.1D)	Ref Man (2.1A)	Program — year Version — added
ZONE-CONTROL	Z-C	S — ZONE	22		IV.199	2.0—2/15/79
•ZONE-FANS	Z-F	S	21	3.4		2.1C—5/15/84
ZONE-FANS	Z-F	S — ZONE	22			2.1C—5/15/84
ZONE-FAN-CFM	Z-F-CFM	S — ZONE-FANS	21	3.4		2.1C—5/15/84
ZONE-FAN-KW	Z-F-KW	S — ZONE-FANS	21	3.5		2.1C—5/15/84
ZONE-FAN-RATIO	Z-F-R	S — ZONE-FANS	21	3.5		2.1C—5/15/84
ZONE-FAN-T-SCH	Z-F-SCH	S — ZONE-FANS	21	3.5		2.1C—5/15/84
ZONE-FRACTION1	Z-F1	L — SPACE-CONDITIONS	9	2.34,2.46		2.1B—1/15/83
ZONE-FRACTION2	Z-F2	L — SPACE-CONDITIONS	9	2.34,2.46		2.1B—1/15/83
ZONE-HEAT-SOURCE	Z-H-S	S — SYSTEM	27		IV.260,IV.262	2.0—2/15/79
ZONE-NAMES	Z-N	S — SYSTEM	27	3.31	IV.264	2.0—2/15/79
ZONE-TYPE	Z-TYPE	L — SPACE-CONDITIONS	9		III.53	2.0—2/15/79
		S — ZONE	22		IV.198	2.0—2/15/79
Z-REF		L — FIXED-SHADE	6			2.1B—1/15/83

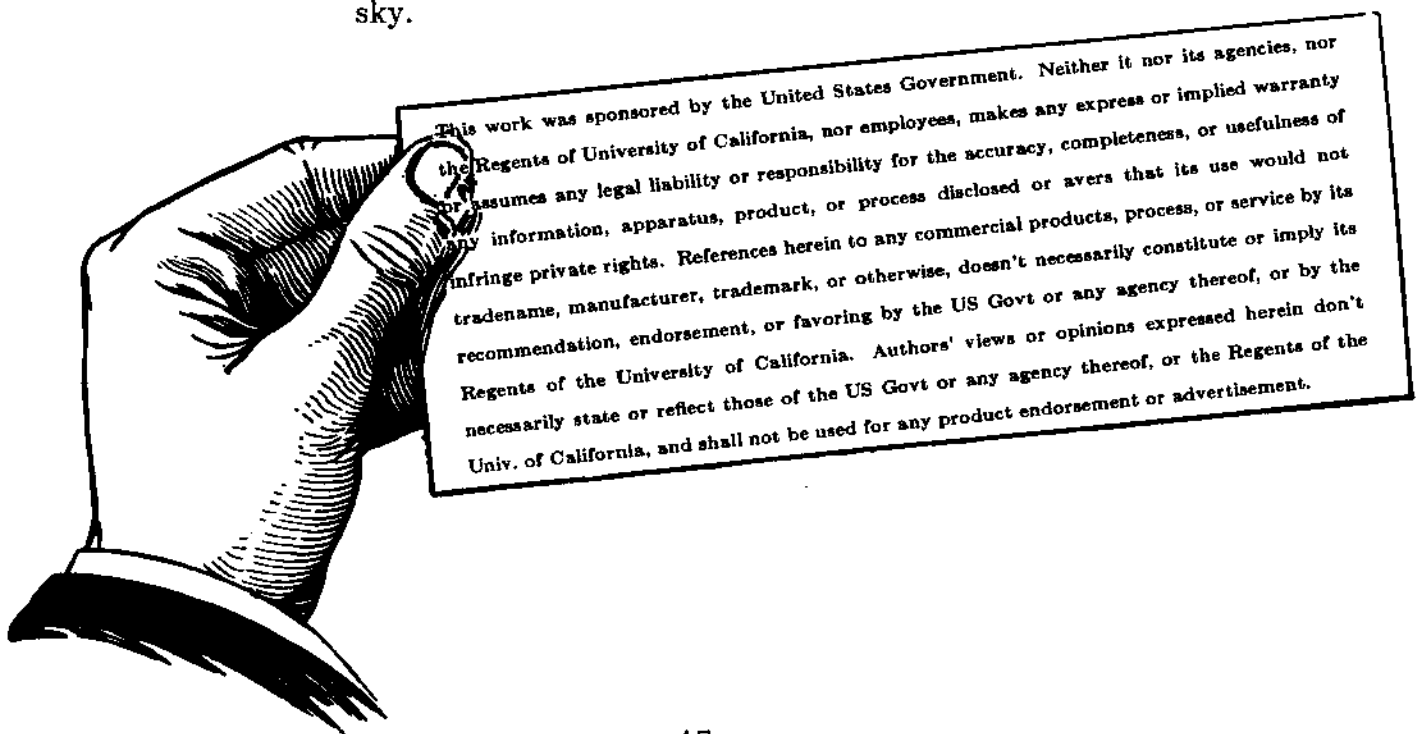
■ ■ ■ THE HEAT EXCHANGER ■ ■ ■

Question: When I run DOE-2.1D I get higher heating loads and lower cooling loads than in DOE-2.1C. Why is this?

Answer: There are two main reasons for this:

- (1) Shading of diffuse solar radiation by overhangs and other building shades is automatically calculated in 2.1D. This was not done in 2.1C — you had to enter sky and ground form factors for diffuse shading, which users rarely did. So if you have building shades, chances are there will be less diffuse solar gain in 2.1D than 2.1C.

- (2) In 2.1D an improvement was made in the calculation of IR radiation heat loss from exterior surfaces to the sky and ground. The result is to increase heat loss from windows and walls relative to 2.1C values, giving 10-15% higher heating loads and 10-15% lower cooling loads. The 2.1C-2.1D difference depends on envelope U-value, and is greatest for spaces with a lot of glass or with poorly insulated walls or roof. The difference is also climate dependent. Most of the improvement in the model comes from calculating sky IR emissivity *hourly* rather than assuming, as in 2.1C, a constant sky emissivity of 1.0 (blackbody) in determining the radiative part of the outside film resistance. In 2.1D the sky emissivity depends on atmospheric moisture, cloud amount, and cloud type. The sky emissivity can vary from about 0.6 for very dry, cloudless conditions to about 0.97 for moist, heavily overcast conditions. DOE-2.1D also automatically accounts for the effect of building shades on IR loss. An overhang, for example, can significantly reduce IR loss from a window to the sky.



Southern California Edison's

"Design Assistance Program"

Southern California Edison (SCE) has developed a "Design Assistance Program" to promote the design of energy-efficient commercial buildings. The SCE Design Assistance Program has three main objectives:

1. To promote the design of energy-efficient commercial buildings by using energy analysts on professional design teams. To that end, SCE has "certified" certain energy analysts (expert DOE-2 users) to provide energy expertise to architects and/or building owners.
2. To accommodate the use of DOE-2 input files to demonstrate California Title-24 compliance.
3. To establish a repository of simulation models for use in SCE's load research and system planning.

The Design Assistance Program works like this:

- A building energy analyst is certified by SCE as a Design Assistance consultant. SCE enters into a general scope-of-work agreement with the consultant for work completed under the Design Assistance Program.
- SCE meets with the Design Assistance consultant to finalize project contracts. The consultant promises to provide SCE with a progress report at least once during this design process.
- The Design Assistance consultant is referred by SCE to an architect and/or building owner for inclusion on the building design team. The Design Assistance consultant interacts with the building design team through design development of the commercial building, with emphasis during the schematic design phase.
- Upon project completion, the Design Assistance consultant provides copies of a final report to the design team, building owner, and SCE. Additional project details are also provided to SCE, including DOE-2 input files and a set of building plans.

For more information on the "*Design Assistance Program*", readers should write to Ms. Christie Kjellman (MS: GO3, Rm. 157), Southern California Edison, 2244 Walnut Grove Avenue, Rosemead, CA 91770.

■ ■ ■ ■ **DOE-2 DIRECTORY** ■ ■ ■ ■
 Program Related Software and Services

■ ■ Source Code ■ ■
<p><i>(2.1D VAX and SUN-4 Only)</i> Simulation Research Group Bldg. 90, Room 3147 Lawrence Berkeley Laboratory Berkeley, CA 94720 (415) 486-5711</p> <p><i>(2.1C and 2.1D Mainframe Only)</i> National Energy Software Center Argonne National Laboratory 9700 South Cass Avenue Argonne, IL 60439 (708) 972-7250</p>
■ ■ PC VERSIONS ■ ■
<p><i>DOE-2.1D for Micros (MICRO-DOE2)</i> Acrosoft International (Gene Tsai) 9745 East Hampden Avenue Denver, CO 80231 (303) 368-9225</p> <p><i>DOE-2.1D for Micros (ADM-DOE2)</i> ADM Associates, Inc. (Taghi Alereza) 3299 Ramos Circle Sacramento, CA 95827 (916) 363-8383</p>
■ ■ Utility Programs ■ ■
<p><i>Pre- and Post-Processor (DOE-Plus™)</i> Building Blocks Software (Steve Byrne) P.O. Box 5218 Berkeley, CA 94705-0218 (415) 549-1444</p> <p><i>Graphs from DOE-2</i> Ernie Jessup 4977 Canoga Avenue Woodland Hills, CA 91364 (818) 884-3997</p> <p><i>COMPLY 24 - California Standards</i> Gabel Dodd Associates (Michael Gabel) 1818 Harmon Street Berkeley, CA 94703 (415) 428-0803</p>
■ ■ VIDEO ■ ■
<p><i>DOE-2 Instructional Video and Manual</i> Prof. Jan Kreider - JCEM University of Colorado at Boulder Campus Box 428 Boulder, CO 80309-0428 (303) 492-3915</p>

■ ■ DOE-2 Training ■ ■
<p><i>Mech. Engs., Consulting, Training</i> Marlon Addison Energy Simulation Specialists 64 East Broadway, Suite 230 Tempe, AZ 85282 (602) 967-5278</p> <p><i>Master Classes, Tutorials, Consulting</i> Bruce Birdsall "In Support of Energy Software" 166 Caldecott Lane, Suite 113 Oakland, CA 94618 (415) 841-2050</p>
■ ■ CONSULTANTS ■ ■
<p><i>Consulting Engineers</i> Craig Cattelino Burns & McDonnell Engineers 8055 E. Tufts Avenue, Suite 330 Denver, CO 80237 (303) 721-9292</p> <p><i>Microcomputer Versions for European Users</i> Werner Gygli Informatik Energietechnik Weiherweg 19 CH-8604 Volketswil Switzerland</p> <p><i>Consulting</i> Jeff Hirsch 2138 Morongo Camarillo, CA 93010 (805) 482-5515</p> <p><i>Large Facility Modeling</i> George F. Marton, P.E. 1129 Keith Avenue Berkeley, CA 94708 (415) 841-8083</p> <p><i>Computer-Aided Mechanical Engineering</i> Mike Roberts Roberts Engineering Co. 11946 Pennsylvania Kansas City, MO 64145 (816) 942-8121</p> <p><i>Mainframe Versions for European Users</i> Joerg Tscherry EMPA, Section 175 8600 Dubendorf Switzerland</p> <p><i>Consulting</i> Philip Wemhoff 1512 South McDuff Avenue Jacksonville, FL 32205 (904) 632-7393</p>

■ ■ ■ ■ DOE-2 PROGRAM DOCUMENTATION ■ ■ ■ ■

National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161

	NTIS Order No.	Shipments Within The U.S.	Shipments Outside The U.S.
DOE-2.1D User Manuals [Reference Manual (2.1A), BDL Summary (2.1D), Sample Run Book (2.1D), Supplement (2.1D)]	PB-852-11449	319.00	635.00
DOE-2.1D Update Package [BDL Summary (2.1D), Sample Run Book (2.1D), Supplement (2.1D)]	PB-901-43074	112.50	225.00
To Order by Separate Titles:			
Reference Manual (2.1A)	LBL-8706, Rev.2	109.00	218.00
BDL Summary (2.1D)	DE-890-17728	23.00	46.00
Sample Run Book (2.1D)	DE-890-17727	60.00	106.00
DOE-2 Supplement (2.1D)	DE-890-17728	55.95	111.90
Engineers Manual (2.1A) [algorithm descriptions]	DE-830-04575	45.00	90.00

For phone orders using Visa or Mastercard (703) 487-4650 or FAX (703) 321-8547
 Overnight Express — 24-hr in-house processing — \$22 surcharge per title
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■ ■ Weather Tapes ■ ■

To order TMY or TRY tapes:
 National Climatic Data Center
 Federal Building
 Asheville, North Carolina 28801
 Phone: (704) 259-0871 climate data
 Phone: (704) 259-0682 main number

To order CTZ tapes:
 California Energy Commission
 Attn: Bruce Maeda, MS-25
 1516-9th Street
 Sacramento, CA 95814-5512
 Phone: 1-800-772-3300

To order WYEC tapes:
 ASHRAE
 1791 Tullie Circle N.E.
 Atlanta, GA 30329
 Phone: (404) 636-8400

■ ■ User News ■ ■

To be put on the newsletter distribution list, to submit articles, corrections or updates to documentation, or for DOE-2 program questions, please contact:

Kathy Ellington
 Simulation Research Group
 Bldg. 90, Room 3147
 Lawrence Berkeley Laboratory
 Berkeley, CA 94720
 Phone: (415) 486-5711
 FAX: (415) 486-5172
 electronic mail: kathy%gundog@lbl.gov

= **LAYERS(LA,16)** [Note: **LIKE** keyword not allowed]

• **MATERIAL(MAT)**

[Note: Value must be a list of either the u-names of **MATERIALs** or code-words from the Materials Library on page 99.]

THICKNESS(TH)

[Note: Must be specified if any thickness is different from those specified in **MATERIAL** commands or Materials Library. Order of list must correspond to list following **MATERIALs**]

INSIDE-FILM-RES(I-F-R)(0.68;0.0 to 40.0 hr-ft²-°F/Btu)

[Note: List materials (a maximum of 9) from outside to inside; do not specify inside or outside air film as a material]

= **CONSTRUCTION(CONS,32)**

• **LAYERS(LA)** u-name or code-word

or

• **U-VALUE(U)**(—;0.0 to 20.0 Btu/hr-ft²-°F)†

ABSORPTANCE(ABS)(0.7;0.0 to 1.0)[Not used for interior walls, underground walls, or underground floors]

ROUGHNESS(RO)(3;1 to 6) (all integers)[Not used for interior walls, underground walls, or underground floors]

WALL-PARAMETERS(W-P) u-name [Required for Trombe walls and sunspaces with interior venting.]

[Note: See RM Chapter III for tables of values of **ABS** and **RO**]

† For interior surfaces, includes resistance of both air films;
for exterior surfaces, includes inside film resistance, but not outside film resistance.

= **WALL-PARAMETERS(W-P,4)**

• **FOR(—;TROMBE-WALL-V,TROMBE-WALL-NV,INTERIOR-WALL)**

EMISSIVITY(EM)(0.93;0.0 to 1.0)

CHANNEL-WIDTH(C-W)(*;0.0 to 1.0 ft)

LOWER-VENT-AREA(L-V-A)(†;0.0 to 100 ft²)

UPPER-VENT-AREA(U-V-A)(†;0.0 to 100 ft²)

VERT-VENT-SEP(V-V-S)(†;0.0 to 20.0 ft)

AIR-FLOW-TYPE(A-F-T)(**NO-AIR-FLOW**;**NO-AIR-FLOW,FORCED-RECIRC**,
FORCED-OA-PREHT,FREE-RECIRC,FREE-DOORWAY)**

AIR-FLOW-RATE(A-F-R)(††;0.0 to 999999.00 ft³/min)

AIR-FLOW-CTRL-DT(A-F-C-DT)(3.0;-100.0 to 50.0°F)†**

FAN-KW(F-KW)(0.00003;0.00 to 0.01 kW/cfm)††**

DOORWAY-H(D-H)(††;0.0 to 8.0 ft)**

DOORWAY-W(D-W)(††;0.0 to 99.0 ft)**

* Required for **TROMBE-WALL**.

** Used only for **INTERIOR-WALL**.

† Required for **TROMBE-WALL-V**; unused for **TROMBE-WALL-NV**.
For sunspaces, required if **AIR-FLOW-TYPE** = **FREE-RECIRC**;
unused for others.

†† Used only if **AIR-FLOW-TYPE** = **FORCED-RECIRC**
or **FORCED-OA-PREHT**.
AIR-FLOW-RATE is required.

‡ Defaults to -100.0° for **AIR-FLOW-TYPE** = **FORCED-OA-PREHT**.

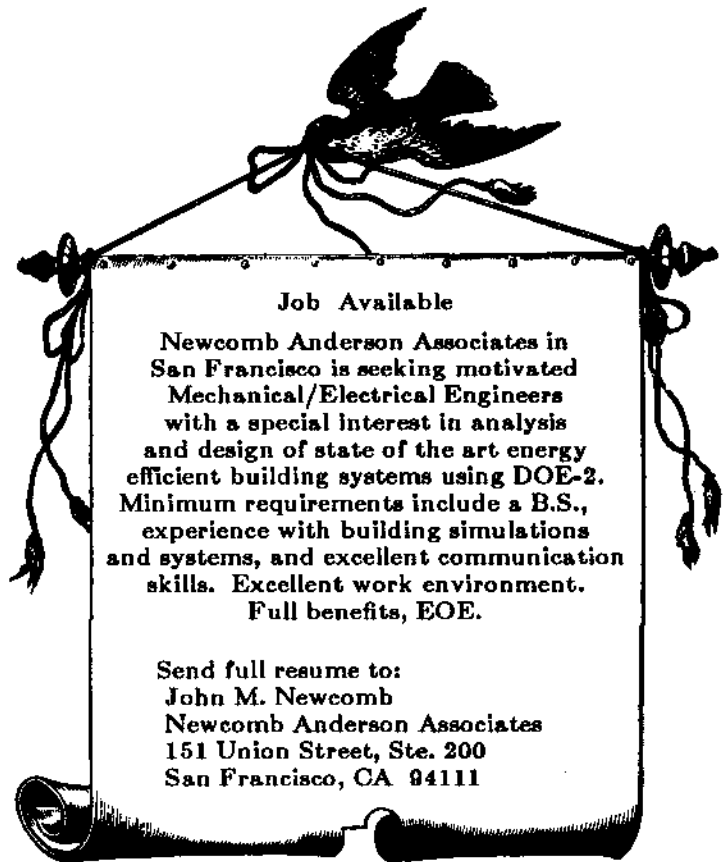
‡‡ Required and used only if **AIR-FLOW-TYPE** = **FREE-DOORWAY**.

Default value was incorrectly shown as 0.0

Starting September 2, 1991, the Simulation Research Group will have a new telephone area code. Please make this change to our address:

Simulation Research Group
Bldg. 90, Room 3147
Lawrence Berkeley Laboratory
Berkeley, CA 94720
USA

Phone: (510) 486-5711
FAX: (510) 486-4089
--or--
(510) 486-5172



Job Available

Newcomb Anderson Associates in San Francisco is seeking motivated Mechanical/Electrical Engineers with a special interest in analysis and design of state of the art energy efficient building systems using DOE-2. Minimum requirements include a B.S., experience with building simulations and systems, and excellent communication skills. Excellent work environment. Full benefits, EOE.

Send full resume to:
John M. Newcomb
Newcomb Anderson Associates
151 Union Street, Ste. 200
San Francisco, CA 94111



The Simulation Research Group is pleased to announce that it has recently joined the LBL Windows and Lighting Program. This Program, headed by Steve Selkowitz, has been involved in windows and lighting research for 15 years and has been making extensive use of DOE-2 as an analytic tool. Among Windows and Lighting's accomplishments are the development and commercialization of low-E windows and the development of high-frequency electronic ballasts (which have made compact fluorescent lamps possible). They have also produced software, such as WINDOW-3 and SUPERLITE. SRG has collaborated with Windows and Lighting on several projects, including development of the daylighting capability in DOE-2. In recognition of SRG's membership, Windows and Lighting's name will be changed to the Building Technologies Program.



**** Job Available ****

Engineer or Architect for building energy analysis. Familiarity with DOE-2 is required. Knowledge of energy monitoring techniques is welcomed. Please contact

Adrian Tuluca
Phone: (203) 852-0110
Steven Winter Associates, Inc.
50 Washington Street
Norwalk, CT 08854