

MODEL 2500 FLOW-MEASUREMENT INSTRUMENT

**DANIEL MEASUREMENT AND CONTROL
HOUSTON, TEXAS**

**CONFIGURED TO CALCULATE
VOLUME, MASS, AND ENERGY
(METRIC UNIT) THROUGH UP TO 3
ORIFICE METERS USING AGA3 1992
AND AGA8 1992 (DETAIL METHOD)**

**Part Number: 3-9003-175
Revision D**

AUGUST 2000

DANIEL

Hardware Definition - Analog Input

		----- 2500 Startup Values -----						
Chan	Name	Units	Zero Scale	Full Scale	M/V	Fixed Val	Period	
1	FT_01H	MMWC	0	100	Var	50		
2	FT_01L	MMWC	0	10	Var	11		
3	TT_01	DEGC	0	150	Var	50		
4	PT_01	KCM2	0	1500	Var	35		
5	FT_02H	MMWC	0	100	Var	0		
6	FT_02L	MMWC	0	10	Var	0		
7	TT_02	DEGC	0	150	Var	0		
8	PT_02	KCM2	0	1500	Var	0		
9	FT_03H	MMWC	0	100	Var	0		
10	FT_03L	MMWC	0	10	Var	0		
11	TT_03	DEGC	0	150	Var	0		
12	PT_03	KCM2	0	1500	Var	0		
13	TT_04	DEGC	0	150	Var	0		
14	PT_04	KCM2	0	1500	Var	0		
15								
16								
17								
18								

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Hardware Definition - Analog Output

Chan	Name	Units	Zero Scale	Full Scale	M/V	Fixed Val	Period
1	AO_01		0	100000	Var		
2	AO_02		0	100000	Var		
3	AO_03		0	100000	Var		
4	AO_04		0	100000	Var		

Hardware Definition - Status Input

Chan	Name	Units	M/V	Value
1	STATUS1		Var	Off
2	STATUS2		Var	Off
3	STATUS3		Var	Off
4	STATUS4		Var	Off
5	STATUS5		Var	Off
6	STATUS6		Var	Off
7	STATUS7		Var	Off
8	STATUS8		Var	Off
9	STATUS9		Var	Off
10	STATUS10		Var	Off
11	STATUS11		Var	Off
12	STATUS12		Var	Off
13	STATUS13		Var	Off
14	STATUS14		Var	Off
15	STATUS15		Var	Off
16	STATUS16		Var	Off
17	STATUS17		Var	Off
18	STATUS18		Var	Off
19	STATUS19		Var	Off
20	STATUS20		Var	Off
21	STATUS21		Var	Off
22	STATUS22		Var	Off
23	STATUS23		Var	Off
24	STATUS24		Var	Off

Hardware Definition - Control Output

Chan	Name	Units	Pulsed	Period (40ms)	M/V	Fixed Val
1	SC01		Yes	1	Var	Off
2	SC02		Yes	1	Var	Off
3	SC03		Yes	1	Var	Off
4	SCO		Yes	1	Var	Off
5	EC01		Yes	1	Var	Off
6	EC02		Yes	1	Var	Off
7	EC03		Yes	1	Var	Off
8	ECO		Yes	1	Var	Off
9	MCO1		Yes	1	Var	Off
10	MCO2		Yes	1	Var	Off
11	MCO3		Yes	1	Var	Off
12	MCO		Yes	1	Var	Off
13	SAMPLER		Yes	1	Var	Off
14	CO14		No		Var	Off
15	CO15		No		Var	Off
16	CO16		No		Var	Off
17	CO17		No		Var	Off
18	CO18		No		Var	Off
19	CO19		No		Var	Off
20	CO20		No		Var	Off
21	CO21		No		Var	Off
22	CO22		No		Var	Off
23	CO23		No		Var	Off
24	CO24		No		Var	Off

Numeric Variable Alarm Definition

A#	Name	LoLo Limit	Lo Limit	Hi Limit	HiHi Limit	ROC/Sec
1	FT_01H		-2.0	102.0		
2	FT_01L		-0.2			
3	FT_02H		-2.0	102.0		
4	FT_02L		-0.2			
5	FT_03H		-2.0	102.0		
6	FT_03L		-0.2			
7	TT_01		-3.0	153.0		
8	TT_02		-3.0	153.0		
9	TT_03		-3.0	153.0		
10	TT_04		-3.0	153.0		
11	PT_01		-30.0	1530.0		
12	PT_02		-30.0	1530.0		
13	PT_03		-30.0	1530.0		
14	PT_04		-30.0	1530.0		
15	CO2T_01		-2.0	102.0		
16	N2T_01		-2.0	102.0		
17	ET_01		990.0	1510.0		
18	AO_01		0.0	100000.0		
19	AO_02		0.0	100000.0		
20	AO_03		0.0	100000.0		
21	AO_04		0.0	100000.0		

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Boolean Variable Alarm Definition

Alarm #	Name	State
1	GCALARM	On
2	GAS_ERR	On

Numeric Operator Entry Definition

Entry	Name	Units	Default
1	ENERGY	JULS	1165637.0
2	METHANE	mol%	93.0
3	NITROGEN	mol%	3.5
4	CO2	mol%	3.5
5	ETHANE	mol%	0.0
6	PROPANE	mol%	0.0
7	WATER	mol%	0.0
8	H2S	mol%	0.0
9	HYDROGEN	mol%	0.0
10	CO	mol%	0.0
11	O2	mol%	0.0
12	IBUTANE	mol%	0.0
13	NBUTANE	mol%	0.0
14	IPENTANE	mol%	0.0
15	NPENTANE	mol%	0.0
16	NHEXANE	mol%	0.0
17	NHEPTANE	mol%	0.0
18	NOCTANE	mol%	0.0
19	NNONANE	mol%	0.0
20	NDECANE	mol%	0.0
21	HELIUM	mol%	0.0
22	ARGON	mol%	0.0
23	RHO	KGM3	10.58
24	CONTRACT	HOURL	8.0
25	TEMPBASE	DEGC	15.0
26	PRESBASE	KCM2	1.035
27	RSHEAT		1.3
28	ORIF1	MM	50.8
29	ORIF2	MM	50.8
30	ORIF3	MM	50.8
31	PIPE1	MM	102.24
32	PIPE2	MM	102.24
33	PIPE3	MM	102.24
34	BAROPRES	KCM2	1.035
35	DPCUTOFF	%	2.0
36	ORIFMEAS	DEGC	20.0
37	PIPEMEAS	DEGC	20.0
38	SAMPLE	SM3	1000.0

Selection List Operator Entry Definition

Entry #	Name	Units	Startup	Selection
1	GAS_DATA			2
2	GAS_OP			2
3	MONTHLY			1
4	CLEARALL			1
5	METERS			1
6	FTTYPE1			1
7	TAPLOC1			1
8	FTTYPE2			1
9	TAPLOC2			1
10	FTTYPE3			1
11	TAPLOC3			1
12	ORIF_MTL			1
13	PIPE_MTL			1
14	VOLSCALE			4
15	ENESCALE			7
16	MASSCALE			1
17	TT_LOC			1
18	PT_LOC			1
19	AO_01DEF			1
20	AO_02DEF			2
21	AO_03DEF			3
22	AO_04DEF			4
23	STREAMID			1
24	INTERVAL			1

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Selection List Operator Entry Option Definition

Variable Name: GAS_DATA

Option # Option

1	GC
2	OPERATOR

Selection List Operator Entry Option Definition

Variable Name: GAS_OP

Option # Option

1	IDLE
2	STORE

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Selection List Operator Entry Option Definition

Variable Name: MONTHLY

Option # Option

1	IDLE
2	PRINT

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Selection List Operator Entry Option Definition

Variable Name: CLEARALL

Option # Option

1	IDLE
2	CLEAR

Selection List Operator Entry Option Definition
Variable Name: METERS

Option #	Option
1	ONE
2	TWO
3	THREE

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Selection List Operator Entry Option Definition

Variable Name: FTYPE1

Option # Option

1	SINGLE
2	STACKED

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Selection List Operator Entry Option Definition

Variable Name: TAPLOC1

Option # Option

1	UPSTREAM
2	DNSTREAM

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Selection List Operator Entry Option Definition

Variable Name: FTYPE2

Option # Option

1	SINGLE
2	STACKED

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Selection List Operator Entry Option Definition

Variable Name: TAPLOC2

Option # Option

1	UPSTREAM
2	DNSTREAM

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Selection List Operator Entry Option Definition

Variable Name: FTYPE3

Option # Option

1	SINGLE
2	STACKED

Selection List Operator Entry Option Definition
Variable Name: TAPLOC3

Option # Option

-
- 1 UPSTREAM
 - 2 DNSTREAM

Selection List Operator Entry Option Definition

Variable Name: ORIF_MTL

Option # Option

1	SS_304
2	SS_316
3	MONEL
4	CARBON

Selection List Operator Entry Option Definition

Variable Name: PIPE_MTL

Option # Option

1	SS_304
2	SS_316
3	MONEL
4	CARBON

Selection List Operator Entry Option Definition
Variable Name: VOLSCALE

Option # Option

1	X1
2	X10
3	X100
4	X1000

Selection List Operator Entry Option Definition

Variable Name: ENESCALE

Option # Option

1	X1
2	X10
3	X100
4	X1000
5	X10000
6	X100000
7	X1000000

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Selection List Operator Entry Option Definition

Variable Name: MASSCALE

Option # Option

1	X1
2	X10
3	X100
4	X1000
5	X10000
6	X100000
7	X1000000

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Selection List Operator Entry Option Definition

Variable Name: TT_LOC

Option # Option

1	METER
2	HEADER

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Selection List Operator Entry Option Definition

Variable Name: PT_LOC

Option # Option

1	METER
2	HEADER

Selection List Operator Entry Option Definition
Variable Name: AO_01DEF

Option #	Option
1	SFR1
2	SFR2
3	SFR3
4	SFR
5	EFR1
6	EFR2
7	EFR3
8	EFR
9	MFR1
10	MFR2
11	MFR3
12	MFR

Selection List Operator Entry Option Definition

Variable Name: AO_02DEF

Option # Option

1	SFR1
2	SFR2
3	SFR3
4	SFR
5	EFR1
6	EFR2
7	EFR3
8	EFR
9	MFR1
10	MFR2
11	MFR3
12	MFR

Selection List Operator Entry Option Definition
Variable Name: AO_03DEF

Option #	Option
1	SFR1
2	SFR2
3	SFR3
4	SFR
5	EFR1
6	EFR2
7	EFR3
8	EFR
9	MFR1
10	MFR2
11	MFR3
12	MFR

Selection List Operator Entry Option Definition
Variable Name: AO_04DEF

Option # Option

1	SFR1
2	SFR2
3	SFR3
4	SFR
5	EFR1
6	EFR2
7	EFR3
8	EFR
9	MFR1
10	MFR2
11	MFR3
12	MFR

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Selection List Operator Entry Option Definition

Variable Name: STREAMID

Option # Option

1	ONE
---	-----

Selection List Operator Entry Option Definition
Variable Name: INTERVAL

Option #	Option
1	HOUR
2	HOUR2
3	HOUR3
4	HOUR4
5	HOUR6
6	HOUR8
7	HOUR12

Report Definition

Report #	Name	Title	Type
1	CURRENT	CURRENT	Line
2	ANALOGS	ANALOGS	Line
3	ENTRY_1	ENTRIES	Line
4	ENTRY_2	ENTRIES	Line
5	ENTRY_3	ENTRIES	Line
6	NONRESET	NONRESET	Line
7	MON1	MONTHLY REPORT	Table
8	MON1A	MONTHLY REPORT	Table
9	MON1B	MONTHLY REPORT	Table
10	MON1C	MONTHLY REPORT	Table
11	MON2	MONTHLY REPORT	Table
12	MON2A	MONTHLY REPORT	Table
13	MON2B	MONTHLY REPORT	Table
14	MON2C	MONTHLY REPORT	Table
15	MON3	MONTHLY REPORT	Table
16	MON3A	MONTHLY REPORT	Table
17	MON3B	MONTHLY REPORT	Table
18	MON3C	MONTHLY REPORT	Table
19	HIS1	24 HOUR HISTORY	Table
20	HIS1A	24 HOUR HISTORY	Table
21	HIS1B	24 HOUR HISTORY	Table
22	HIS1C	24 HOUR HISTORY	Table
23	HIS2	24 HOUR HISTORY	Table
24	HIS2A	24 HOUR HISTORY	Table
25	HIS2B	24 HOUR HISTORY	Table
26	HIS2C	24 HOUR HISTORY	Table
27	HIS3	24 HOUR HISTORY	Table
28	HIS3A	24 HOUR HISTORY	Table
29	HIS3B	24 HOUR HISTORY	Table
30	HIS3C	24 HOUR HISTORY	Table
31	DAY1	DAILY REPORT	Table
32	DAY2	DAILY REPORT	Table
33	DAY3	DAILY REPORT	Table

Line Report Definition
Title: CURRENT Name: CURRENT
Line # Name

1	=====
2	VOLUME
3	=====
4	STOT1
5	STOT2
6	STOT3
7	-----
8	STOT
9	-----
10	SFR1
11	SFR2
12	SFR3
13	-----
14	SFR
15	=====
16	ENERGY
17	=====
18	ETOT1
19	ETOT2
20	ETOT3
21	-----
22	ETOT
23	-----
24	EFR1
25	EFR2
26	EFR3
27	-----
28	EFR
29	=====
30	MASS
31	=====
32	MTOT1
33	MTOT2
34	MTOT3
35	-----
36	MTOT
37	-----
38	MFR1
39	MFR2
40	MFR3
41	-----
42	MFR
43	-----

Line Report Definition
Title: ANALOGS Name: ANALOGS
Line # Name

1	=====
2	INPUTS
3	=====
4	FT_01H
5	FT_01L
6	TT_01
7	PT_01
8	FT_02H
9	FT_02L
10	TT_02
11	PT_02
12	FT_03H
13	FT_03L
14	TT_03
15	PT_03
16	TT_04
17	PT_04
18	=====
19	OUTPUTS
20	=====
21	AO_01
22	AO_02
23	AO_03
24	AO_04

Line Report Definition
Title: ENTRIES Name: ENTRY_1
Line # Name

1	ENERGY
2	RHO
3	CONTRACT
4	TEMPBASE
5	PRESBASE
6	RSHEAT
7	PIPE1
8	ORIF1
9	PIPE2
10	ORIF2
11	PIPE3
12	ORIF3
13	BAROPRES
14	DPCUTOFF
15	ORIFMEAS
16	PIPEMEAS
17	SAMPLE

Line Report Definition
Title: ENTRIES Name: ENTRY_2
Line # Name

1	METERS
2	FTTYPE1
3	TAPLOC1
4	FTTYPE2
5	TAPLOC2
6	FTTYPE3
7	TAPLOC3
8	ORIF_MTL
9	PIPE_MTL
10	VOLSCALE
11	ENESCALE
12	MASSCALE
13	AO_01DEF
14	AO_02DEF
15	AO_03DEF
16	AO_04DEF
17	INTERVAL

Line Report Definition
Title: ENTRIES Name: ENTRY_3
Line # Name

1	GAS_DATA
2	ENERGY
3	METHANE
4	NITROGEN
5	CO2
6	ETHANE
7	PROPANE
8	WATER
9	H2S
10	HYDROGEN
11	CO
12	O2
13	IBUTANE
14	NBUTANE
15	IPENTANE
16	NPENTANE
17	NHEXANE
18	NHEPTANE
19	NOCTANE
20	NNONANE
21	NDECANE
22	HELIUM
23	ARGON

Line Report Definition
Title: NONRESET Name: NONRESET
Line # Name

1	=====
2	VOLUME
3	=====
4	NRSTOT1
5	NRSTOT2
6	NRSTOT3
7	NRSTOT
8	=====
9	ENERGY
10	=====
11	NRETOT1
12	NRETOT2
13	NRETOT3
14	NRETOT
15	=====
16	MASS
17	=====
18	NRMTOT1
19	NRMTOT2
20	NRMTOT3
21	NRMTOT

Table Report Definition

Title: MONTHLY REPORT Name: MON1

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 1						PAGE 1/4	
2	-----		-----		-----		-----	
3	TOT SCM		MS01	N	TOT JUL		ME01	N
4	TOT KG		MM01	N				
5	-----		-----		-----		-----	
6	MO1		INT1		INT31			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 1						PAGE 2/4	
2	-----		-----		-----		-----	
3	M01A		INT1		INT31			

Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 1						PAGE 3/4	
2	-----		-----		-----		-----	
3	M01B		INT1		INT31			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 1						PAGE 4/4	
2	-----		-----		-----		-----	
3	M01C		INT1		INT31			

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Table Report Definition

Title: MONTHLY REPORT Name: MON2

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER	2					PAGE	1/4
2	-----		-----		-----		-----	
3	TOT	SCM	MS02	N	TOT	JUL	ME02	N
4	TOT	KG	MM02	N				
5	-----		-----		-----		-----	
6	M02		INT1		INT31			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER	2					PAGE	2/4
2	-----		-----		-----		-----	
3	M02A		INT1		INT31			

Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER	2					PAGE	3/4
2	-----		-----		-----		-----	
3	M02B		INT1		INT31			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER	2					PAGE	4/4
2	-----		-----		-----		-----	
3	M02C		INT1		INT31			

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Table Report Definition

Title: MONTYLY REPORT Name: MON3

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 3						PAGE 1/4	
2	-----		-----		-----		-----	
3	TOT SCM		MS03	N	TOT JUL		ME03	N
4	TOT KG		MM03	N				
5	-----		-----		-----		-----	
6	M03		INT1		INT31			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER	3					PAGE	2/4
2	-----		-----		-----		-----	
3	M03A		INT1		INT31			

Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER	3					PAGE	3/4
2	-----		-----		-----		-----	
3	M03B		INT1		INT31			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER	3					PAGE	4/4
2	-----		-----		-----		-----	
3	M03C		INT1		INT31			

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Table Report Definition

Title: 24 HOUR HISTORY Name: HIS1

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 1						PAGE 1/4	
2	-----		-----		-----		-----	
3	TOT SCM		DS01	N	TOT JUL		DE01	N
4	TOT KG		DM01	N				
5	-----		-----		-----		-----	
6	HIS01		INT1		INT24			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 1						PAGE 2/4	
2	-----		-----		-----		-----	
3	HIS01A		INT1		INT24			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 1						PAGE 3/4	
2	-----		-----		-----		-----	
3	HIS01B		INT1		INT24			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 1						PAGE 4/4	
2	-----		-----		-----		-----	
3	HIS01C		INT1		INT24			

Table Report Definition

Title: 24 HOUR HISTORY Name: HIS2

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 2						PAGE 1/4	
2	-----		-----		-----		-----	
3	TOT SCM		DS02	N	TOT JUL		DE02	N
4	TOT KG		DM02	N				
5	-----		-----		-----		-----	
6	HIS02		INT1		INT24			

Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER	2					PAGE	2/4
2	-----		-----		-----		-----	
3	HIS02A		INT1		INT24			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER	2					PAGE	3/4
2	-----		-----		-----		-----	
3	HIS02B		INT1		INT24			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 2						PAGE 4/4	
2	-----		-----		-----		-----	
3	HIS02C		INT1		INT24			

Table Report Definition

Title: 24 HOUR HISTORY Name: HIS3

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 3						PAGE 1/4	
2	-----		-----		-----		-----	
3	TOT SCM		DS03	N	TOT JUL		DE03	N
4	TOT KG		DM03	N				
5	-----		-----		-----		-----	
6	HIS03		INT1		INT24			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 3						PAGE 2/4	
2	-----		-----		-----		-----	
3	HIS03A		INT1		INT24			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 3						PAGE 3/4	
2	-----		-----		-----		-----	
3	HIS03B		INT1		INT24			

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Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 3						PAGE 4/4	
2	-----		-----		-----		-----	
3	HIS03C		INT1		INT24			

Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 1							
2	-----		-----		-----		-----	
3	D01		INT1		INT1			
4	D01A		INT1		INT1			

Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER	2						
2	-----		-----		-----		-----	
3	D02		INT1		INT1			
4	D02A		INT1		INT1			

Table Report Definition

#	Data	Flags	Data	Flags	Data	Flags	Data	Flags
1	METER 3							
2	-----		-----		-----		-----	
3	D03		INT1		INT1			
4	D03A		INT1		INT1			

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Data Table Definition

Table #	Name	Units
1	TABLE18	

Data Table Row and Column Definition

Table Name: TABLE18

#	Row Name	1st Value	Row Incr	Col Name	1st Value	Col Incr
1	BETA	.100	.025	TAPTYP	1	1

Table Name: TABLE18		Data Table Value Entry					
#	BETA	1	2	TAPTYP	3	4	5
1	0.100	.607	.604				
2	0.125	.608	.604				
3	0.150	.611	.604				
4	0.175	.614	.604				
5	0.200	.618	.604				
6	0.225	.623	.605				
7	0.250	.628	.605				
8	0.275	.634	.606				
9	0.300	.641	.606				
10	0.325	.650	.607				
11	0.350	.658	.609				
12	0.375	.668	.610				
13	0.400	.680	.612				
14	0.425	.692	.614				
15	0.450	.707	.617				
16	0.475	.724	.620				
17	0.500	.742	.624				
18	0.525	.763	.628				
19	0.550	.785	.634				
20	0.575	.810	.640				
21	0.600	.837	.647				
22	0.625	.869	.656				
23	0.650	.904	.666				
24	0.675	.943	.679				
25	0.700	.988	.693				
26	0.725	.988	.710				
27	0.750	.988	.731				

Data Storage (Archiving) Definition

	Name	Size
1	GHFACTRS	3
2	DTDEBUG	2
3	GHSTATIC	3
4	GC	16
5	GHORF	3
6	GHRSH	3
7	GHORFM	3
8	GHDP	3
9	GHDP5	3
10	GHPRES	3
11	GHTEMP	3
12	NX19DATA	3
13	NX19DEBUG	3
14	NX19E	3
15	NX19ERR	99
16	GHFPV	3
17	FPV2500	3
18	STATIC1	3
19	GASCOEF	3
20	LIMFACT	3
21	FACTORS	3
22	GHY	3
23	GRI	1
24	GRIDATA	1
25	GHSINCR	3
26	GHSFRAC	3
27	GHSTIX	3
28	GHSL	3
29	GHEINCR	3
30	GHEFRAC	3
31	GHETIX	3
32	GHEL	3
33	GHRHOF	3
34	GHRHOB	3
35	GHMINCR	3
36	GHMFRAC	3
37	GHMTIX	3
38	GHML	3
39	GH4AVG	3
40	GHFWDIV	3
41	GHFWSUM	3
42	GHFWA	3
43	GHONFL	3
44	M01	31
45	M01A	31
46	M01B	31
47	M01C	31
48	C01	31
49	C01A	31
50	D01	1

Data Storage (Archiving) Definition

	Name	Size
51	D01A	1
52	M02	31
53	M02A	31
54	M02B	31
55	M02C	31
56	C02	31
57	C02A	31
58	D02	1
59	D02A	1
60	M03	31
61	M03A	31
62	M03B	31
63	M03C	31
64	C03	31
65	C03A	31
66	D03	1
67	D03A	1
68	PMLD	12
69	GHHSL	3
70	GHHEL	3
71	GHHML	3
72	GHHFWSUM	3
73	GHHFWDIV	3
74	GHHFWA	3
75	GHHONFL	3
76	CHLOG1	24
77	CHLOG1A	24
78	CHLOG2	24
79	CHLOG2A	24
80	CHLOG3	24
81	CHLOG3A	24
82	HIS01	24
83	HIS01A	24
84	HIS01B	24
85	HIS01C	24
86	HIS02	24
87	HIS02A	24
88	HIS02B	24
89	HIS02C	24
90	HIS03	24
91	HIS03A	24
92	HIS03B	24
93	HIS03C	24
94	QQ	24
95	REPQ	30
96	GCGASA	1
97	GCGASB	1
98	OPGASA	1
99	OPGASB	1

Data Storage Data Definition
Archive Data Name: GHFACTRS
Name Data Type

1	CPRIME	Floating
2	FB	Floating
3	FR	Floating
4	Y	Floating
5	FPB	Floating
6	FTB	Floating
7	FTF	Floating
8	FG	Floating
9	FPV	Floating
10	FA	Floating

Data Storage Data Definition
Archive Data Name: DTDEBUG
Name Data Type

1	FREQ	Floating
2	PERIOD	Floating
3	DI_DU	Floating
4	DT_00	Floating
5	DA_DPT	Floating
6	DC	Floating

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Data Storage Data Definition
Archive Data Name: GHSTATIC
Name Data Type

1	FB	Floating
2	SMALLB	Floating
3	YSUB	Floating

Data Storage Data Definition

Archive Data Name: GC

Name Data Type

1	CID	Integer
2	PCT	Floating

Data Storage Data Definition
Archive Data Name: GHORF
Name Data Type

1	ORIF	Floating
2	PIPE	Floating
3	TYPE	Integer
4	LOC	Integer

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Data Storage Data Definition

Archive Data Name: GHRSH

Name Data Type

1	RSHEAT	Floating
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Data Storage Data Definition

Archive Data Name: GHORFM

Name Data Type

1	ORIF	Floating
2	PIPE	Floating

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Data Storage Data Definition

Archive Data Name: GHDP

Name Data Type

1	DP	Floating
---	----	----------

Data Storage Data Definition

Archive Data Name: GHDFS

Name Data Type

1	ZEROSCAL	Floating
2	FULLSCAL	Floating

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Data Storage Data Definition

Archive Data Name: GHPRES

Name Data Type

1	PRES	Floating
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Data Storage Data Definition

Archive Data Name: GHTEMP

Name Data Type

1	TEMP	Floating
---	------	----------

Data Storage Data Definition
Archive Data Name: NX19DATA
Name Data Type

1	PI	Floating
2	TAU	Floating
3	RANGEX	Integer

Data Storage Data Definition
Archive Data Name: NX19DEBUG
Name Data Type

1	KT	Floating
2	FT	Floating
3	TADJ	Floating
4	KP	Floating
5	FP	Floating
6	PADJ	Floating

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Data Storage Data Definition

Archive Data Name: NX19E

Name Data Type

1	E	Floating
---	---	----------

Data Storage Data Definition
Archive Data Name: NX19ERR
Name Data Type

1	TEMP	Floating
2	PRES	Floating
3	GRAVITY	Floating
4	CO2	Floating
5	N2	Floating
6	FPV_CALC	Floating
7	FPV_FUNC	Floating

Data Storage Data Definition

Archive Data Name: GHFPV

Name Data Type

1	ZF	Floating
2	ZB	Floating
3	FPV	Floating

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Data Storage Data Definition
Archive Data Name: FPV2500
Name Data Type

1	FPV	Floating
---	-----	----------

Data Storage Data Definition
Archive Data Name: STATIC1
Name Data Type

1	BETA	Floating
2	BIGB	Floating
3	YSUB	Floating
4	E	Floating

Data Storage Data Definition
Archive Data Name: GASCOEF
Name Data Type

1	CD0	Floating
2	CD1	Floating
3	CD2	Floating
4	CD3	Floating
5	CD4	Floating

Data Storage Data Definition
Archive Data Name: LIMFACT
Name Data Type

1	FI	Floating
2	FIC	Floating
3	FIP	Floating

Data Storage Data Definition
Archive Data Name: FACTORS
Name Data Type

1	X	Floating
2	FC	Floating
3	DC	Floating
4	CD	Floating

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Data Storage Data Definition

Archive Data Name: GHY

Name Data Type

1	Y	Floating
---	---	----------

Data Storage Data Definition

Archive Data Name: GRI

Name Data Type

1	A	Floating
2	B	Floating
3	C	Floating
4	D	Floating
5	E	Floating
6	F	Floating
7	G	Floating
8	H	Floating
9	I	Floating
10	J	Floating
11	K	Floating
12	L	Floating
13	M	Floating
14	N	Floating
15	O	Floating
16	P	Floating
17	Q	Floating
18	R	Floating
19	S	Floating
20	T	Floating
21	U	Floating

Data Storage Data Definition
Archive Data Name: GRIDATA
Name Data Type

1	ZLINE	Floating
2	ZREF	Floating
3	FPV	Floating
4	DEN	Floating
5	SPECVOL	Floating
6	MOLARMSS	Floating
7	MOLARDEN	Floating
8	MOLARVOL	Floating
9	ERROR	Integer

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Data Storage Data Definition
Archive Data Name: GHSINCR
Name Data Type

1	INCR	Floating
2	RATE	Floating

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Data Storage Data Definition
Archive Data Name: GHSFRAC
Name Data Type

1	FRAC	Floating
---	------	----------

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Data Storage Data Definition

Archive Data Name: GHSTIX

Name Data Type

1	TICKS	Integer
---	-------	---------

Data Storage Data Definition

Archive Data Name: GHSL

Name Data Type

1	RATE	Floating
2	TOT	Integer
3	NRTOT	Integer

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Data Storage Data Definition
Archive Data Name: GHEINCR
Name Data Type

1	INCR	Floating
2	RATE	Floating

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Data Storage Data Definition
Archive Data Name: GHEFRAC
Name Data Type

1	FRAC	Floating
---	------	----------

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Data Storage Data Definition
Archive Data Name: GHETIX
Name Data Type

1	TICKS	Integer
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Data Storage Data Definition

Archive Data Name: GHEL

Name Data Type

1	RATE	Floating
2	TOT	Integer
3	NRTOT	Integer

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Data Storage Data Definition

Archive Data Name: GHRHOF

Name Data Type

1	RHO	Floating
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Data Storage Data Definition

Archive Data Name: GHRHOB

Name Data Type

1	RHOB	Floating
---	------	----------

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Data Storage Data Definition
Archive Data Name: GHMINCR
Name Data Type

1	INCR	Floating
2	RATE	Floating

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Data Storage Data Definition
Archive Data Name: GHMFRAC
Name Data Type

1	FRAC	Floating
---	------	----------

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Data Storage Data Definition
Archive Data Name: GHMTIX
Name Data Type

1	TICKS	Integer
---	-------	---------

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Data Storage Data Definition

Archive Data Name: GHML

Name Data Type

1	RATE	Floating
2	TOT	Integer
3	NRTOT	Integer

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Data Storage Data Definition

Archive Data Name: GH4AVG

Name Data Type

1	DP	Floating
2	PRES	Floating

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Data Storage Data Definition
Archive Data Name: GHFWDIV
Name Data Type

1	RATE	Floating
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Data Storage Data Definition
Archive Data Name: GHFWSUM
Name Data Type

1	DP	Floating
2	GRAV	Floating
3	TEMP	Floating
4	PRES	Floating
5	BTU	Floating
6	N2	Floating
7	CO2	Floating
8	RHO	Floating
9	SQR_PRES	Floating
10	SQR_DP	Floating
11	SQR_RHO	Floating

Data Storage Data Definition

Archive Data Name: GHFWA

Name Data Type

1	DP	Floating
2	GRAV	Floating
3	TEMP	Floating
4	PRES	Floating
5	BTU	Floating
6	NA	Floating
7	NA	Floating
8	RHO	Floating
9	SQR_PRES	Floating
10	SQR_DP	Floating
11	SQR_RHO	Floating

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Data Storage Data Definition

Archive Data Name: GHONFL

Name Data Type

1	ONFLOW	Floating
---	--------	----------

Data Storage Data Definition

Archive Data Name: M01

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: M01A

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating

Data Storage Data Definition

Archive Data Name: M01B

Name Data Type

1	STAMP	Integer
2	BTU	Floating
3	NA	Floating
4	NA	Floating
5	RHO	Floating

Data Storage Data Definition

Archive Data Name: M01C

Name Data Type

1	STAMP	Integer
2	SQR_PRES	Floating
3	SQR_DP	Floating
4	SQR_RHO	Floating
5	ONLFLOW	Floating

Data Storage Data Definition

Archive Data Name: C01

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating
6	BTU	Floating
7	NA	Floating
8	NA	Floating
9	RHO	Floating
10	SQR_PRES	Floating
11	SQR_DP	Floating
12	SQR_RHO	Floating
13	ONFLOW	Floating

Data Storage Data Definition

Archive Data Name: C01A

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: D01

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating
6	BTU	Floating
7	NA	Floating
8	NA	Floating
9	RHO	Floating
10	SQR_PRES	Floating
11	SQR_DP	Floating
12	SQR_RHO	Floating
13	ONFLOW	Floating

Data Storage Data Definition

Archive Data Name: D01A

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: M02

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: M02A

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating

Data Storage Data Definition

Archive Data Name: M02B

Name Data Type

1	STAMP	Integer
2	BTU	Floating
3	NA	Floating
4	NA	Floating
5	RHO	Floating

Data Storage Data Definition

Archive Data Name: M02C

Name Data Type

1	STAMP	Integer
2	SQR_PRES	Floating
3	SQR_DP	Floating
4	SQR_RHO	Floating
5	ONFLOW	Floating

Data Storage Data Definition

Archive Data Name: C02

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating
6	BTU	Floating
7	NA	Floating
8	NA	Floating
9	RHO	Floating
10	SQR_PRES	Floating
11	SQR_DP	Floating
12	SQR_RHO	Floating
13	ONFLOW	Floating

Data Storage Data Definition

Archive Data Name: C02A

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: D02

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating
6	BTU	Floating
7	NA	Floating
8	NA	Floating
9	RHO	Floating
10	SQR_PRES	Floating
11	SQR_DP	Floating
12	SQR_RHO	Floating
13	ONFLOW	Floating

Data Storage Data Definition

Archive Data Name: D02A

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: M03

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: M03A

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating

Data Storage Data Definition

Archive Data Name: M03B

Name Data Type

1	STAMP	Integer
2	BTU	Floating
3	NA	Floating
4	NA	Floating
5	RHO	Floating

Data Storage Data Definition

Archive Data Name: M03C

Name Data Type

1	STAMP	Integer
2	SQR_PRES	Floating
3	SQR_DP	Floating
4	SQR_RHO	Floating
5	ONFLOW	Floating

Data Storage Data Definition

Archive Data Name: C03

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating
6	BTU	Floating
7	NA	Floating
8	NA	Floating
9	RHO	Floating
10	SQR_PRES	Floating
11	SQR_DP	Floating
12	SQR_RHO	Floating
13	ONFLOW	Floating

Data Storage Data Definition

Archive Data Name: C03A

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: D03

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating
6	BTU	Floating
7	NA	Floating
8	NA	Floating
9	RHO	Floating
10	SQR_PRES	Floating
11	SQR_DP	Floating
12	SQR_RHO	Floating
13	ONFLOW	Floating

Data Storage Data Definition

Archive Data Name: D03A

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

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Data Storage Data Definition

Archive Data Name: PMLD

Name Data Type

1	MONTH	Integer
2	DAY	Integer

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Data Storage Data Definition
Archive Data Name: GHSL
Name Data Type

1	TOTAL	Integer
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Data Storage Data Definition
Archive Data Name: GHHEL
Name Data Type

1	TOTAL	Integer
---	-------	---------

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Data Storage Data Definition
Archive Data Name: GHHML
Name Data Type

1	TOTAL	Integer
---	-------	---------

Data Storage Data Definition
Archive Data Name: GHHFWSUM
Name Data Type

1	DP	Floating
2	GRAV	Floating
3	TEMP	Floating
4	PRES	Floating
5	BTU	Floating
6	N2	Floating
7	CO2	Floating
8	RHO	Floating
9	SQR_PRES	Floating
10	SQR_DP	Floating
11	SQR_RHO	Floating

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Data Storage Data Definition
Archive Data Name: GHHFWDIV
Name Data Type

1	DIV	Floating
---	-----	----------

Data Storage Data Definition

Archive Data Name: GHFWA

Name Data Type

1	DP	Floating
2	GRAV	Floating
3	TEMP	Floating
4	PRES	Floating
5	BTU	Floating
6	NA	Floating
7	NA	Floating
8	RHO	Floating
9	SQR_PRES	Floating
10	SQR_DP	Floating
11	SQR_RHO	Floating

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Data Storage Data Definition
Archive Data Name: GHHONFL
Name Data Type

1	ONFLOW	Floating
---	--------	----------

Data Storage Data Definition

Archive Data Name: CHLOG1

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating
6	BTU	Floating
7	NA	Floating
8	NA	Floating
9	RHO	Floating
10	SQR_PRES	Floating
11	SQR_DP	Floating
12	SQR_RHO	Floating
13	ONFLOW	Floating

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Data Storage Data Definition
Archive Data Name: CHLOG1A
Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition
Archive Data Name: CHLOG2
Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating
6	BTU	Floating
7	NA	Floating
8	NA	Floating
9	RHO	Floating
10	SQR_PRES	Floating
11	SQR_DP	Floating
12	SQR_RHO	Floating
13	ONFLOW	Floating

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Data Storage Data Definition
Archive Data Name: CHLOG2A
Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: CHLOG3

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating
6	BTU	Floating
7	NA	Floating
8	NA	Floating
9	RHO	Floating
10	SQR_PRES	Floating
11	SQR_DP	Floating
12	SQR_RHO	Floating
13	ONFLOW	Floating

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Data Storage Data Definition
Archive Data Name: CHLOG3A
Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: HIS01

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: HIS01A

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating

Data Storage Data Definition
Archive Data Name: HIS01B
Name Data Type

1	STAMP	Integer
2	BTU	Floating
3	NA	Floating
4	NA	Floating
5	RHO	Floating

Data Storage Data Definition

Archive Data Name: HIS01C

Name Data Type

1	STAMP	Integer
2	SQR_PRES	Floating
3	SQR_DP	Floating
4	SQR_RHO	Floating
5	ONFLOW	Floating

Data Storage Data Definition

Archive Data Name: HIS02

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: HIS02A

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating

Data Storage Data Definition

Archive Data Name: HIS02B

Name Data Type

1	STAMP	Integer
2	BTU	Floating
3	NA	Floating
4	NA	Floating
5	RHO	Floating

Data Storage Data Definition

Archive Data Name: HIS02C

Name Data Type

1	STAMP	Integer
2	SQR_PRES	Floating
3	SQR_DP	Floating
4	SQR_RHO	Floating
5	ONFLOW	Floating

Data Storage Data Definition

Archive Data Name: HIS03

Name Data Type

1	STAMP	Integer
2	VOLUME	Integer
3	ENERGY	Integer
4	MASS	Integer

Data Storage Data Definition

Archive Data Name: HIS03A

Name Data Type

1	STAMP	Integer
2	DP	Floating
3	GRAV	Floating
4	TEMP	Floating
5	PRES	Floating

Data Storage Data Definition

Archive Data Name: HIS03B

Name Data Type

1	STAMP	Integer
2	BTU	Floating
3	NA	Floating
4	NA	Floating
5	RHO	Floating

Data Storage Data Definition

Archive Data Name: HIS03C

Name Data Type

1	STAMP	Integer
2	SQR_PRES	Floating
3	SQR_DP	Floating
4	SQR_RHO	Floating
5	ONFLOW	Floating

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Data Storage Data Definition

Archive Data Name: QQ

Name Data Type

1	PUSH_REC	Integer
---	----------	---------

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Data Storage Data Definition

Archive Data Name: REPQ

Name Data Type

1	QUEUED	Integer
---	--------	---------

Data Storage Data Definition

Archive Data Name: GCGASA

Name Data Type

1	A	Floating
2	B	Floating
3	C	Floating
4	D	Floating
5	E	Floating
6	F	Floating
7	G	Floating
8	H	Floating
9	I	Floating
10	J	Floating
11	K	Floating
12	L	Floating
13	M	Floating
14	N	Floating
15	O	Floating
16	P	Floating
17	Q	Floating
18	R	Floating
19	S	Floating
20	T	Floating
21	U	Floating

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Data Storage Data Definition
Archive Data Name: GCGASB
Name Data Type

1	ENERGY	Floating
---	--------	----------

Data Storage Data Definition

Archive Data Name: OPGASA

Name Data Type

1	A	Floating
2	B	Floating
3	C	Floating
4	D	Floating
5	E	Floating
6	F	Floating
7	G	Floating
8	H	Floating
9	I	Floating
10	J	Floating
11	K	Floating
12	L	Floating
13	M	Floating
14	N	Floating
15	O	Floating
16	P	Floating
17	Q	Floating
18	R	Floating
19	S	Floating
20	T	Floating
21	U	Floating

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Data Storage Data Definition

Archive Data Name: OPGASB

Name Data Type

1	ENERGY	Floating
---	--------	----------

Boolean Variable Communications Definition
Note: The protocol adds 1000 to these index numbers

Index #	Name	SubField
1	FT_01H	Man/Var
2	FT_01L	Man/Var
3	TT_01	Man/Var
4	PT_01	Man/Var
5	FT_02H	Man/Var
6	FT_02L	Man/Var
7	TT_02	Man/Var
8	PT_02	Man/Var
9	FT_03H	Man/Var
10	FT_03L	Man/Var
11	TT_03	Man/Var
12	PT_03	Man/Var
13	TT_04	Man/Var
14	PT_04	Man/Var
15	R1000	Man/Var
16	R1000	Man/Var
17	R1000	Man/Var
18	R1000	Man/Var
19	AO_01	Man/Var
20	AO_02	Man/Var
21	AO_03	Man/Var
22	AO_04	Man/Var
23	STATUS1	
24	STATUS2	
25	STATUS3	
26	STATUS4	
27	STATUS5	
28	STATUS6	
29	STATUS7	
30	STATUS8	
31	STATUS9	
32	STATUS10	
33	STATUS11	
34	STATUS12	
35	STATUS13	
36	STATUS14	
37	STATUS15	
38	STATUS16	
39	STATUS17	
40	STATUS18	
41	STATUS19	
42	STATUS20	
43	STATUS21	
44	STATUS22	
45	STATUS23	
46	STATUS24	
47	CO14	
48	CO15	
49	CO16	
50	CO17	

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Boolean Variable Communications Definition

Note: The protocol adds 1000 to these index numbers

Index # Name SubField

51	C018
52	C019
53	C020
54	C021
55	C022
56	C023
57	C024

Long Integer Variable Communications Definition
Note: The protocol adds 5000 to these index numbers
Index # Name SubField

1	STOT1	
2	STOT2	
3	STOT3	
4	STOT	
5	NRSTOT1	
6	NRSTOT2	
7	NRSTOT3	
8	NRSTOT	
9	ETOT1	
10	ETOT2	
11	ETOT3	
12	ETOT	
13	NRETOT1	
14	NRETOT2	
15	NRETOT3	
16	NRETOT	
17	MTOT1	
18	MTOT2	
19	MTOT3	
20	MTOT	
21	NRMTOT1	
22	NRMTOT2	
23	NRMTOT3	
24	NRMTOT	
25	METERS	
26	FTTYPE1	
27	R5000	
28	TAPLOC1	
29	FTTYPE2	
30	R5000	
31	TAPLOC2	
32	FTTYPE3	
33	R5000	
34	TAPLOC3	
35	ORIF_MTL	
36	VOLSCALE	
37	ENESCALE	
38	MASSCALE	
39	TT_LOC	
40	PT_LOC	
41	R5000	
42	R5000	
43	R5000	
44	R5000	
45	R5000	
46	R5000	
47	AO_01DEF	
48	AO_02DEF	
49	AO_03DEF	
50	AO_04DEF	

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Long Integer Variable Communications Definition
Note: The protocol adds 5000 to these index numbers
Index # Name SubField

51	R5000	
52	STREAMID	
53	INTERVAL	

Floating Point Variable Communications Definition
Note: The protocol adds 7000 to these index numbers
Index # Name SubField

1	FT_01H	
2	FT_01L	
3	TT_01	
4	PT_01	
5	FT_02H	
6	FT_02L	
7	TT_02	
8	PT_02	
9	FT_03H	
10	FT_03L	
11	TT_03	
12	PT_03	
13	TT_04	
14	PT_04	
15	R7000	
16	R7000	
17	R7000	
18	R7000	
19	AO_01	
20	AO_02	
21	AO_03	
22	AO_04	
23	SFR1	
24	SFR2	
25	SFR3	
26	SFR	
27	EFR1	
28	EFR2	
29	EFR3	
30	EFR	
31	MFR1	
32	MFR2	
33	MFR3	
34	MFR	
35	R7000	
36	CO2	
37	N2	
38	ENERGY	
39	RHO	
40	CONTRACT	
41	TEMPBASE	
42	PRESBASE	
43	RSHEAT	
44	PIPE1	
45	ORIF1	
46	PIPE2	
47	ORIF2	
48	PIPE3	
49	ORIF3	
50	BAROPRES	

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Floating Point Variable Communications Definition
Note: The protocol adds 7000 to these index numbers
Index # Name SubField

51	DPCUTOFF	
52	ORIFMEAS	
53	SAMPLE	
54	PIPEMEAS	

MODBUS Slave Archive Definition

Note: The protocol adds 700 to these index numbers

Index # Archive Name

1	M01
2	M01A
3	M01B
4	M01C
5	M02
6	M02A
7	M02B
8	M02C
9	M03
10	M03A
11	M03B
12	M03C
13	HIS01
14	HIS01A
15	HIS01B
16	HIS01C
17	HIS02
18	HIS02A
19	HIS02B
20	HIS02C
21	HIS03
22	HIS03A
23	HIS03B
24	HIS03C

MODBUS Remote Unit Definition

#	Name	Comm Addr	State	Control
1	GC2251	GCADR	GCSTATE	GCCNTRL
2				

MODBUS Remote Variable Definition

Unit Name: GC2251

#	Name	Units	Register	Xmit/Rec
1	GCSTART1		3045	Receive
2	GCC1		3001	Receive
3	GCC2		3002	Receive
4	GCC3		3003	Receive
5	GCC4		3004	Receive
6	GCC5		3005	Receive
7	GCC6		3006	Receive
8	GCC7		3007	Receive
9	GCC8		3008	Receive
10	GCC9		3009	Receive
11	GCCA		3010	Receive
12	GCCB		3011	Receive
13	GCCC		3012	Receive
14	GCCD		3013	Receive
15	GCC E		3014	Receive
16	GCC F		3015	Receive
17	GCC0		3016	Receive
18	GCSTREAM		3034	Receive
19	GICALARM1		3046	Receive
20	GICALARM2		3047	Receive
21	GCCALFLG		3059	Receive
22	GCP1		7001	Receive
23	GCP2		7002	Receive
24	GCP3		7003	Receive
25	GCP4		7004	Receive
26	GCP5		7005	Receive
27	GCP6		7006	Receive
28	GCP7		7007	Receive
29	GCP8		7008	Receive
30	GCP9		7009	Receive
31	GCPA		7010	Receive
32	GCPB		7011	Receive
33	GCP C		7012	Receive
34	GCPD		7013	Receive
35	GCP E		7014	Receive
36	GCP F		7015	Receive
37	GCP0		7016	Receive
38	GCBTU		7033	Receive
39	GCBTUS		7034	Receive
40	GCGRAV		7035	Receive
41	GCUNNORM		7038	Receive
42	GCSTART2		3045	Receive

System Variable Override Definition

Name	Units	Default	Description
1 UNITID		0	Unit Identification
2 COMMID		1	Communications Identification
3 COMMID2		1	Communications Identification
4 LOGGER		No Log	Logging
5 BAUD1		1200	Baud Rate - Port 1
6 BAUD2		9600	Baud Rate - Port 2
7 BAUD3		1200	Baud Rate - Port 3
8 PORTUSE1		Reports	Usage - Port 1
9 PORTUSE2		Slave	Usage - Port 2
10 PORTUSE3		Master	Usage - Port 3
11 PARITY1		Even	Parity - Port 1
12 PARITY2		Even	Parity - Port 2
13 PARITY3		Even	Parity - Port 3
14 STOPBIT1		1	Stop Bits - Port 1
15 STOPBIT2		1	Stop Bits - Port 2
16 STOPBIT3		1	Stop Bits - Port 3
17 PRTCLSLV		ModAscii	Slave Protocol
18 PRTCLSL2		ModAscii	Slave #2 Protocol
19 PRTCLMAS		ModAscii	Master Protocol
20 RPTGAP		Spaces	Report Gap
21 COMMWAIT	10ms	20	Comm Wait
22 COMWAIT2	10ms	20	Comm Wait Slave #2
23 EVENTLOG		0	Number of MB Event Log Entries
24 TYPEVNTS		Old_18	MB Event Length 18 or 22
25 MODITOFFP		No	Allow Int/Seln Vars in FP Regs

Calculation Sheet Title Entry

Sheet #	Sheet Title	Calc Type
1	DESCRIPTION	Startup
2	STARTUP 1	Startup
3	STARTUP 2	Startup
4	STARTUP 3	Startup
5	STARTUP 4	Startup
6	STARTUP 5	Startup
7	STARTUP 6	Startup
8	DANIEL GC	Startup
9	CALENDAR STARTUP	Startup
10	OPERATOR ENTRY 1	Operator
11	OPERATOR ENTRY 2	Operator
12	EXECUTIVE	Normal
13	CALENDAR	Normal
14	CLEAR ALL	Normal
15	CLEAR TOTALS	Normal
16	CLEAR HOUR	Normal
17	CLEAR DAY	Normal
18	DANIEL GC WARM	Normal
19	DANIEL GC SEQ 1	Normal
20	DANIEL GC SEQ 2A	Normal
21	DANIEL GC SEQ 2B	Normal
22	DANIEL GC SEQ 3	Normal
23	GC GAS DATA	Normal
24	OP GAS DATA	Normal
25	GAS DATA SOURCE	Normal
26	METER INPUTS	Normal
27	HEADER INPUTS	Normal
28	DP INPUTS	Normal
29	DP CUTOFF	Normal
30	SELECT UNITS	Normal
31	STATIC 1	Normal
32	STATIC 2	Normal
33	AGA8-92 RHOF	Normal
34	RHOB, GRAVITY	Normal
35	FLOW FACTOR	Normal
36	ORIF COEF	Normal
37	MASS INCR	Normal
38	VOL INCR	Normal
39	VOL TOTAL	Normal
40	ENERGY INCR	Normal
41	ENERGY TOTAL	Normal
42	MASS TOTAL	Normal
43	VOLUME	Normal
44	ENERGY	Normal
45	MASS	Normal
46	SAMPLER	Normal
47	ANALOG OUTPUT 1	Normal
48	ANALOG OUTPUT 2	Normal
49	ANALOG OUTPUT 3	Normal
50	ANALOG OUTPUT 4	Normal

Calculation Sheet Title Entry

Sheet #	Sheet Title	Calc Type
51	GAS DAILY AVG	Normal
52	GAS HOURLY AVG	Normal
53	GAS HOURLY TOTAL	Normal
54	REPORT EXECUTIVE	Normal
55	EVENT EXECUTIVE	Normal
56	HOURLY 01	Normal
57	HOURLY 02	Normal
58	HOURLY 03	Normal
59	MONTHLY 01	Normal
60	MONTHLY 01A	Normal
61	MONTHLY 02	Normal
62	MONTHLY 02A	Normal
63	MONTHLY 03	Normal
64	MONTHLY 03A	Normal
65	DAILY	Normal
66	DAILY 01	Normal
67	DAILY 02	Normal
68	DAILY 03	Normal
69	INTERVAL REPORT	Normal
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
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91		
92		
93		
94		
95		
96		
97		
98		
99		

Calculation Entry

I#	Calculation Statements	Title: DESCRIPTION	Type: Startup	Units
1	{	METRIC GAS_ORIF		
2				
3	{	CALCULATES VOLUME, MASS, AND ENERGY FLOW THRU UP TO 3		
4	{	ORIFICE RUNS		
5	{	CALCULATES USING AGA3 1992 AND AGA8 1992 (DETAILED METHOD)		
6				
7	{	X0017511		
8	{	CUSTOMIZED VERSION OF 50017510		
9	{	ADDED CAPABILITY TO CALCULATE AGA8-1992 DETAIL USING ALL		
10	{	21 COMPONENTS. OPERATOR SELECTION "GAS_DATA" ADDED TO		
11	{	USE COMPONENTS FROM GC OR OPERATOR. OPERATOR SELECTION		
12	{	"GAS_OP" ADDED TO STORE OPERATOR ENTERED COMPONENT DATA.		
13	{	"GAS_ERR" ALARM IS SET TO FLAG SUM OF OPERATOR COMPONENTS		
14	{	NOT EQUAL TO 1.0.		
15	{	UNUSED FREQUENCY DENSITOMETERS, UNUSED ANALOG INPUTS, AND		
16	{	UNUSED OPERATOR ENTRIES WERE REMOVED TO MAKE ROOM FOR THE		
17	{	ABOVE.		
18	{	AUG 2000		
19				
20	{	X0017512		
21	{	CORRECTED ERROR IN CALCULATING BASE AND FLOWING DENSITY		
22	{	MADE SEPARATE OPERATOR ENTRIES TO DEFINE ORIFICE AND PIPE		
23	{	MEASUREMENT TEMPERATURE AND MATERIAL		
24	{	AUG 2000		
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				

Calculation Entry

Title: STARTUP 1 Type: Startup

I#	Calculation Statements	Units
1		
2		
3		
4		
5	RESET (WATCHDOG)	
6	RESET (POWRFAIL)	
7	GHTUBES = 1	
8	YES = 1	
9	NO = 0	
10	ORIF = 0.0	
11	PIPE = 0.0	
12	HEAT = 0.0	
13	TYP = 1	
14	LOC = 1	
15	GRAVX = 0.0	
16	DENX = 0.0	
17	TEMPX = 0.0	
18	T\$ = 0.0	
19	PRESX = 0.0	
20	P\$ = 0.0	
21	DPX = 0.0	
22	CUTX = 0.0	
23	CO2X = 0.0	
24	N2X = 0.0	
25	BTUX = 0.0	
26	NRTOT = 0	
27	TOT = 0	
28	RATEX = 0.0	
29	RATE\$ = 0.0	
30	INCR = 0.0	
31	FRAC = 0.0	
32	CURRHOUR = HOUR	
33	OEMN = 1.0E-8	
34	OEMX = 1.0E8	
35	ON = 1	
36	OFF = 2	
37	SEQUENCE = 1	
38	FWDIV = 0.0	
39	PRINTDLY = 0.0	
40	PRINTSEQ = 0	
41	CLEARHH = 2	
42	CLEARDD = 2	
43	SAMPFRAC = 0.0	
44	IOCYCLE = 0.0	
45		
46		
47		
48		
49		
50		

Calculation Entry

Title: STARTUP 2 Type: Startup

I#	Calculation Statements	Units
1		
2		
3		
4		
5	GCADR =1	
6	IDLE = 1	
7	ACTIVE = 2	
8	FAULT = 3	
9	GCTRIES = 0	
10	CX = 0	
11	PX = 0.0	
12	WAIT1 = NO	
13	SUSPEND1 = 1	
14	PRINTALR = NO	
15	SELECT = 4	
16	NTERVAL = 0	
17	ONFLX = 0.0	
18	SOLRHOS = 0.0	
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
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37		
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41		
42		
43		
44		
45		
46		
47		
48		
49		
50		

Calculation Entry

Title: STARTUP 3 Type: Startup

I#	Calculation Statements	Units
1		
2		
3		
4		
5	I = 0	
6	I0 = 0 { CAUTION***THIS SHOULD ALWAYS BE = 0	
7	I1 = 0	
8	I2 = 0	
9	I3 = 0	
10	I4 = 0	
11		
12	INT1 = 1 { CAUTION***THIS IS A CONSTANT	
13	INT24 = 24	
14	INT31 = 31	
15		
16	F0 = 0.0 { CAUTION***THIS SHOULD ALWAYS BE = 0.0	
17	F1 = 0.0	
18	F2 = 0.0	
19	F3 = 0.0	
20	F4 = 0.0	
21	F5 = 0.0	
22	F6 = 0.0	
23	F7 = 0.0	
24	F8 = 0.0	
25	F9 = 0.0	
26	FA = 0.0	
27	FB = 0.0	
28	FC = 0.0	
29	FD = 0.0	
30	FE = 0.0	
31	FF = 0.0	
32		
33	NA = 0	
34		
35	TEN3 = 1000.0	
36	TEN6 = 1000000.0	
37		
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Calculation Entry

Title: STARTUP 4 Type: Startup

I#	Calculation Statements	Units
1		
2		
3	TOT1 = 0	
4	TOT2 = 0	
5	GCSEQ = 1	
6	STREAMID = 1	
7		
8	CIDX = 0	
9	CH4X = 0.0	
10	O2X = 0.0	
11	PX = 0.0	
12		
13	RATE1 = 0.0	
14	RATE2 = 0.0	
15	TEMP1 = 0.0	
16	TEMP2 = 0.0	
17	PRES1 = 0.0	
18	PRES2 = 0.0	
19		
20	GCSTART = 0	
21		
22	RANGE = 0	
23	RANGEX = 0	
24		
25	SFR01_P = 0	
26	SFR02_P = 0	
27	SFR1_P = 0	
28	SFR2_P = 0	
29	E01_P = 0	
30	E02_P = 0	
31		
32		
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Calculation Entry

Title: STARTUP 5 Type: Startup

I#	Calculation Statements	Units
1		
2		
3		
4		
5	ETOT1 = 0	
6	ETOT2 = 0	
7	ETOT3 = 0	
8	ETOT = 0	
9		
10	MTOT1 = 0	
11	MTOT2 = 0	
12	MTOT3 = 0	
13	MTOT = 0	
14		
15	STOT1 = 0	
16	STOT2 = 0	
17	STOT3 = 0	
18	STOT = 0	
19		
20	TICK1 = 0	
21	TICK2 = 0	
22	TICK3 = 0	
23		
24	NRSTOT1 = 0	
25	NRSTOT2 = 0	
26	NRSTOT3 = 0	
27	NRSTOT = 0	
28		
29	NRETOT1 = 0	
30	NRETOT2 = 0	
31	NRETOT3 = 0	
32	NRETOT = 0	
33		
34	NRMTOT1 = 0	
35	NRMTOT2 = 0	
36	NRMTOT3 = 0	
37	NRMTOT = 0	
38		
39	TUBE = 1	
40	PUT (NX19DATA, TUBE, F1, F1, I1)	
41	TUBE = TUBE + 1	
42	IF (TUBE <= GHTUBES) GOTO 40	
43		
44		
45		
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Calculation Entry

Title: STARTUP 6 Type: Startup

I#	Calculation Statements	Units
1		
2		
3		
4		
5	RESET (R1000)	
6	R3000 = 0	
7	R5000 = 0	
8	R7000 = 0.0	
9	TEN2 = 100.0	
10	SMALLE = 2.71828	
11	RHOBX = 0.0	
12	ERROR = 0	
13	RHOFX = 0.0	
14	FPVX = 0.0	
15	ZBX = 0.0	
16	ZFX = 0.0	
17	BTUX = 0.0	
18	BTU\$ = 0.0	
19		
20		
21		
22		
23		
24		
25		
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29		
30		
31		
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Calculation Entry

Title: DANIEL GC Type: Startup

I#	Calculation Statements	Units
1		
2		
3		
4		
5	GCADR = 1	
6	GCTRIES = 1	
7	GCSEQ = 3	
8	GCIDLE = 1	
9	GCACTIVE = 2	
10	GCFAULT = 3	
11		
12	CIDX = 0	
13	PCTX = 0.0	
14		
15		
16		
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Calculation Entry

Title: CALENDAR STARTUP Type: Startup

I#	Calculation Statements	Units
1		
2		
3		
4		
5	CURRTIME = (HOUR * 100) + MINUTE	
6		
7	PUT (PMLD, 1,12,31)	
8	PUT (PMLD, 2, 1,31)	
9	PUT (PMLD, 4, 3,31)	
10	PUT (PMLD, 5, 4,30)	
11	PUT (PMLD, 6, 5,31)	
12	PUT (PMLD, 7, 6,30)	
13	PUT (PMLD, 8, 7,31)	
14	PUT (PMLD, 9, 8,31)	
15	PUT (PMLD,10, 9,30)	
16	PUT (PMLD,11,10,31)	
17	PUT (PMLD,12,11,30)	
18		
19	DATEX = 0	
20		
21		
22		
23		
24		
25		
26		
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Calculation Entry

Title: OPERATOR ENTRY 1 Type: Operator

I#	Calculation Statements	Units
1		
2		
3		
4		
5	OE\$ = CLIP (CONTRACT,0.0,23.0)	
6	OE\$ = TRUNC (CONTRACT)	
7	DAYBEGIN = FIX (OE\$)	
8	DAYSTART = FIX (OE\$)	
9	CONTRACT = OE\$	
10		
11	I = INTERVAL	
12	IF (I = 1) J = 1	
13	IF (I = 2) J = 2	
14	IF (I = 3) J = 3	
15	IF (I = 4) J = 4	
16	IF (I = 5) J = 6	
17	IF (I = 6) J = 8	
18	IF (I = 7) J = 12	
19	INTERVAL = J	
20		
21	I = VOLSCALE - 1	
22	SCFSF = 10.0 ^ I	
23		
24	I = ENESCALE - 1	
25	BTUSF = 10.0 ^ I	
26		
27	I = MASSCALE - 1	
28	LBSF = 10.0 ^ I	
29		
30	BARO\$ = BAROPRES * 0.980650 { KCM2 TO BAR	
31		
32	HEAT\$ = RSHEAT	
33		
34	I = STREAMID	
35	OE\$ = FLOAT (I)	
36	OE\$ = CLIP (OE\$,1.0,5.0)	
37	STREAMID = FIX (OE\$)	
38	STREAM\$ = FIX (OE\$)	
39		
40		
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Calculation Entry

Title: OPERATOR ENTRY 2 Type: Operator

I#	Calculation Statements	Units
1		
2		
3		
4		
5	TBASE\$ = TEMPBASE	{ DEGC
6	PBASE\$ = PRESBASE * 0.980650	{ KCM2 TO BAR
7		
8	FTB = (TBASE\$ + 460.0) / 520.0	
9	FPB = 14.73 / PBASE\$	
10		
11	PUT (GHORF,1,ORIF1,PIPE1,0,TAPLOC1)	
12	PUT (GHORF,2,ORIF2,PIPE2,0,TAPLOC2)	
13	PUT (GHORF,3,ORIF3,PIPE3,0,TAPLOC3)	
14		
15	IF (ORIF_MTL = 1) ORIFALF\$ = 0.0000167	
16	IF (ORIF_MTL = 2) ORIFALF\$ = 0.0000167	
17	IF (ORIF_MTL = 3) ORIFALF\$ = 0.0000143	
18	IF (ORIF_MTL = 4) ORIFALF\$ = 0.0000112	
19		
20	IF (PIPE_MTL = 1) PIPEALF\$ = 0.0000167	
21	IF (PIPE_MTL = 2) PIPEALF\$ = 0.0000167	
22	IF (PIPE_MTL = 3) PIPEALF\$ = 0.0000143	
23	IF (PIPE_MTL = 4) PIPEALF\$ = 0.0000112	
24		
25	I = METERS	
26	OE\$ = FLOAT (I)	
27	OE\$ = CLIP (OE\$,1.0,3.0)	
28	METERS = FIX (OE\$)	
29	GHTUBES = FIX (OE\$)	
30	METERS\$ = FIX (OE\$)	
31		
32	AGA3\$ = 3	
33		
34	IF (MONTHLY = 1) GOTO NEXT	
35	PUT (REPO,1,1)	
36	PUT (REPO,2,1)	
37	PUT (REPO,3,1)	
38	PUT (REPO,4,1)	
39	IF (GHTUBES > 1) PUT (REPO,5,1)	
40	IF (GHTUBES > 1) PUT (REPO,6,1)	
41	IF (GHTUBES > 1) PUT (REPO,7,1)	
42	IF (GHTUBES > 1) PUT (REPO,8,1)	
43	IF (GHTUBES > 2) PUT (REPO,9,1)	
44	IF (GHTUBES > 2) PUT (REPO,10,1)	
45	IF (GHTUBES > 2) PUT (REPO,11,1)	
46	IF (GHTUBES > 2) PUT (REPO,12,1)	
47	MONTHLY = 1	
48		
49		
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Calculation Entry
Title: EXECUTIVE Type: Normal
I# Calculation Statements Units

1
2
3
4
5 IF (POWRFAIL) SET (WARM)
6
7 RESET (WATCHDOG)
8 RESET (POWRFAIL)
9
10 IOCYCLE = FLOAT (IOTIME) / 1000.0
11 IOCYCLE = IOCYCLE
12
13 IF (PRINTDLY > 0.0) PRINTDLY = PRINTDLY - IOCYCLE
14
15 GOTO NEXT
16
17
18
19
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Calculation Entry		
Title: CALENDAR		Type: Normal
I#	Calculation Statements	Units
1		
2		
3		
4		
5	CMINUTE = MINUTE	
6	CMONTH = MONTH	
7	CDAY = DAY	
8	CYEAR = YEAR	
9	CHOUR = HOUR	
10		
11	IF (CMINUTE <> MINUTE) GOTO 5	
12		
13	PDYY = CYEAR	
14	IF (CMONTH = 1) AND (CDAY = 1) PDYY = CYEAR - 1	
15		
16	PUT (PMLD,3,2,28)	
17	LEAP = CYEAR MOD 4	
18	IF (LEAP = 0) PUT (PMLD,3,2,29)	
19		
20	PDMM = CMONTH	
21		
22	PDDD = CDAY - 1	
23	IF (PDDD = 0) GET (PMLD,CMONTH,PDMM,PDDD)	
24		
25	PDMMDDYY = PDYY MOD 100	
26	PDMMDDYY = PDMMDDYY + (PDDD * 100)	
27	PDMMDDYY = PDMMDDYY + (PDMM * 10000)	
28		
29	PDMMDD = (PDMM * 100) + PDDD	
30		
31	MMDDYY = (CMONTH * 10000) + (CDAY * 100) + (CYEAR MOD 100)	
32		
33	GOTO NEXT	
34		
35		
36		
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Calculation Entry
Title: CLEAR ALL Type: Normal
I# Calculation Statements Units

1
2 IF (CLEARALL = 1) GOTO NEXT
3
4
5
6 CLEARALL = 1
7 CLEARDD = 2
8
9
10 GOTO NEXT
11
12
13
14
15
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Calculation Entry

Title: CLEAR TOTALS Type: Normal

I#	Calculation Statements	Units
1	IF (CLEARDD = 1) GOTO NEXT	
2		
3	TUBE = 1	
4		
5	GET (GHSL,TUBE,RATEX,TOT,NRTOT)	
6	PUT (GHSL,TUBE, 0.0, 0,NRTOT)	
7		
8	GET (GHEL,TUBE,RATEX,TOT,NRTOT)	
9	PUT (GHEL,TUBE, 0.0, 0,NRTOT)	
10		
11	GET (GHML,TUBE,RATEX,TOT,NRTOT)	
12	PUT (GHML,TUBE, 0.0, 0,NRTOT)	
13		
14	PUT (GHFWA ,TUBE,0.0,0.0,0.0,0.0,0.0,0.0,0.0,FO,FO,FO,FO)	
15	PUT (GHFWSUM,TUBE,0.0,0.0,0.0,0.0,0.0,0.0,0.0,FO,FO,FO,FO)	
16	PUT (GHFWDIV,TUBE,0.0)	
17		
18	PUT (GHONFL ,TUBE,0.0)	
19		
20	TUBE = TUBE + 1	
21	IF (TUBE <= 3) GOTO 5	
22	GOTO NEXT	
23		
24		
25		
26		
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30		
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Calculation Entry

Title: CLEAR HOUR Type: Normal

I#	Calculation Statements	Units
1	IF (CLEARHH = 1) GOTO NEXT	
2		
3	TUBE = 1	
4		
5	PUT (GHHS1,TUBE,0)	
6		
7	PUT (GHHEL,TUBE,0)	
8		
9	PUT (GHHML,TUBE,0)	
10		
11	PUT (GHHFWA ,TUBE,0.0,0.0,0.0,0.0,0.0,F0,F0,F0,F0,F0,F0)	
12	PUT (GHHFWSUM,TUBE,0.0,0.0,0.0,0.0,0.0,F0,F0,F0,F0,F0,F0)	
13	PUT (GHHFWDIV,TUBE,0.0)	
14	PUT (GHHONFL ,TUBE,F0)	
15		
16	TUBE = TUBE + 1	
17	IF (TUBE <= 3) GOTO 5	
18		
19	CLEARHH = 1	
20		
21	GOTO NEXT	
22		
23		
24		
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Calculation Entry

Title: CLEAR DAY Type: Normal

I#	Calculation Statements	Units
1	IF (CLEARDD = 1) GOTO NEXT	
2		
3	I = 1	
4		
5	PUT (CHLOG1 ,I,I0,F0,F0,F0,F0,F0,F0,F0,F0,F0,F0,F0)	
6	PUT (CHLOG2 ,I,I0,F0,F0,F0,F0,F0,F0,F0,F0,F0,F0,F0)	
7	PUT (CHLOG3 ,I,I0,F0,F0,F0,F0,F0,F0,F0,F0,F0,F0,F0)	
8		
9	PUT (CHLOG1A,I,I0,I0,I0,I0)	
10	PUT (CHLOG2A,I,I0,I0,I0,I0)	
11	PUT (CHLOG3A,I,I0,I0,I0,I0)	
12		
13	I = I + 1	
14	IF (I <= 24) GOTO 5	
15		
16	CLEARDD = 1	
17		
18	GOTO NEXT	
19		
20		
21		
22		
23		
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Calculation Entry

Title: DANIEL GC WARM Type: Normal

I#	Calculation Statements	Units
1	IF (NOT WARM) GOTO NEXT	
2		
3		
4		
5	GCTRIES = 1	
6	RESET (GCALARM)	
7	GCSEQ = 3	
8		
9	GOTO NEXT	
10		
11		
12		
13		
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15		
16		
17		
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Calculation Entry

Title: DANIEL GC SEQ 1 Type: Normal

I#	Calculation Statements	Units
1	IF (GCSEQ <> 1)	GOTO NEXT
2		
3		
4		
5	CNTRL = GCCNTRL	
6	IF (CNTRL = GCACTIVE)	GOTO NEXT
7		
8		
9		
10	IF (CNTRL = GCIDLE)	GOTO 20
11		
12	IF (GCTRIES < 5)	GCTRIES = GCTRIES + 1
13	IF (GCTRIES = 5)	SET (GCALARM)
14	GCSEQ = 3	
15	GOTO NEXT	
16		
17		
18		
19		
20	RESET (GCALARM)	
21	GCTRIES = 1	
22	GCSEQ = 2	
23		
24	TEST = GCALARM1 MOD 4	
25	IF (TEST <> 0)	SET (GCALARM)
26	IF (GCALARM1 > 16383)	SET (GCALARM)
27	IF (GCALARM1 < 0)	SET (GCALARM)
28	TEST = GCALARM2 MOD 8	
29	IF (TEST > 3)	SET (GCALARM)
30		
31	IF (GCALARM)	GCSEQ = 3
32	IF (GCSTART1 <> GCSTART2)	GCSEQ = 3
33	IF (GCCALFLG = 0)	GCSEQ = 3
34		
35	GOTO NEXT	
36		
37		
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Calculation Entry

Title: DANIEL GC SEQ 2A Type: Normal

I#	Calculation Statements	Units
1	IF (GCSEQ <> 2)	GOTO NEXT
2		
3		
4		
5	PUT (GC, 1, GCC1, GCP1)	
6	PUT (GC, 2, GCC2, GCP2)	
7	PUT (GC, 3, GCC3, GCP3)	
8	PUT (GC, 4, GCC4, GCP4)	
9	PUT (GC, 5, GCC5, GCP5)	
10	PUT (GC, 6, GCC6, GCP6)	
11	PUT (GC, 7, GCC7, GCP7)	
12	PUT (GC, 8, GCC8, GCP8)	
13	PUT (GC, 9, GCC9, GCP9)	
14	PUT (GC, 10, GCCA, GCPA)	
15	PUT (GC, 11, GCCB, GCPB)	
16	PUT (GC, 12, GCCC, GCPC)	
17	PUT (GC, 13, GCCD, GCPD)	
18	PUT (GC, 14, GCCE, GCPE)	
19	PUT (GC, 15, GCCF, GCPF)	
20	PUT (GC, 16, GCC0, GCP0)	
21		
22	GOTO NEXT	
23		
24		
25		
26		
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Calculation Entry

Title: DANIEL GC SEQ 2B Type: Normal

I#	Calculation Statements	Units
1	IF (GCSEQ <> 2) GOTO NEXT	
2		
3	I = 1	
4		
5	GET (GC,I,CIDX,PCTX)	
6		
7	IF (CIDX = 14) GC_N2 = PCTX	
8	IF (CIDX = 17) GC_CO2 = PCTX	
9	IF (CIDX = 40) GC_H2S = PCTX	
10	IF (CIDX = 44) GC_H2O = PCTX	
11	IF (CIDX = 13) GC_HE = PCTX	
12	IF (CIDX = 00) GC_C1 = PCTX	
13	IF (CIDX = 01) GC_C2 = PCTX	
14	IF (CIDX = 02) GC_C3 = PCTX	
15	IF (CIDX = 04) GC_NC4 = PCTX	
16	IF (CIDX = 03) GC_IC4 = PCTX	
17	IF (CIDX = 06) GC_NC5 = PCTX	
18	IF (CIDX = 05) GC_IC5 = PCTX	
19	IF (CIDX = 39) GC_NC6 = PCTX	
20	IF (CIDX = 45) GC_NC7 = PCTX	
21	IF (CIDX = 20) GC_NC8 = PCTX	
22	GC_NC9 = 0.0	
23	GC_NC10 = 0.0	
24	IF (CIDX = 16) GC_O2 = PCTX	
25	IF (CIDX = 15) GC_CO = PCTX	
26	IF (CIDX = 12) GC_H2 = PCTX	
27	IF (CIDX = 46) GC_AR = PCTX	
28		
29	I = I + 1	
30	IF (I <= 16) GOTO 5	
31		
32		
33		
34		
35	UNN_TOT = (GCUNNORM < 95.0) OR (GCUNNORM > 105.0)	
36	GC_BTU = GCBTU	
37	GC_BTUS = GCBTUS	
38	GC_GRAV = GCGRAV	
39	{GC_COMP = GCCOMP	
40	GC_UN = GCUNNORM	
41	GC_STID = GCSTREAM	
42		
43	SET (GCUPDATE)	
44		
45	GOTO NEXT	
46		
47		
48		
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Calculation Entry

Title: DANIEL GC SEQ 3 Type: Normal

I#	Calculation Statements	Units
1	IF (GCSEQ <> 3) GOTO NEXT	
2		
3		
4		
5	GCCNTRL = GCACTIVE	
6	GCSEQ = 1	
7		
8	{LOOPING = LOOPING + 1	
9		
10	GOTO NEXT	
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
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Calculation Entry

Title: GC GAS DATA Type: Normal

I#	Calculation Statements	Units
1	IF (NOT GCUPDATE)	GOTO NEXT
2		
3		
4		
5	A = GC_N2 / 100.0	
6	B = GC_CO2 / 100.0	
7	C = GC_H2S / 100.0	
8	D = GC_H2O / 100.0	
9	E = GC_HE / 100.0	
10	F = GC_C1 / 100.0	
11	G = GC_C2 / 100.0	
12	H = GC_C3 / 100.0	
13	FI = GC_NC4 / 100.0	
14	FJ = GC_IC4 / 100.0	
15	FK = GC_NC5 / 100.0	
16	L = GC_IC5 / 100.0	
17	M = GC_NC6 / 100.0	
18	N = GC_NC7 / 100.0	
19	O = GC_NC8 / 100.0	
20	P = GC_NC9 / 100.0	
21	Q = GC_NC10 / 100.0	
22	R = GC_O2 / 100.0	
23	S = GC_CO / 100.0	
24	T = GC_H2 / 100.0	
25	U = GC_AR / 100.0	
26		
27	PUT (GCGASA,1,A,B,C,D,E,F,G,H,FI,FJ,FK,F,F,F,O,P,Q,R,S,T,U)	
28	PUT (GCGASB,1,GC_BTU)	
29		
30	GCSEQ = 3	
31		
32	RESET (GCUPDATE)	
33		
34	GOTO NEXT	
35		
36		
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Calculation Entry

Title: OP GAS DATA Type: Normal

I#	Calculation Statements	Units
1	IF (GAS_OP = 1) GOTO NEXT	
2	GAS_OP = 1	
3		
4		
5	A = NITROGEN / 100.0	
6	B = CO2 / 100.0	
7	C = H2S / 100.0	
8	D = WATER / 100.0	
9	E = HELIUM / 100.0	
10	F = METHANE / 100.0	
11	G = ETHANE / 100.0	
12	H = PROPANE / 100.0	
13	FI = NIBUTANE / 100.0	
14	FJ = IBUTANE / 100.0	
15	FK = NPENTANE / 100.0	
16	L = IPENTANE / 100.0	
17	M = NHEXANE / 100.0	
18	N = NHEPTANE / 100.0	
19	O = NOCTANE / 100.0	
20	P = NNONANE / 100.0	
21	Q = NDECANE / 100.0	
22	R = O2 / 100.0	
23	S = CO / 100.0	
24	T = HYDROGEN / 100.0	
25	U = ARGON / 100.0	
26		
27	compsum = a+b+c+d+e+f+g+h+fi+fj+fk+l+m+n+o+p+q+r+s+t+u	
28		
29	GAS_ERR = (compsum > 1.0001) OR (compsum < 0.9999)	
30		
31	PUT (OPGASA,1,a,b,c,d,e,f,g,h,fi,fj,fk,l,m,n,o,p,q,r,s,t,u)	
32	PUT (OPGASB,1,ENERGY)	
33		
34	GOTO NEXT	
35		
36		
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Calculation Entry		
I#	Calculation Statements	Units
1		
2		
3		
4		
5	IF (GAS_DATA = 1) GOTO 10 { GC	
6	IF (GAS_DATA = 2) GOTO 25 { OPERATOR	
7		
8		
9		
10	GET (GCGASA,1,A,B,C,D,E,F,G,H,FI,FJ,FK,L,M,N,O,P,Q,R,S,T,U)	
11	GET (GCGASB,1,BTU\$)	
12		
13	BTU\$ = BTU\$ * TEN6 { MJ TO J	
14		
15	GOTO 40	
16		
17		
18		
19		
20		
21		
22		
23		
24		
25	GET (OPGASA,1,A,B,C,D,E,F,G,H,FI,FJ,FK,L,M,N,O,P,Q,R,S,T,U)	
26	GET (OPGASB,1,BTU\$)	
27		
28	GOTO 40	
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40	PUT (GRI,1,A,B,C,D,E,F,G,H,FI,FJ,FK,L,M,N,O,P,Q,R,S,T,U)	
41		
42	GOTO NEXT	
43		
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Calculation Entry

Title: METER INPUTS Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	IF (TT_LOC = 2) GOTO 15	
6		
7	PUT (GHTEMP,1,TT_01)	
8	PUT (GHTEMP,2,TT_02)	
9	PUT (GHTEMP,3,TT_03)	
10		
11		
12		
13		
14		
15	IF (PT_LOC = 2) GOTO NEXT	
16		
17	PUT (GHPRES,1,PT_01)	
18	PUT (GHPRES,2,PT_02)	
19	PUT (GHPRES,3,PT_03)	
20		
21	GOTO NEXT	
22		
23		
24		
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Calculation Entry

Title: HEADER INPUTS Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	IF (TT_LOC = 1) GOTO 15	
6		
7	PUT (GHTEMP,1,TT_04)	
8	PUT (GHTEMP,2,TT_04)	
9	PUT (GHTEMP,3,TT_04)	
10		
11		
12		
13		
14		
15	IF (PT_LOC = 1) GOTO NEXT	
16		
17	PUT (GHPRES,1,PT_04)	
18	PUT (GHPRES,2,PT_04)	
19	PUT (GHPRES,3,PT_04)	
20		
21	GOTO NEXT	
22		
23		
24		
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Calculation Entry

Title: DP INPUTS Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	IF (FTTYPE1 = 1) FT_01 = FT_01H	
6	IF (FTTYPE2 = 1) FT_02 = FT_02H	
7	IF (FTTYPE3 = 1) FT_03 = FT_03H	
8		
9	IF (FTTYPE1 = 2) FT_01 = BESTDP (FT_01L,FT_01H)	
10	IF (FTTYPE2 = 2) FT_02 = BESTDP (FT_02L,FT_02H)	
11	IF (FTTYPE3 = 2) FT_03 = BESTDP (FT_03L,FT_03H)	
12		
13	IF (FTTYPE1 = 1) ZS = ZEROSCALE (FT_01H)	
14	IF (FTTYPE1 = 1) FS = FULLSCALE (FT_01H)	
15	IF (FTTYPE1 = 2) ZS = ZEROSCALE (FT_01L)	
16	IF (FTTYPE1 = 2) FS = FULLSCALE (FT_01L)	
17	PUT (GHDP,1,ZS,FS)	
18	PUT (GHDP ,1,FT_01)	
19		
20	IF (FTTYPE2 = 1) ZS = ZEROSCALE (FT_02H)	
21	IF (FTTYPE2 = 1) FS = FULLSCALE (FT_02H)	
22	IF (FTTYPE2 = 2) ZS = ZEROSCALE (FT_02L)	
23	IF (FTTYPE2 = 2) FS = FULLSCALE (FT_02L)	
24	PUT (GHDP,2,ZS,FS)	
25	PUT (GHDP ,2,FT_02)	
26		
27	IF (FTTYPE3 = 1) ZS = ZEROSCALE (FT_03H)	
28	IF (FTTYPE3 = 1) FS = FULLSCALE (FT_03H)	
29	IF (FTTYPE3 = 2) ZS = ZEROSCALE (FT_03L)	
30	IF (FTTYPE3 = 2) FS = FULLSCALE (FT_03L)	
31	PUT (GHDP,3,ZS,FS)	
32	PUT (GHDP ,3,FT_03)	
33		
34	GOTO NEXT	
35		
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Calculation Entry

Title: DP CUTOFF Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHDP, TUBE, ZS, FS)	
6	GET (GHDP, TUBE, DPX)	
7		
8	CUTX = (DPCUTOFF * (FS - ZS)) / 100.0 + ZS	
9		
10	IF (DPX < CUTX) PUT (GHDP, TUBE, 0.0)	
11		
12	TUBE = TUBE + 1	
13	IF (TUBE <= GHTUBES) GOTO 5	
14	GOTO NEXT	
15		
16		
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Calculation Entry

Title: SELECT UNITS Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHDP , TUBE, DPX)	
6	GET (GHPRES, TUBE, PRESX)	
7		
8	PUT (GH4AVG, TUBE, DPX, PRESX)	
9		
10	DPX = DPX * 0.0980638	{ MMWC TO MBAR
11		
12	PRESX = PRESX * 0.980650	{ KCM2 TO BARG
13	PRESX = PRESX + BARO\$	{ BARG TO BARA
14		
15	PUT (GHDP , TUBE, DPX)	
16	PUT (GHPRES, TUBE, PRESX)	
17		
18	TUBE = TUBE + 1	
19	IF (TUBE <= GHTUBES) GOTO 5	
20		
21	N1\$\$ = 0.036	
22	N2\$\$ = 0.1	
23	N3\$\$ = 1000.0	
24	N4\$\$ = 25.4	
25	N5\$\$ = 273.15	
26		
27	VIS_ABS = 0.010268	
28		
29	GOTO NEXT	
30		
31		
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Calculation Entry

Title: STATIC 1 Type: Normal

I#	Calculation Statements	Units
1		
2		
3	GHTUBE = 1	
4		
5	GET (GHTEMP,GHTUBE,TEMPX)	
6	GET (GHORF ,GHTUBE,ORIF,PIPE,TYP,LOC)	
7		
8	ORIF = CLIP (ORIF,OEMN,OEMX)	
9	PIPE = CLIP (PIPE,OEMN,OEMX)	
10	HEAT = HEAT\$	
11		
12	TEMPX = TRUNC (TEMPX * TEN2) / TEN2	
13	ORIFM = TRUNC (ORIF * TEN6) / TEN6	
14	PIPEM = TRUNC (PIPE * TEN6) / TEN6	
15	HEAT = TRUNC (HEAT * TEN6) / TEN6	
16		
17	TERM1 = ORIFALF\$ * (TEMPX - ORIFMEAS)	
18	TERM1 = 1 + TERM1	
19	ORIFM = ORIFM * TERM1	
20		
21	TERM2 = PIPEALF\$ * (TEMPX - PIPEMEAS)	
22	TERM2 = 1 + TERM2	
23	PIPEM = PIPEM * TERM2	
24		
25	BETA = ORIFM / PIPEM	
26		
27	BETA4 = BETA^4	
28	YSUB = (.41 + .35 * BETA4) / HEAT	
29		
30	{ VELOCITY OF APPROACH FACTOR E :	
31	EX = 1.0 / SQRT(1.0 - BETA4)	
32		
33	BIGB = BETA4 / (1.0 - BETA4)	
34		
35	PUT (STATIC1,GHTUBE,BETA,BIGB,YSUB,EX)	
36	PUT (GHORF ,GHTUBE,ORIF,PIPE,TYP,LOC)	
37	PUT (GHORFM ,GHTUBE,ORIFM,PIPEM)	
38	PUT (GHRSH ,GHTUBE,HEAT)	
39		
40	GHTUBE = GHTUBE + 1	
41	IF (GHTUBE <= GHTUBES) GOTO 5	
42	GOTO NEXT	
43		
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Calculation Entry

Title: STATIC 2 Type: Normal

I#	Calculation Statements	Units
1	{ COEFFICIENT OF DISCHARGE FOR FLANGED-TAPPED ORIFICE METERS	
2		
3	GHTUBE = 1	
4		
5	GET (STATIC1,GHTUBE,BETA,BIGB,YSUB,EX)	
6	GET (GHORFM ,GHTUBE,ORIF,PIPE)	
7		
8	DX = PIPE	
9	N4 = N4\$\$ { WHEN D is in Inches N4 = 1.0	
10	{ WHEN D is in Millimeters N4 = 25.4	
11		
12		
13	L1 = N4 / DX { Value of Dimensionless upstream Tap position	
14		
15	TERM1 = SMALLE ^(-8.5 * L1)	
16	TERM2 = SMALLE ^(-6.0 * L1)	
17	Tu = (.0433 + .0712*TERM1 + (-.1145*TERM2)) * BIGB	
18		
19		
20	L2 = N4 / DX { Value of Dimensionless Downstream Tap pos.	
21		
22	M2 = (2.0 * L2) / (1.0 - BETA)	
23		
24	Td = -.0116 * (M2 + (-.52 * M2 ^{1.3})) * BETA ^{1.1}	
25		
26	Ts = 0.003 * (1 - BETA) * (2.8 - (DX / N4))	
27	IF (DX > 2.8 * N4) Ts = 0.0	
28		
29	BETA4 = BETA ⁴	
30	BETA8 = BETA4 * BETA4	
31		
32	TERM1 = 0.0291 * BETA ²	
33	TERM2 = -0.229 * BETA8	
34	Cd0 = 0.5961 + TERM1 + TERM2 + Tu + Td + Ts	
35	Cd1 = 0.000511 * BETA ^{0.7} * 250. ^{0.7}	
36	TERM3 = 250. ^{0.35}	
37	Cd2 = 0.021 * BETA4 * TERM3	
38	TERM4 = 4.75 ^{0.8}	
39	Cd3 = .0049 * BETA4 * BETA ^{0.8} * TERM4 * TERM3	
40	Cd4 = ((-0.23 * Tu) + (-0.14 * Td))	
41	Cd4 = Cd4 * BETA ^{0.8} * TERM4	
42		
43		
44		
45	PUT (GASCOEF,GHTUBE,Cd0,Cd1,Cd2,Cd3,Cd4)	
46		
47	GHTUBE = GHTUBE + 1	
48	IF (GHTUBE <= GHTUBES) GOTO 5	
49	GOTO NEXT	
50		

Calculation Entry

Title: AGA8-92 RHOF Type: Normal

I#	Calculation Statements	Units
1		
2		
3	I = 1	
4		
5	GET (GHTEMP,I,TEMPX)	
6	GET (GHPRES,I,PRESX)	
7	GET (GHDP ,I,DPX)	
8	GET (GHORF ,I,ORIF,PIPE,TYP,LOC)	
9		
10	TEMPX = (1.8 * TEMPX) + 32.0	{ DEGC TO DEGF
11	TEMPX = TEMPX + 459.67	
12		
13	BASETEMP = (1.8 * TBASE\$) + 32.0	{ DEGC TO DEGF
14	BASETEMP = BASETEMP + 459.67	
15		
16	IF (LOC = 2) PRESX = (DPX / N3\$\$) * PRESX	
17	PRESX = PRESX * 14.50377439	{ BARA TO PSIA
18		
19	BASEPRES = PBASE\$ * 14.50377439	{ BARA TO PSIA
20		
21	GET (GRI,1,A,B,C,D,E,F,G,H,FI,FJ,FK,L,M,N,O,P,Q,R,S,T,U)	
22		
23	GRICMP (A,B,C,D,E,F,G,H,FI,FJ,FK,L,M,N,O,P,Q,R,S,T,U)	
24		
25	GRIPROC (GRIDATA,TEMPX,PRESX,BASETEMP,BASEPRES)	
26		
27	GET (GRIDATA,1,F1,F2,F3,F4,F5,F6,F7,F8,ERROR)	
28		
29	F4 = F4	{ KG/M3
30	RHOFCAL = F4	KGM3
31		
32	IF (ERROR = 0) PUT (GHRHOF,I,RHOFCAL)	
33	IF (ERROR = 0) PUT (GHFPV ,I,F1,F2,F3)	
34		
35	I = I + 1	
36	IF (I <= GHTUBES) GOTO 5	
37	GOTO NEXT	
38		
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Calculation Entry

Title: RHOB, GRAVITY Type: Normal

I#	Calculation Statements	Units
1		
2		
3	I = 1	
4		
5	GET (GHTEMP,I,TEMPX)	{ DEGC
6	GET (GHPRES,I,PRESX)	{ BARA
7		
8	TEMPX = TEMPX + N5\$\$	
9		
10	BASETEMP = TBASE\$ + N5\$\$	
11		
12	PRESX = PRESX	{ BARA
13	BASEPRES = PBASE\$	{ BARA
14		
15	GET (GHRHOF,I,RHOFX)	
16	GET (GHFPV ,I,ZFX,ZBX,FPVX)	
17		
18	F1 = BASEPRES * TEMPX * RHOFX	
19	F2 = BASETEMP * PRESX * FPVX * FPVX	
20		
21	RHOB\$ = F1 / F2	KGM3
22		
23	MRAIR = 28.9625	
24	R = 0.0831451	
25		
26	F1 = BASETEMP * RHOB\$ * ZBX * R	
27	F2 = BASEPRES * MRAIR	
28		
29	GRAV\$ = F1 / F2	-
30		
31	GOTO NEXT	
32		
33		
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Calculation Entry

Title: FLOW FACTOR Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHTEMP ,TUBE,TEMPX)	
6	GET (GHPRES ,TUBE,PRESX)	
7	GET (GHDP ,TUBE,DPX)	
8	GET (GHORF ,TUBE,ORIF,PIPE,TYP,LOC)	
9	GET (STATIC1,TUBE,BETA,BIGB,YSUB,E)	
10	GET (GHORFM ,TUBE,ORIFM,PIPEM)	
11	GET (GHRSH ,TUBE,HEAT)	
12	GET (GHRHOF ,TUBE,DENX)	
13		
14	{Upstream flowing fluid pressure is calculated as per 14.3.4	
15	{Procedure 3.2.6A page no. 4-20	
16		
17	PRESX = PRESX	
18	IF (LOC = 2) PRESX = (DPX / N3\$\$) + PRESX	
19	R = DPX / (N3\$\$ * PRESX)	
20	Y = 1.0 - YSUB * R	
21	IF (HEAT = -1) Y = 1.0	
22		
23	N2 = N2\$\$	
24		
25	Fic = (4000. * N2 * PIPEM* VIS_ABS) / (E * ORIFM*ORIFM * Y)	
26		
27	Fip = SQRT (2.0 * DENX * DPX)	
28		
29	Fi = 1000.0	
30		
31	IF (Fic < (1000.0 * Fip)) Fi = Fic / Fip	
32		
33	PUT (LIMFACT,TUBE,Fi,Fic,Fip)	
34		
35	PUT (GHY ,TUBE,Y)	
36		
37	TUBE = TUBE + 1	
38	IF (TUBE <= GHTUBES) GOTO 5	
39	GOTO NEXT	
40		
41		
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Calculation Entry

Title: ORIF COEF Type: Normal

I#	Calculation Statements	Units
1		
2	Icd = 0	
3	TUBE = 1	
4		
5	GET (LIMFACT,TUBE,Fi,Fic,Fip)	
6	GET (GASCOEF,TUBE,Cd0,Cd1,Cd2,Cd3,Cd4)	
7		
8	Xc = 1.142139337256165 {Low Reynolds number switch value	
9	A = 4.343524261523267 {Corelation const for REYNOLDS No.	
10	B = 3.764387693320165 { " " " "	
11	Cd = Cd0 {Initial value at Infinite REYNOLDS number.	
12		
13		
14	X = Fi / Cd { REDUCED RECIPROCAL REYNOLDS NO.	
15	Icd = Icd + 1	
16	RESET(CONVFLAG)	-
17	IF (X > 1.0) SET(CONVFLAG)	
18		
19	X7 = X^0.7	
20	X8 = X^0.8	
21	X35 = X^0.35	
22	TERM2 = A-(B / X)	
23	TERM3 = Cd3 * X8	
24	TERM4 = Cd4 * X8	
25		
26	IF (X < Xc) GOTO 33	
27		
28	Fc = Cd0 + Cd1 * X7 + ((Cd2 + TERM3) * TERM2) + TERM4	
29	Dc = 0.7 * Cd1 * X7 + ((Cd2 + TERM3) * (B/X))	
30	Dc = Dc + (0.8 * Cd3 * TERM2 * X8) + (0.8 * TERM4)	
31	GOTO 41	
32		
33	TERM1 = Cd0	
34	TERM2 = (Cd1 * X35 + Cd2 + TERM3) * X35	
35	Fc = TERM1 + TERM2 + TERM4	
36		
37	TERM1 = 0.7 * Cd1 * X35 + 0.35 * Cd2 + 1.15 * Cd3 * X8	
38	TERM1 = TERM1 * X35	
39	Dc = TERM1 + 0.8 * TERM4	
40		
41	Cd\$ = (Cd - Fc) / (1 + (Dc / Cd))	
42	Cd = Cd - Cd\$	
43	DCD = ABS(Cd\$)	
44	IF (DCD > 0.000005) GOTO 14	
45		
46	PUT (FACTORS,TUBE,X,Fc,Dc,Cd)	
47		
48	TUBE = TUBE + 1	
49	IF (TUBE <= GHTUBES) GOTO 5	
50	GOTO NEXT	

Calculation Entry

Title: MASS INCR Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHTEMP ,TUBE,TEMPX)	
6	GET (GHPRES ,TUBE,PRESX)	
7	GET (GHDP ,TUBE,DPX)	
8	GET (STATIC1,TUBE,BETA,BIGB,YSUB,E)	
9	GET (GHORFM ,TUBE,ORIFM,PIPEM)	
10	GET (GHY ,TUBE,Y)	
11	GET (FACTORS,TUBE,X,FC,DC,CD)	
12	GET (GHRHOF ,TUBE,RHOFX)	
13		
14		
15	N1 = N1\$\$	
16	PI = 3.14159	
17		
18	Fm = N1 * PI * E * ORIFM * ORIFM / 4.0	
19		
20	TERM = DPX * RHOFX	
21		
22	RATEX = Fm * Y * Cd * SQRT (2.0 * DPX * RHOFX)	
23		
24	IF (TERM <= 0.0) RATEX = 0.0	
25	INCR = RATEX * IOCYCLE / 3600.0	
26		
27	PUT (GHMINCR,TUBE,INCR,RATEX)	
28		
29	TUBE = TUBE + 1	
30	IF (TUBE <= GHTUBES) GOTO 5	
31	GOTO NEXT	
32		
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Calculation Entry

Title: VOL INCR Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHMINCR,TUBE,INCR,RATEX)	
6		
7	INCR = INCR / RHOB\$	
8	RATEX = RATEX / RHOB\$	
9		
10	PUT (GHSINCR,TUBE,INCR,RATEX)	
11		
12	TUBE = TUBE + 1	
13	IF (TUBE <= GHTUBES) GOTO 5	
14	GOTO NEXT	
15		
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Calculation Entry

Title: VOL TOTAL Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHSL ,TUBE,RATEX,TOT,NRTOT)	
6	GET (GHSINCR,TUBE,INCR,RATEX)	
7	GET (GHSFRAC,TUBE,FRAC)	
8		
9	CYCLE = (INCR / SCFSF) + FRAC	
10	TICKS = FIX (CYCLE)	
11	FRAC = CYCLE - TRUNC (CYCLE)	
12	TOT = (TOT + TICKS) MOD 1E9	
13	RATEX = RATEX / SCFSF	
14	NRTOT = (NRTOT + TICKS) MOD 1E9	
15		
16	STOT = (STOT + TICKS) MOD 1E9	
17		
18	NRSTOT = (NRSTOT + TICKS) MOD 1E9	
19		
20	PUT (GHSFRAC,TUBE,FRAC)	
21	PUT (GHSTIX ,TUBE,TICKS)	
22	PUT (GHSL ,TUBE,RATEX,TOT,NRTOT)	
23		
24	TUBE = TUBE + 1	
25	IF (TUBE <= GHTUBES) GOTO 5	
26	GOTO NEXT	
27		
28		
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Calculation Entry

Title: ENERGY INCR Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHSINCR,TUBE,INCR,RATEX)	
6		
7		
8	INCR = INCR * BTU\$	
9	IF (INCR < 0.0) INCR = 0.0	
10		
11	RATEX = INCR * 3600.0 / IOCYCLE	
12		
13	PUT (GHEINCR,TUBE,INCR,RATEX)	
14		
15	TUBE = TUBE + 1	
16	IF (TUBE <= GHTUBES) GOTO 5	
17	GOTO NEXT	
18		
19		
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Calculation Entry

Title: ENERGY TOTAL Type: Normal

I#	Calculation Statements	Units
1		
2	TUBE = 1	
3		
4		
5	GET (GHEL ,TUBE,RATEX,TOT,NRTOT)	
6	GET (GHEINCR,TUBE,INCR,RATEX)	
7	GET (GHEFRAC,TUBE,FRAC)	
8		
9	CYCLE = (INCR / BTUSF) + FRAC	
10	TICKS = FIX (CYCLE)	
11	FRAC = CYCLE - TRUNC (CYCLE)	
12	TOT = (TOT + TICKS) MOD 1E9	
13	RATEX = RATEX / BTUSF	
14	NRTOT = (NRTOT + TICKS) MOD 1E9	
15		
16	ETOT = (ETOT + TICKS) MOD 1E9	
17		
18	NRETOT = (NRETOT + TICKS) MOD 1E9	
19		
20	PUT (GHEFRAC,TUBE,FRAC)	
21	PUT (GHETIX ,TUBE,TICKS)	
22	PUT (GHEL ,TUBE,RATEX,TOT,NRTOT)	
23		
24	TUBE = TUBE + 1	
25	IF (TUBE <= GHTUBES) GOTO 5	
26	GOTO NEXT	
27		
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Calculation Entry

Title: MASS TOTAL Type: Normal

I#	Calculation Statements	Units
1		
2	TUBE = 1	
3		
4		
5	GET (GHML ,TUBE,RATEX,TOT,NRTOT)	
6	GET (GHMINCR,TUBE,INCR,RATEX)	
7	GET (GHMFRAC,TUBE,FRAC)	
8		
9	CYCLE = (INCR / LBSF) + FRAC	
10	TICKS = FIX (CYCLE)	
11	FRAC = CYCLE - TRUNC (CYCLE)	
12	TOT = (TOT + TICKS) MOD 1E9	
13	RATEX = RATEX / LBSF	
14	NRTOT = (NRTOT + TICKS) MOD 1E9	
15		
16	MTOT = (MTOT + TICKS) MOD 1E9	
17		
18	NRMTOT = (NRMTOT + TICKS) MOD 1E9	
19		
20	PUT (GHMFRAC,TUBE,FRAC)	
21	PUT (GHMTIX ,TUBE,TICKS)	
22	PUT (GHML ,TUBE,RATEX,TOT,NRTOT)	
23		
24	TUBE = TUBE + 1	
25	IF (TUBE <= GHTUBES) GOTO 5	
26	GOTO NEXT	
27		
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Calculation Entry

Title: VOLUME Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	GET (GHSL,1,RATEX,TOT,NRTOT)	
6	SFR1 = RATEX	SCMH
7	STOT1 = TOT	SCM
8	NRSTOT1 = NRTOT	SCM
9		
10	GET (GHSL,2,RATEX,TOT,NRTOT)	
11	SFR2 = RATEX	SCMH
12	STOT2 = TOT	SCM
13	NRSTOT2 = NRTOT	SCM
14		
15	GET (GHSL,3,RATEX,TOT,NRTOT)	
16	SFR3 = RATEX	SCMH
17	STOT3 = TOT	SCM
18	NRSTOT3 = NRTOT	SCM
19		
20	SFR = SFR1 + SFR2 + SFR3	SCMH
21	STOT = (STOT1 + STOT2 + STOT3) MOD 1E9	SCM
22	NRSTOT = NRSTOT	SCM
23		
24	GET (GHSTIX,1,TICK1)	
25	GET (GHSTIX,2,TICK2)	
26	GET (GHSTIX,3,TICK3)	
27		
28	SCO1 = TICK1	
29	SCO2 = TICK2	
30	SCO3 = TICK3	
31	SCO = TICK1 + TICK2 + TICK3	
32		
33	GOTO NEXT	
34		
35		
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Calculation Entry

Title: ENERGY Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	GET (GHEL,1,RATEX,TOT,NRTOT)	
6	EFR1 = RATEX	JULH
7	ETOT1 = TOT	JUL
8	NRETOT1 = NRTOT	JUL
9		
10	GET (GHEL,2,RATEX,TOT,NRTOT)	
11	EFR2 = RATEX	JULH
12	ETOT2 = TOT	JUL
13	NRETOT2 = NRTOT	JUL
14		
15	GET (GHEL,3,RATEX,TOT,NRTOT)	
16	EFR3 = RATEX	JULH
17	ETOT3 = TOT	JUL
18	NRETOT3 = NRTOT	JUL
19		
20	EFR = EFR1 + EFR2 + EFR3	JULH
21	ETOT = (ETOT1 + ETOT2 + ETOT3) MOD 1E9	JUL
22	NRETOT = NRETOT	JUL
23		
24	GET (GHETIX,1,TICK1)	
25	GET (GHETIX,2,TICK2)	
26	GET (GHETIX,3,TICK3)	
27		
28	ECO1 = TICK1	
29	ECO2 = TICK2	
30	ECO3 = TICK3	
31	ECO = TICK1 + TICK2 + TICK3	
32		
33	GOTO NEXT	
34		
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Calculation Entry
 Title: MASS Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	GET (GHML,1,RATEX,TOT,NRTOT)	
6	MFR1 = RATEX	KGH
7	MTOT1 = TOT	KG
8	NRMTOT1 = NRTOT	KG
9		
10	GET (GHML,2,RATEX,TOT,NRTOT)	
11	MFR2 = RATEX	KGH
12	MTOT2 = TOT	KG
13	NRMTOT2 = NRTOT	KG
14		
15	GET (GHML,3,RATEX,TOT,NRTOT)	
16	MFR3 = RATEX	KGH
17	MTOT3 = TOT	KG
18	NRMTOT3 = NRTOT	KG
19		
20	MFR = MFR1 + MFR2 + SFR3	KJH
21	MTOT = (MTOT1 + MTOT2 + MTOT3) MOD 1E9	KG
22	NRMTOT = NRMTOT	KG
23		
24	GET (GHMTIX,1,TICK1)	
25	GET (GHMTIX,2,TICK2)	
26	GET (GHMTIX,3,TICK3)	
27		
28	MCO1 = TICK1	
29	MCO2 = TICK2	
30	MCO3 = TICK3	
31	MCO = TICK1 + TICK2 + TICK3	
32		
33	GOTO NEXT	
34		
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Calculation Entry

Title: SAMPLER Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHSINCR, TUBE, INCR, RATEX)	
6		
7	INCR = INCR / SAMPLE	
8	CYCLE = INCR + SAMPFRAC	
9	TICK = FIX (CYCLE)	
10	SAMPFRAC = CYCLE - TRUNC (CYCLE)	
11		
12	SAMPLER = SAMPLER + TICK	
13		
14	TUBE = TUBE + 1	
15	IF (TUBE <= GHTUBES) GOTO 5	
16	GOTO NEXT	
17		
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Calculation Entry

Title: ANALOG OUTPUT 1 Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	I = AO_01DEF	
6		
7	IF (I = 1) A\$ = SFR1	
8	IF (I = 2) A\$ = SFR2	
9	IF (I = 3) A\$ = SFR3	
10	IF (I = 4) A\$ = SFR	
11	IF (I = 5) A\$ = EFR1	
12	IF (I = 6) A\$ = EFR2	
13	IF (I = 7) A\$ = EFR3	
14	IF (I = 8) A\$ = EFR	
15	IF (I = 9) A\$ = MFR1	
16	IF (I = 10) A\$ = MFR2	
17	IF (I = 11) A\$ = MFR3	
18	IF (I = 12) A\$ = MFR	
19		
20	AO_01 = A\$	
21		
22	GOTO NEXT	
23		
24		
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Calculation Entry

Title: ANALOG OUTPUT 2 Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	I = AO_02DEF	
6		
7	IF (I = 1) A\$ = SFR1	
8	IF (I = 2) A\$ = SFR2	
9	IF (I = 3) A\$ = SFR3	
10	IF (I = 4) A\$ = SFR	
11	IF (I = 5) A\$ = EFR1	
12	IF (I = 6) A\$ = EFR2	
13	IF (I = 7) A\$ = EFR3	
14	IF (I = 8) A\$ = EFR	
15	IF (I = 9) A\$ = MFR1	
16	IF (I = 10) A\$ = MFR2	
17	IF (I = 11) A\$ = MFR3	
18	IF (I = 12) A\$ = MFR	
19		
20	AO_02 = A\$	
21		
22	GOTO NEXT	
23		
24		
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Calculation Entry

Title: ANALOG OUTPUT 3 Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	I = AO_03DEF	
6		
7	IF (I = 1) A\$ = SFR1	
8	IF (I = 2) A\$ = SFR2	
9	IF (I = 3) A\$ = SFR3	
10	IF (I = 4) A\$ = SFR	
11	IF (I = 5) A\$ = EFR1	
12	IF (I = 6) A\$ = EFR2	
13	IF (I = 7) A\$ = EFR3	
14	IF (I = 8) A\$ = EFR	
15	IF (I = 9) A\$ = MFR1	
16	IF (I = 10) A\$ = MFR2	
17	IF (I = 11) A\$ = MFR3	
18	IF (I = 12) A\$ = MFR	
19		
20	AO_03 = A\$	
21		
22	GOTO NEXT	
23		
24		
25		
26		
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Calculation Entry

Title: ANALOG OUTPUT 4 Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	I = AO_04DEF	
6		
7	IF (I = 1) A\$ = SFR1	
8	IF (I = 2) A\$ = SFR2	
9	IF (I = 3) A\$ = SFR3	
10	IF (I = 4) A\$ = SFR	
11	IF (I = 5) A\$ = EFR1	
12	IF (I = 6) A\$ = EFR2	
13	IF (I = 7) A\$ = EFR3	
14	IF (I = 8) A\$ = EFR	
15	IF (I = 9) A\$ = MFR1	
16	IF (I = 10) A\$ = MFR2	
17	IF (I = 11) A\$ = MFR3	
18	IF (I = 12) A\$ = MFR	
19		
20	AO_04 = A\$	
21		
22	GOTO NEXT	
23		
24		
25		
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Calculation Entry

Title: GAS DAILY AVG Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHSINCR,TUBE,INCR,RATEX)	
6	IF (RATEX = 0.0) GOTO 45	
7	GET (GH4AVG ,TUBE,DPX,PRESX)	
8	GET (GHTEMP ,TUBE,TEMPX)	
9	GET (GHRHOF ,TUBE,RHOFX)	
10		
11	GET (GHFWDIV,TUBE,FWDIV)	
12	GET (GHFWSUM,TUBE,F1,F2,F3,F4,F5,F6,F7,F8,F9,FA,FB)	
13	WEIGHT = RATEX / 10000.0	
14	FWDIV = FWDIV + WEIGHT	
15	F1 = F1 + (DPX * WEIGHT)	
16	F2 = F2 + (GRAV\$ * WEIGHT)	
17	F3 = F3 + (TEMPX * WEIGHT)	
18	F4 = F4 + ((PRESX + BARO\$) * WEIGHT)	
19	F5 = F5 + (BTU\$ * WEIGHT)	
20	F6 = F0	
21	F7 = F0	
22	F8 = F8 + (RHOFX * WEIGHT)	
23	F9 = F9 + (SQRT (PRESX + BARO\$) * WEIGHT)	
24	FA = FA + (SQRT (DPX) * WEIGHT)	
25	FB = FB + (SQRT (RHOFX) * WEIGHT)	
26	PUT (GHFWDIV,TUBE,FWDIV)	
27	PUT (GHFWSUM,TUBE,F1,F2,F3,F4,F5,F6,F7,F8,F9,FA,FB)	
28	F1 = F1 / FWDIV	
29	F2 = F2 / FWDIV	
30	F3 = F3 / FWDIV	
31	F4 = F4 / FWDIV	
32	F5 = F5 / FWDIV	
33	F6 = F6 / FWDIV	
34	F7 = F7 / FWDIV	
35	F8 = F8 / FWDIV	
36	F9 = F9 / FWDIV	
37	FA = FA / FWDIV	
38	FB = FB / FWDIV	
39	PUT (GHFWA,TUBE,F1,F2,F3,F4,F5,F6,F7,F8,F9,FA,FB)	
40		
41	GET (GHONFL,TUBE,ONFLX)	
42	ONFLX = ONFLX + IOCYCLE	
43	PUT (GHONFL,TUBE,ONFLX)	
44		
45	TUBE = TUBE + 1	
46	IF (TUBE <= GHTUBES) GOTO 5	
47	GOTO NEXT	
48		
49		
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Calculation Entry

Title: GAS HOURLY AVG Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHSINCR,TUBE,INCR,RATEX)	
6	IF (RATEX = 0.0) GOTO 45	
7	GET (GH4AVG ,TUBE,DPX,PRESX)	
8	GET (GHTEMP ,TUBE,TEMPX)	
9	GET (GHRHOF ,TUBE,RHOFX)	
10		
11	GET (GHHFWDIV,TUBE,FWDIV)	
12	GET (GHHFWSUM,TUBE,F1,F2,F3,F4,F5,F6,F7,F8,F9,FA,FB)	
13	WEIGHT = RATEX / 10000.0	
14	FWDIV = FWDIV + WEIGHT	
15	F1 = F1 + (DPX * WEIGHT)	
16	F2 = F2 + (GRAV\$ * WEIGHT)	
17	F3 = F3 + (TEMPX * WEIGHT)	
18	F4 = F4 + ((PRESX + BARO\$) * WEIGHT)	
19	F5 = F5 + (BTU\$ * WEIGHT)	
20	F6 = F0	
21	F7 = F0	
22	F8 = F8 + (RHOFX * WEIGHT)	
23	F9 = F9 + (SQRT (PRESX + BARO\$) * WEIGHT)	
24	FA = FA + (SQRT (DPX) * WEIGHT)	
25	FB = FB + (SQRT (RHOFX) * WEIGHT)	
26	PUT (GHHFWDIV,TUBE,FWDIV)	
27	PUT (GHHFWSUM,TUBE,F1,F2,F3,F4,F5,F6,F7,F8,F9,FA,FB)	
28	F1 = F1 / FWDIV	
29	F2 = F2 / FWDIV	
30	F3 = F3 / FWDIV	
31	F4 = F4 / FWDIV	
32	F5 = F5 / FWDIV	
33	F6 = F6 / FWDIV	
34	F7 = F7 / FWDIV	
35	F8 = F8 / FWDIV	
36	F9 = F9 / FWDIV	
37	FA = FA / FWDIV	
38	FB = FB / FWDIV	
39	PUT (GHHFWA,TUBE,F1,F2,F3,F4,F5,F6,F7,F8,F9,FA,FB)	
40		
41	GET (GHHONFL,TUBE,ONFLX)	
42	ONFLX = ONFLX + IOCYCLE	
43	PUT (GHHONFL,TUBE,ONFLX)	
44		
45	TUBE = TUBE + 1	
46	IF (TUBE <= GHTUBES) GOTO 5	
47	GOTO NEXT	
48		
49		
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Calculation Entry

Title: GAS HOURLY TOTAL Type: Normal

I#	Calculation Statements	Units
1		
2		
3	TUBE = 1	
4		
5	GET (GHHSL ,TUBE,TOT)	
6	GET (GHSTIX,TUBE,TICKS)	
7		
8	TOT = (TOT + TICKS) MOD 1E9	
9		
10	PUT (GHHSL ,TUBE,TOT)	
11		
12	GET (GHHEL ,TUBE,TOT)	
13	GET (GHETIX,TUBE,TICKS)	
14		
15	TOT = (TOT + TICKS) MOD 1E9	
16		
17	PUT (GHHEL ,TUBE,TOT)	
18		
19	GET (GHHML ,TUBE,TOT)	
20	GET (GHMTIX,TUBE,TICKS)	
21		
22	TOT = (TOT + TICKS) MOD 1E9	
23		
24	PUT (GHHML ,TUBE,TOT)	
25		
26	TUBE = TUBE + 1	
27	IF (TUBE <= GHTUBES) GOTO 5	
28	GOTO NEXT	
29		
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Calculation Entry

Title: REPORT EXECUTIVE Type: Normal

I#	Calculation Statements	Units
1	IF (PRINTDLY > 0.0) GOTO NEXT	
2		
3	I = 1	
4		
5	GET (REPQ,I,J)	
6		
7	IF (J = 0) GOTO 45	
8		
9		
10	IF (I = 1) PRINT (MON1)	
11	IF (I = 2) PRINT (MON1A)	
12	IF (I = 3) PRINT (MON1B)	
13	IF (I = 4) PRINT (MON1C)	
14	IF (I = 5) PRINT (MON2)	
15	IF (I = 6) PRINT (MON2A)	
16	IF (I = 7) PRINT (MON2B)	
17	IF (I = 8) PRINT (MON2C)	
18	IF (I = 9) PRINT (MON3)	
19	IF (I = 10) PRINT (MON3A)	
20	IF (I = 11) PRINT (MON3B)	
21	IF (I = 12) PRINT (MON3C)	
22	IF (I = 13) PRINT (HIS1)	
23	IF (I = 14) PRINT (HIS1A)	
24	IF (I = 15) PRINT (HIS1B)	
25	IF (I = 16) PRINT (HIS1C)	
26	IF (I = 17) PRINT (HIS2)	
27	IF (I = 18) PRINT (HIS2A)	
28	IF (I = 19) PRINT (HIS2B)	
29	IF (I = 20) PRINT (HIS2C)	
30	IF (I = 21) PRINT (HIS3)	
31	IF (I = 22) PRINT (HIS3A)	
32	IF (I = 23) PRINT (HIS3B)	
33	IF (I = 24) PRINT (HIS3C)	
34	IF (I = 25) PRINT (DAY1)	
35	IF (I = 26) PRINT (DAY2)	
36	IF (I = 27) PRINT (DAY3)	
37		
38		
39	PRINTDLY = 60.0	
40	PUT (REPQ,I,0)	
41	GOTO NEXT	
42		
43		
44		
45	I = I + 1	
46	IF (I <= 30) GOTO 5	
47	GOTO NEXT	
48		
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Calculation Entry		
I#	Calculation Statements	Units
1		
2		
3		
4		
5	IF (CURRHOUR = CHOUR) GOTO START	
6		
7	CURRHOUR = CHOUR	
8		
9	GOTO NEXT	
10		
11		
12		
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15		
16		
17		
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Calculation Entry

Title: HOURLY 01 Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	PUSHX = CHOUR	
6	IF (CHOUR = 0) PUSHX = 24	
7		
8	PHHH = CHOUR - 1	
9	IF (CHOUR = 0) PHHH = 23	
10		
11	I1 = MMDDYY	
12	IF (CHOUR = 0) I1 = PDMMDDYY	
13		
14	I1 = (I1 * 100) + PHHH	
15		
16	GET (GHHFWA , 1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB)	
17	GET (GHHSL , 1, I2)	
18	GET (GHHEL , 1, I3)	
19	GET (GHHML , 1, I4)	
20	GET (GHHONFL, 1, FC)	
21		
22	PUT (CHLOG1 , PUSHX, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
23	PUT (CHLOG1A, PUSHX, I1, I2, I3, I4)	
24		
25	CLEARHH = 2	
26		
27	GOTO NEXT	
28		
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Calculation Entry

Title: HOURLY 02 Type: Normal

I#	Calculation Statements	Units
1	IF (METERS\$ = 1) GOTO NEXT	
2		
3		
4		
5	PUSHX = CHOUR	
6	IF (CHOUR = 0) PUSHX = 24	
7		
8	PHHH = CHOUR - 1	
9	IF (CHOUR = 0) PHHH = 23	
10		
11	I1 = MMDDYY	
12	IF (CHOUR = 0) I1 = PDMMDDYY	
13		
14	I1 = (I1 * 100) + PHHH	
15		
16	GET (GHHFWA , 2, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB)	
17	GET (GHHONFL, 2, FC)	
18	GET (GHHSL , 2, I2)	
19	GET (GHHEL , 2, I3)	
20	GET (GHHML , 2, I4)	
21		
22	PUT (CHLOG2 , PUSHX, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
23	PUT (CHLOG2A, PUSHX, I1, I2, I3, I4)	
24		
25	GOTO NEXT	
26		
27		
28		
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Calculation Entry

Title: HOURLY 03 Type: Normal

I#	Calculation Statements	Units
1	IF (METERS\$ <> 3) GOTO NEXT	
2		
3		
4		
5	PUSHX = CHOUR	
6	IF (CHOUR = 0) PUSHX = 24	
7		
8	PHHH = CHOUR - 1	
9	IF (CHOUR = 0) PHHH = 23	
10		
11	I1 = MMDDYY	
12	IF (CHOUR = 0) I1 = PDMMDDYY	
13		
14	I1 = (I1 * 100) + PHHH	
15		
16	GET (GHHFWA , 3, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB)	
17	GET (GHHONFL, 3, FC)	
18	GET (GHHSL , 3, I2)	
19	GET (GHHEL , 3, I3)	
20	GET (GHHML , 3, I4)	
21		
22	PUT (CHLOG3 , PUSHX, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
23	PUT (CHLOG3A, PUSHX, I1, I2, I3, I4)	
24		
25	GOTO NEXT	
26		
27		
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Calculation Entry

Title: MONTHLY 01 Type: Normal

I#	Calculation Statements	Units
1	IF (CURRHOOR <> DAYBEGIN) GOTO NEXT	
2		
3	TUBE = 1	
4		
5	GET (GHSL , TUBE, RATEX, I2, NRTOT)	
6	GET (GHEL , TUBE, RATEX, I3, NRTOT)	
7	GET (GHML , TUBE, RATEX, I4, NRTOT)	
8	GET (GHFWA , TUBE, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB)	
9	GET (GHONFL, TUBE, FC)	
10		
11	DPX = F1	
12	GRAVX = F2	
13	TEMPX = F3	
14	PRESX = F4	
15	BTUX = F5	
16	N2X = F6	
17	CO2X = F7	
18		
19	I = PDDD	
20	I1 = PDMDDYY	
21		
22	PUT (C01 , I, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
23	PUT (C01A, I, I1, I2, I3, I4)	
24		
25	PUT (D01 , 1, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
26	PUT (D01A, 1, I1, I2, I3, I4)	
27		
28	CLEARALL = 2	
29		
30	GOTO NEXT	
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Calculation Entry

Title: MONTHLY 01A Type: Normal

I#	Calculation Statements	Units
1	IF (CURRHOUR <> DAYBEGIN) GOTO NEXT	
2		
3		
4		
5	IF (CDAY <> 1) GOTO NEXT	
6		
7	I = 1	
8		
9	MSTOT = 0	
10	METOT = 0	
11	MMTOT = 0	
12		
13		
14		
15	GET (C01 ,I, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
16	PUT (C01 ,I, I0, F0, F0, F0, F0, F0, F0, F0, F0, F0, F0, F0, F0)	
17		
18	GET (C01A, I, I1, I2, I3, I4)	
19	PUT (C01A, I, I0, I0, I0, I0)	
20		
21	PUT (M01 ,I, I1, I2, I3, I4)	
22	PUT (M01A, I, I1, F1, F2, F3, F4)	
23	PUT (M01B, I, I1, F5, F6, F7, F8)	
24	PUT (M01C, I, I1, F9, FA, FB, FC)	
25		
26	MSTOT = MSTOT + I2	
27	METOT = METOT + I3	
28	MMTOT = MMTOT + I4	
29		
30	I = I + 1	
31	IF (I <= 31) GOTO 15	
32		
33	MS01 = MSTOT	
34	ME01 = METOT	
35	MM01 = MMTOT	
36		
37	GOTO NEXT	
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Calculation Entry

Title: MONTHLY 02 Type: Normal

I#	Calculation Statements	Units
1	IF (CURRHOOR <> DAYBEGIN) OR (METERS\$ = 1) GOTO NEXT	
2		
3	TUBE = 2	
4		
5	GET (GHSL , TUBE, RATEX, I2, NRTOT)	
6	GET (GHEL , TUBE, RATEX, I3, NRTOT)	
7	GET (GHML , TUBE, RATEX, I4, NRTOT)	
8	GET (GHFWA , TUBE, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB)	
9	GET (GHONFL, TUBE, FC)	
10		
11	DPX = F1	
12	GRAVX = F2	
13	TEMPX = F3	
14	PRESX = F4	
15	BTUX = F5	
16	N2X = F6	
17	CO2X = F7	
18		
19	I = PDDD	
20	I1 = PDMDDYY	
21		
22	PUT (CO2 , I, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
23	PUT (CO2A, I, I1, I2, I3, I4)	
24		
25	PUT (D02 , 1, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
26	PUT (D02A, 1, I1, I2, I3, I4)	
27		
28	GOTO NEXT	
29		
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Calculation Entry

Title: MONTHLY 02A Type: Normal

I#	Calculation Statements	Units
1	IF (CURRHOUR <> DAYBEGIN) OR (METERS\$ = 1) GOTO NEXT	
2		
3		
4		
5	IF (CDAY <> 1) GOTO NEXT	
6		
7	I = 1	
8		
9		
10	MSTOT = 0	
11	METOT = 0	
12	MMTOT = 0	
13		
14		
15	GET (C02 ,I, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
16	PUT (C02 ,I, I0, F0, F0, F0, F0, F0, F0, F0, F0, F0, F0, F0, F0)	
17		
18	GET (C02A, I, I1, I2, I3, I4)	
19	PUT (C02A, I, I0, I0, I0, I0)	
20		
21	PUT (M02 ,I, I1, I2, I3, I4)	
22	PUT (M02A, I, I1, F1, F2, F3, F4)	
23	PUT (M02B, I, I1, F5, F6, F7, F8)	
24	PUT (M02C, I, I1, F9, FA, FB, FC)	
25		
26	MSTOT = MSTOT + I2	
27	METOT = METOT + I3	
28	MMTOT = MMTOT + I4	
29		
30	I = I + 1	
31	IF (I <= 31) GOTO 15	
32		
33	MS02 = MSTOT	
34	ME02 = METOT	
35	MM02 = MMTOT	
36		
37	GOTO NEXT	
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Calculation Entry

Title: MONTHLY 03 Type: Normal

I#	Calculation Statements	Units
1	IF (CURRHOUR <> DAYBEGIN) OR (METERS\$ <> 3) GOTO NEXT	
2		
3	TUBE = 3	
4		
5	GET (GHSL , TUBE, RATEX, I2, NRTOT)	
6	GET (GHEL , TUBE, RATEX, I3, NRTOT)	
7	GET (GHML , TUBE, RATEX, I4, NRTOT)	
8	GET (GHFWA , TUBE, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB)	
9	GET (GHONFL, TUBE, FC)	
10		
11	DPX = F1	
12	GRAVX = F2	
13	TEMPX = F3	
14	PRESX = F4	
15	BTUX = F5	
16	N2X = F6	
17	CO2X = F7	
18		
19	I = PDDD	
20	I1 = PDMDDYY	
21		
22	PUT (C03 , I, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
23	PUT (C03A, I, I1, I2, I3, I4)	
24		
25	PUT (D03 , 1, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
26	PUT (D03A, 1, I1, I2, I3, I4)	
27		
28	GOTO NEXT	
29		
30		
31		
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Calculation Entry

Title: MONTHLY 03A Type: Normal

I#	Calculation Statements	Units
1	IF (CURRHOUR <> DAYBEGIN) OR (METERS\$ <> 3) GOTO NEXT	
2		
3		
4		
5	IF (CDAY <> 1) GOTO NEXT	
6		
7	I = 1	
8		
9	MSTOT = 0	
10	METOT = 0	
11	MMTOT = 0	
12		
13		
14		
15	GET (C03 ,I, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
16	PUT (C03 ,I, I0, F0, F0, F0, F0, F0, F0, F0, F0, F0, F0, F0, F0)	
17		
18	GET (C03A, I, I1, I2, I3, I4)	
19	PUT (C03A, I, I0, I0, I0, I0)	
20		
21	PUT (M03 ,I, I1, I2, I3, I4)	
22	PUT (M03A, I, I1, F1, F2, F3, F4)	
23	PUT (M03B, I, I1, F5, F6, F7, F8)	
24	PUT (M03C, I, I1, F9, FA, FB, FC)	
25		
26	MSTOT = MSTOT + I2	
27	METOT = METOT + I3	
28	MMTOT = MMTOT + I4	
29		
30	I = I + 1	
31	IF (I <= 31) GOTO 15	
32		
33	MS03 = MSTOT	
34	ME03 = METOT	
35	MM03 = MMTOT	
36		
37	GOTO NEXT	
38		
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Calculation Entry

Title: DAILY Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	IF (CURRHOUR <> DAYBEGIN) GOTO NEXT	
6		
7		
8		
9	PUSHX = DAYBEGIN + 1	
10		
11		
12	I = 1	
13		
14		
15	PUT (QQ,PUSHX,I)	
16		
17	PUSHX = PUSHX + 1	
18	IF (PUSHX = 25) PUSHX = 1	
19		
20	I = I + 1	
21	IF (I <= 24) GOTO 15	
22		
23	CLEARALL = 2	
24		
25	GOTO NEXT	
26		
27		
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30		
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Calculation Entry

Title: DAILY 01 Type: Normal

I#	Calculation Statements	Units
1	IF (CURRHOOR <> DAYBEGIN) GOTO NEXT	
2		
3	I = 1	
4		
5	DSTOT = 0	
6	DETOT = 0	
7	DMTOT = 0	
8		
9		
10	GET (CHLOG1 , I, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
11	GET (CHLOG1A, I, I1, I2, I3, I4)	
12		
13	IF (I1 = 0) GOTO 30	
14		
15	J = I1 MOD 100	
16	J = J + 1	
17	GET (QQ , J, PUSHX)	
18		
19	PUT (HIS01 , PUSHX, I1, I2, I3, I4)	
20	PUT (HIS01A, PUSHX, I1, F1, F2, F3, F4)	
21	PUT (HIS01B, PUSHX, I1, F5, F6, F7, F8)	
22	PUT (HIS01C, PUSHX, I1, F9, FA, FB, FC)	
23		
24	DSTOT = DSTOT + I2	
25	DETOT = DETOT + I3	
26	DMTOT = DMTOT + I4	
27		
28		
29		
30	I = I + 1	
31	IF (I <= 24) GOTO 10	
32		
33	DS01 = DSTOT	
34	DE01 = DETOT	
35	DM01 = DMTOT	
36		
37	PUT (REPQ, 13, 1)	{ PRINT (HIS1)
38	PUT (REPQ, 14, 1)	{ PRINT (HIS1A)
39	PUT (REPQ, 15, 1)	{ PRINT (HIS1B)
40	PUT (REPQ, 16, 1)	{ PRINT (HIS1C)
41	PUT (REPQ, 25, 1)	{ PRINT (DAY1)
42		
43	CLEARDD = 2	
44		
45	GOTO NEXT	
46		
47		
48		
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Calculation Entry

Title: DAILY 02 Type: Normal

I#	Calculation Statements	Units
1	IF (CURRHOOR <> DAYBEGIN) OR (METERS\$ = 1) GOTO NEXT	
2		
3	I = 1	
4		
5	DSTOT = 0	
6	DETOT = 0	
7	DMTOT = 0	
8		
9		
10	GET (CHLOG2 , I, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
11	GET (CHLOG2A, I, I1, I2, I3, I4)	
12		
13	IF (I1 = 0) GOTO 30	
14		
15	J = I1 MOD 100	
16	J = J + 1	
17	GET (QQ , J, PUSHX)	
18		
19	PUT (HIS02 , PUSHX, I1, I2, I3, I4)	
20	PUT (HIS02A, PUSHX, I1, F1, F2, F3, F4)	
21	PUT (HIS02B, PUSHX, I1, F5, F6, F7, F8)	
22	PUT (HIS02C, PUSHX, I1, F9, FA, FB, FC)	
23		
24	DSTOT = DSTOT + I2	
25	DETOT = DETOT + I3	
26	DMTOT = DMTOT + I4	
27		
28		
29		
30	I = I + 1	
31	IF (I <= 24) GOTO 10	
32		
33	DS02 = DSTOT	
34	DE02 = DETOT	
35	DM02 = DMTOT	
36		
37	PUT (REPQ, 17, 1)	{ PRINT (HIS2)
38	PUT (REPQ, 18, 1)	{ PRINT (HIS2A)
39	PUT (REPQ, 19, 1)	{ PRINT (HIS2B)
40	PUT (REPQ, 20, 1)	{ PRINT (HIS2C)
41	PUT (REPQ, 26, 1)	{ PRINT (DAY2)
42		
43	GOTO NEXT	
44		
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Calculation Entry

Title: DAILY 03 Type: Normal

I#	Calculation Statements	Units
1	IF (CURRHOUR <> DAYBEGIN) OR (METERS\$ <> 3) GOTO NEXT	
2		
3	I = 1	
4		
5	DSTOT = 0	
6	DETOT = 0	
7	DMTOT = 0	
8		
9		
10	GET (CHLOG3 , I, I1, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC)	
11	GET (CHLOG3A, I, I1, I2, I3, I4)	
12		
13	IF (I1 = 0) GOTO 30	
14		
15	J = I1 MOD 100	
16	J = J + 1	
17	GET (QQ , J, PUSHX)	
18		
19	PUT (HIS03 , PUSHX, I1, I2, I3, I4)	
20	PUT (HIS03A, PUSHX, I1, F1, F2, F3, F4)	
21	PUT (HIS03B, PUSHX, I1, F5, F6, F7, F8)	
22	PUT (HIS03C, PUSHX, I1, F9, FA, FB, FC)	
23		
24	DSTOT = DSTOT + I2	
25	DETOT = DETOT + I3	
26	DMTOT = DMTOT + I4	
27		
28		
29		
30	I = I + 1	
31	IF (I <= 24) GOTO 10	
32		
33	DS03 = DSTOT	
34	DE03 = DETOT	
35	DM03 = DMTOT	
36		
37	PUT (REPQ, 21, 1)	{ PRINT (HIS3)
38	PUT (REPQ, 22, 1)	{ PRINT (HIS3A)
39	PUT (REPQ, 23, 1)	{ PRINT (HIS3B)
40	PUT (REPQ, 24, 1)	{ PRINT (HIS3C)
41	PUT (REPQ, 27, 1)	{ PRINT (DAY3)
42		
43	GOTO NEXT	
44		
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Calculation Entry

Title: INTERVAL REPORT Type: Normal

I#	Calculation Statements	Units
1		
2		
3		
4		
5	PRNTTIME = (CURRHOUR - DAYBEGIN) MOD NTERVAL	
6		
7	IF (PRNTTIME <> 0) GOTO NEXT	
8		
9	PRINT (CURRENT)	
10		
11	GOTO NEXT	
12		
13		
14		
15		
16		
17		
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50017512 Termination Board One Wire List
 (See Drawing Section of Manual for typical connection to external devices)

+24V	1	AO_01	25	Spare	49
FT_02L+	2	Com	26	Gnd	50
FT_02L-	3	AO_02	27	Spare	51
Com	4	Com	28	Gnd	52
+24V	5	~ STATUS6	29	Spare	53
FT_02H+	6	Gnd	30	Gnd	54
FT_02H-	7	~ STATUS5	31	NO Alarm CC	55
Com	8	~ STATUS4	32	NC Alarm CC	56
+24V	9	Gnd	33	Alrm CC Com	57
PT_01+	10	~ STATUS3	34	Serial Out	58
PT_01-	11	~ STATUS2	35	Serial In	59
Com	12	Gnd	36	DTR/RTS	60
+24V	13	~ STATUS1	37	CTS	61
TT_01+	14	~ ECO2	38	Gnd	62
TT_01-	15	+5V	39	Serial Out	63
Com	16	~ ECO1	40	Serial In	64
+24V	17	~ SCO	41	DTR/RTS	65
FT_01L+	18	+5V	42	CTS	66
FT_01L-	19	~ SCO3	43	Gnd	67
Com	20	~ SCO2	44	Gnd	68
+24V	21	+5V	45	Gnd	69
FT_01H+	22	~ SCO1	46	Gnd	70
FT_01H-	23	+5V	47	Gnd	71
Com	24	~ Detector	48	+5V	72

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50017512 Termination Board Two Wire List

(See Drawing Section of Manual for typical connection to external devices)

~ ECO3 1	~ SAMPLER 32	~ CO19 63	AO_03 94
~ ECO 2	~ CO14 33	~ CO20 64	Com 95
+5V 3	+5V 34	+5V 65	AO_04 96
~ MCO1 4	~ CO15 35	~ CO21 66	Com 97
~ MCO2 5	~ CO16 36	~ CO22 67	
+5V 6	+5V 37	+5V 68	
~ MCO3 7	~ CO17 38	~ CO23 69	
~ MCO 8	~ CO18 39	~ CO24 70	
~ STATUS7 9	Spare 40	Spare 71	
~ STATUS8 10	Gnd 41	Gnd 72	
Gnd 11	Spare 42	Spare 73	
~ STATUS9 12	Gnd 43	Gnd 74	
~ STATUS10 13	~ Detector 44	Spare 75	
~ STATUS11 14	PT_03+ 45	Spare+ 76	
~ STATUS12 15	PT_03- 46	Spare- 77	
Gnd 16	+24V 47	+24V 78	
~ STATUS13 17	Com 48	Com 79	
~ STATUS14 18	TT_03+ 49	Spare+ 80	
~ STATUS15 19	TT_03- 50	Spare- 81	
~ STATUS16 20	FT_03L+ 51	Spare+ 82	
Gnd 21	FT_03L- 52	Spare- 83	
~ STATUS17 22	+24V 53	+24V 84	
~ STATUS18 23	Com 54	Com 85	
~ STATUS19 24	FT_03H+ 55	Spare+ 86	
~ STATUS20 25	FT_03H- 56	Spare- 87	
Gnd 26	PT_02+ 57	PT_04+ 88	
~ STATUS21 27	PT_02- 58	PT_04- 89	Serial Out 98
~ STATUS22 28	+24V 59	+24V 90	Serial In 99
~ STATUS23 29	Com 60	Com 91	Gnd 100
Gnd 30	TT_02+ 61	TT_04+ 92	DTR/RTS 101
~ STATUS24 31	TT_02- 62	TT_04- 93	CTS 102

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