DWG. NO. ELN 2111 | SHEET NO. B4001

IDENTIFICATION LETTERS FOR INSTRUMENTS

VARIABLE	FIRST LETTER	SECOND LETTER	THIRD LETTER	FOURTH LETTER
A	ANALYSIS	ALARM		
B	BURNER FLAME			
C	CONDUCTIVITY (ELECTRICAL) / COMMON	CONTROL	CONTROL	
D	DENSITY OR SPECIFIC GRAVITY	DIFFERENTIAL		
E	VOLTAGE (EMF) OR EMERGENCY	PRIMARY ELEMENT	PRIMARY ELEMENT	
F	FLOW RATE	RATIO		
G		GAUGE GLASS		
H	HAND OR HYDRAULIC	HAND	HIGH	HIGH
I	CURRENT	INDICATE	INDICATE	
J	POWER	SCAN	SCAN	
K	TIME			
L	LEVEL	LIGHT (PILOT)	LOW	LOW
M	MOISTURE		MIDDLE	MIDDLE
N				
O		ORIFICE (RESTRICTION)		
P	PRESSURE OR VACUUM	POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATOR	INTEGRATOR	
R	RADIOACTIVITY	RECORD OR PRINT	RECORD OR PRINT	
S	SPEED	SWITCH OR SAFETY	SWITCH	
T	TEMPERATURE	TRANSMITTER	TRANSMITTER	
U	MULTIVARIABLE	MULTIFUNCTION	MULTIFUNCTION	
V	VISCOSITY	VALVE	VALVE	VALVE
W	WEIGHT	WELL		
X	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y		RELAY OR COMPUTE	RELAY OR COMPUTE	
Z	POSITION	POSITION		

NOTE:- ALL PROCESS MEASUREMENTS INDICATED OR RECORDED ON THE MAIN BOARD ARE ALSO DATA LOGGED BY THE COMPUTER.

INSTRUMENT BALLOON SYMBOLS

- LOCAL MOUNTED INSTRUMENT FOR SINGLE VARIABLE
- LOCAL BOARD MOUNTED INSTRUMENT.
- INSTRUMENT MOUNTED BEHIND BOARD.
- INSTRUMENT MOUNTED ON MAIN BOARD.
- LOCALLY MOUNTED INSTRUMENT WITH TWO SERVICES
- AUX — INSTRUMENT MOUNTED IN TP1 INTERFACE ROOM
- PILOT LIGHT
- INSTRUMENT MOUNTED BEHIND LOCAL BOARD

MISCELLANEOUS INSTRUMENT SYMBOLS

- BOARD MOUNTED PATCHBOARD OR MATRIX BOARD CONNECTION, NUMBER 12.
- P — PURGE OR FLUSHING DEVICE.
- I — GENERALISED - FOR UNDEFINED OR COMPLEX INTERLOCK LOGIC.
- AND — INTERLOCK IS EFFECTIVE ONLY IF ALL INPUTS EXIST.
- OR — INTERLOCK IS EFFECTIVE IF ANY ONE OR MORE INPUTS EXIST.
- FAB — ALARM AND FIRE PUMP START STATION.
- ESD — EMERGENCY SHUTDOWN STATION.
- ESD — FROM EMERGENCY SHUTDOWN SYSTEM.
- ESD — TO EMERGENCY SHUTDOWN SYSTEM.

MISCELLANEOUS LETTER ABBREVIATIONS

FLA - FLAME ARRESTOR
LUB - LUBRICATOR
CSC - CAR SEAL CLOSED
CSO - CAR SEAL OPEN
BSW - BASIC SEDIMENT & WATER
STR - STRAINER
ESDV - EMERGENCY SHUTDOWN VALVE
(VF) - VENDOR FURNISHED
(CF) - CUSTOMER FURNISHED
NC - NORMALLY CLOSED
NO - NORMALLY OPEN
I/A - INSTRUMENT AIR SUPPLY
S.P - SET POINT
FM - FIRE MONITOR
HR - HOSE REEL
S/D. - SHUTDOWN
BF - BLIND FLANGE
R.P. - RODDING POINT

VALVE SYMBOLS

- GATE
- BALL
- ROTARY PLUG OR BALL
- CHECK
- BUTTERFLY
- GLOBE
- NEEDLE
- PLUG

CONTROL VALVE BODY SYMBOLS

- GLOBE, GATE, OR OTHER IN-LINE TYPE NOT OTHERWISE IDENTIFIED
- ROTARY PLUG OR BALL
- ANGLE
- BUTTERFLY, DAMPER OR LOUVRE
- THREE-WAY
- CHOKE

VALVE ACTUATOR SYMBOLS

- DIAPHRAGM SPRING OPPOSED
- SINGLE-ACTING CYLINDER, WITHOUT POSITIONER OR OTHER PILOT
- M — ROTARY MOTOR
- DOUBLE-ACTING CYLINDER WITHOUT POSITIONER OR OTHER PILOT
- SPRING, WEIGHT OR INTEGRAL PILOT FOR PSV'S.
- ANY CYLINDER THAT IS ASSEMBLED WITH PILOT SO THAT ASSEMBLY IS ACTUATED BY ONE CONTROLLED INPUT
- HAND ACTUATOR/MOUNTED AT TOP, SIDE, OR BOTTOM OF ACTUATED DEVICE AS APPLICABLE
- S — SOLENOID
- S — LATCH-TYPE SOLENOID ACTUATOR WITH RESET
- R — (MANUAL RESET)
- R — (REMOTE RESET)

SYMBOLS FOR SELF-ACTUATED REGULATORS, VALVES, AND OTHER DEVICES

- HS — HAND-ACTUATED ON-OFF SWITCHING VALVE IN PNEUMATIC SIGNAL LINE
- HO — MANUALLY ADJUSTABLE RESTRICTION ORIFICE IN PNEUMATIC SIGNAL LINE
- TANK — LCV — LEVEL REGULATOR WITH MECHANICAL LINKAGE
- PCV — PRESSURE-REDUCING REGULATOR SELF CONTAINED
- PCV — PRESSURE-REDUCING REGULATOR WITH EXTERNAL PRESSURE TAP
- PDCV — DIFFERENTIAL-PRESSURE-REDUCING REGULATOR WITH INTERNAL AND EXTERNAL PRESSURE TAPS
- PCV — BACKPRESSURE REGULATOR, SELF-CONTAINED
- PCV — BACKPRESSURE REGULATOR WITH EXTERNAL PRESSURE TAP
- PI, PCV — PRESSURE-REDUCING REGULATOR WITH INTEGRAL OUTLET PRESSURE RELIEF VALVE, AND OPTIONAL PRESSURE INDICATOR (TYPICAL AIR SET).
- PSV — PRESSURE RELIEF, ANGLE PATTERN, SPRING OR WEIGHT LOADED, OR WITH INTEGRAL PILOT.
- PSV — PRESSURE RELIEF, STRAIGHT-THROUGH PATTERN, SPRING- OR WEIGHT-LOADED, OR WITH INTEGRAL PILOT.
- PSV — VACUUM RELIEF VALVE, ANGLE PATTERN, SPRING OR WEIGHT-LOADED, OR WITH INTEGRAL PILOT.
- PSV — PRESS. VAC. — PRESSURE AND VACUUM RELIEF VALVE, SPRING OR WEIGHT-LOADED, OR WITH INTEGRAL PILOT.
- PSV — TANK — PRESSURE AND VACUUM RELIEF MANHOLE COVER
- PSE — RUPTURE DISK OR SAFETY HEAD FOR PRESSURE RELIEF
- PSE — RUPTURE DISK OR SAFETY HEAD FOR VACUUM RELIEF.
- TCV — TEMPERATURE REGULATOR, FILLED-SYSTEM TYPE WITH WELL.
- TSE — TANK — FUSIBLE PLUG OR DISK.

SYMBOLS FOR ACTUATOR ACTION IN EVENT OF ACTUATOR POWER FAILURE (SHOWN TYPICALLY FOR DIAPHRAGM-ACTUATED CONTROL VALVE)

- FO — TWO-WAY VALVE, FAIL OPEN
- FC — TWO-WAY VALVE, FAIL CLOSED
- FL — ANY VALVE, FAIL LOCKED (POSITION DOES NOT CHANGE)
- FI — ANY VALVE, FAIL INDETERMINATE
- A B C FO — THREE-WAY VALVE FAIL OPEN TO PATH A-C

PRIMARY ELEMENT SYMBOLS

- FE — ORIFICE PLATE WITH FLANGE OR CORNER TAPS.
- FE — ORIFICE PLATE WITH VENA CONTRACTA, RADIUS OR PIPE TAPS.
- FE — ORIFICE PLATE IN QUICK CHANGE FITTING.
- FE — TURBINE- OR PROPELLER-TYPE PRIMARY ELEMENT.
- FI — ROTAMETER TYPE FLOW INDICATOR.
- FQI — POSITIVE-DISPLACEMENT-TYPE FLOW TOTALIZING INDICATOR
- TARGET OR MASS FLOW ETC. — RECEIVER — FT — UNCLASSIFIED PRIMARY FLOW ELEMENT INTEGRAL WITH TRANSMITTER.
- FE — PITOT TUBE OR PITOT VENTURI TUBE
- FG — FLOW SIGHT GLASS
- FO — FIXED RESTRICTION ORIFICE
- FX — FLOW STRAIGHTENING VANES
- TANK — LG — GAUGE GLASS, INTEGRALLY MOUNTED ON TANK.
- TANK — LG — GAUGEGLASS EXTERNALLY MOUNTED.
- TANK — LT — RECEIVER — LEVEL TRANSMITTER, INTERNAL FLOAT TYPE OR DISPLACER TYPE, MOUNTED ON TANK.
- TANK — LI — LEVEL INDICATOR, MAGNET-WINDOW TYPE, OR FLOAT OR DISPLACER TYPE.
- LI — TANK — LEVEL INDICATOR, FLOAT TYPE, WITH GAUGE BOARD OR TAPE INDICATOR MOUNTED ABOVE TANK.
- TANK — LT — RECEIVER — LEVEL TRANSMITTER, DIFFERENTIAL-PRESSURE TYPE, MOUNTED ON TANK.
- LT — P — AIR RECEIVER — LEVEL TRANSMITTER FOR OPEN TANK WITH DIP TUBE AND AIR PURGE
- TE — TEMPERATURE ELEMENT WITH WELL.
- TI — FILLED-SYSTEM-TYPE TEMPERATURE INDICATOR WITH WELL.
- RTD — TI — THERMOCOUPLE OR RESISTANCE BULB (RTD) TEMPERATURE ELEMENT CONNECTED TO TEMPERATURE INDICATOR
- TI — BIMETALLIC-TYPE THERMOMETER, GLASS THERMOMETER OR OTHER LOCAL UNCLASSIFIED TEMPERATURE INDICATOR

RELAYS AND COMPUTE SYMBOLS

- TCV — TY — I/P — ELECTRIC CURRENT SIGNAL ACTUATING PNEUMATIC CONTROL VALVE WITH SEPARATELY MOUNTED ELECTRO-PNEUMATIC CONVERTER. (SEE NOTE BELOW)
- TCV — TY — I/P — ELECTRIC CURRENT SIGNAL TO PNEUMATIC CONTROL VALVE FURNISHED WITH ATTACHED ELECTROPNEUMATIC SIGNAL CONVERTER. (SEE NOTE BELOW)
- FY — RECVR — SELECTOR RELAY WHOSE OUTPUT REPRESENTS HIGHER FLOW OF TWO INPUTS.
- FY — RECVR — SELECTOR RELAY WHOSE OUTPUT REPRESENTS LOWER FLOW OF TWO INPUTS.
- FY — FLOW SUMMATION RELAY.
- FY — SQUARE ROOT EXTRACTOR
- FY — DIFFERENTIAL RELAY

NOTE:-
I/H IS USED FOR ELECTRIC CURRENT/HYDRAULIC CONVERTER.
E/P IS USED FOR ELECTRIC VOLTAGE/PNEUMATIC CONVERTER.
I/P IS USED FOR ELECTRIC CURRENT/PNEUMATIC CONVERTER.
E/I IS USED FOR ELECTRIC VOLTAGE/ELECTRIC CURRENT CONVERTER.

LINE AND PIPING SYMBOLS

- MAJOR PROCESS LINE
- MINOR PROCESS LINE
- INSTRUMENT PNEUMATIC SIGNAL
- INSTRUMENT CAPILLARY TUBING (FILLED SYSTEM)
- ELECTRICAL SIGNAL
- INSTRUMENT HYDRAULIC SIGNAL
- ELECTROMAGNET OR SONIC SIGNAL
- FUTURE PIPING
- INSULATED LINE
- SINGLE TRACED LINE (TYPE TO BE SPECIFIED)
- SKID LIMIT

TYPICAL PROCESS LINE IDENTIFICATION

12GC-10"-P-I

- 12 — LINE No.
- G — PIPE SPECIFICATION
- C — NOMINAL LINE SIZE
- 10" — NOMINAL LINE SIZE
- P — TYPE OF INSULATION
- I — COMMODITY IN LINE

TYPES OF INSULATION

I - CALCIUM SILICATE

EQUIPMENT SYMBOLS

- M — ELECTRIC MOTOR DRIVEN CENTRIFUGAL PUMP
- T — TURBINE DRIVEN CENTRIFUGAL PUMP
- MOTOR DRIVEN RECIPROCATING PUMP
- MOTOR DRIVEN RECIPROCATING COMPRESSOR
- MOTOR DRIVEN ROTARY OR GEAR PUMP
- M, H, A — ELECTRIC MOTOR DRIVER HYRAULICALLY OPERATED AIR MOTOR DRIVER
- E — ELECTRICAL GENERATOR
- MOTOR DRIVEN CENTRIFUGAL COMPRESSOR
- ENGINE
- TURBINE
- MOTOR DPIVEN FORCED DRAUGHT HEAT EXCHANGER
- SHELL AND TUBE HEAT EXCHANGER
- EJECTOR/BOOSTER
- MOTOR DRIVEN BLADE MIXER
- PERMANENT STRAINER
- 'Y' TYPE STRAINER
- CAP
- SCREWED CAP
- HOSE CONNECTION
- FLOW DIRECTION
- BLIND FLANGE
- FLANGE
- BLIND AND SPACER
- FIG.8 BLIND
- TS — TEMPORARY STRAINER
- DUPLEX BASKET STRAINER
- EXPANSION JOINT
- EXPANSION BELLOWS
- REDUCER
- FLEXIBLE HOSE
- VENT
- OPEN DRAIN
- FILTER
- T — TRAP OR DRAINER
- SP — PIPING SPECIALITY
- PUSH BUTTON STATION
- FIXED TEMPERATURE FUSIBLE PLUG
- RATE OF TEMPERATURE RISE DETECTOR
- SPRINKLER HEAD (OPEN TYPE)
- SPRINKLER HEAD (FUSIBLE TYPE)
- HOSE REEL
- FIRE MONITOR
- DUTY SELECTOR SWITCH
- HEATING ELEMENT
- FLAME DETECTOR
- GAS DETECTOR
- IONISATION SMOKE DETECTOR
- H — HAND PUMP
- VICTUALIC COUPLING
- WECO HAMER COUPLING
- SILENCER

HYDRO-TEST SYMBOLS

- LINE BLIND
- BLIND FLANGE
- 'CLOSED' VALVE
- LINE PLUG

NOTE:- JACK OPEN OR REMOVE CHECK VALVES.

QP HYDRO-TEST FLOWSHEET

FAB. STDS. REQ'D. THIS SHT.	DESIGN	STRUCT.	PIPING	ELEC.	MK.	BY	DATE	REVISIONS	DATE	APP.

DESIGN	STRUCT.	PIPING	ELEC.	MK.	BY	DATE	REVISIONS	DATE	APP.

DESIGN	STRUCT.	PIPING	ELEC.	MK.	BY	DATE	REVISIONS	DATE	APP.
A.H.				2	JP	20.10.76	APPROVED FOR CONSTRUCTION	25/10/76	
A.H.				1	JP	7.10.76	ISSUED FOR CLIENTS APPROVAL	15/10/76	

21.10.76

rev.	date	DESCRIPTION	by	app.
2	18/10/76	NEW FF - NUMBER	AG	

elf aquitaine norge a/s p.o.box 188 — 4001 Stavanger

FRIGG FIELD — QUARTERS PLATFORM — Dwgr. no. FF 96 00 00 5015 — Rev. 2 — Sheet 1/1

APPROVED: [signature] DATE: 21/10/76

ENGINEERS APPROVAL

	BY	DATE
PROJECT	[signature]	18/10/76
STRUCTURAL		
PROCESS	[signature]	7-10-76
MECHANICAL	[signature]	19-10-76
ELECTRICAL		
INSTRUMENT		
FAB. CHECK		
PROP. CHECK		

McDERMOTT-HUDSON
LONDON ENGLAND

DRAWN BY	SCALE	DATE	DWG NO.
J PARKER	NONE	7-10-76	ELN 2111
DESIGNED BY		ZONE No.	SHEET NO.
A HAILSTONE		00	B4001

LEGEND FOR PIPING AND INSTRUMENT DIAGRAM

U.S.O.