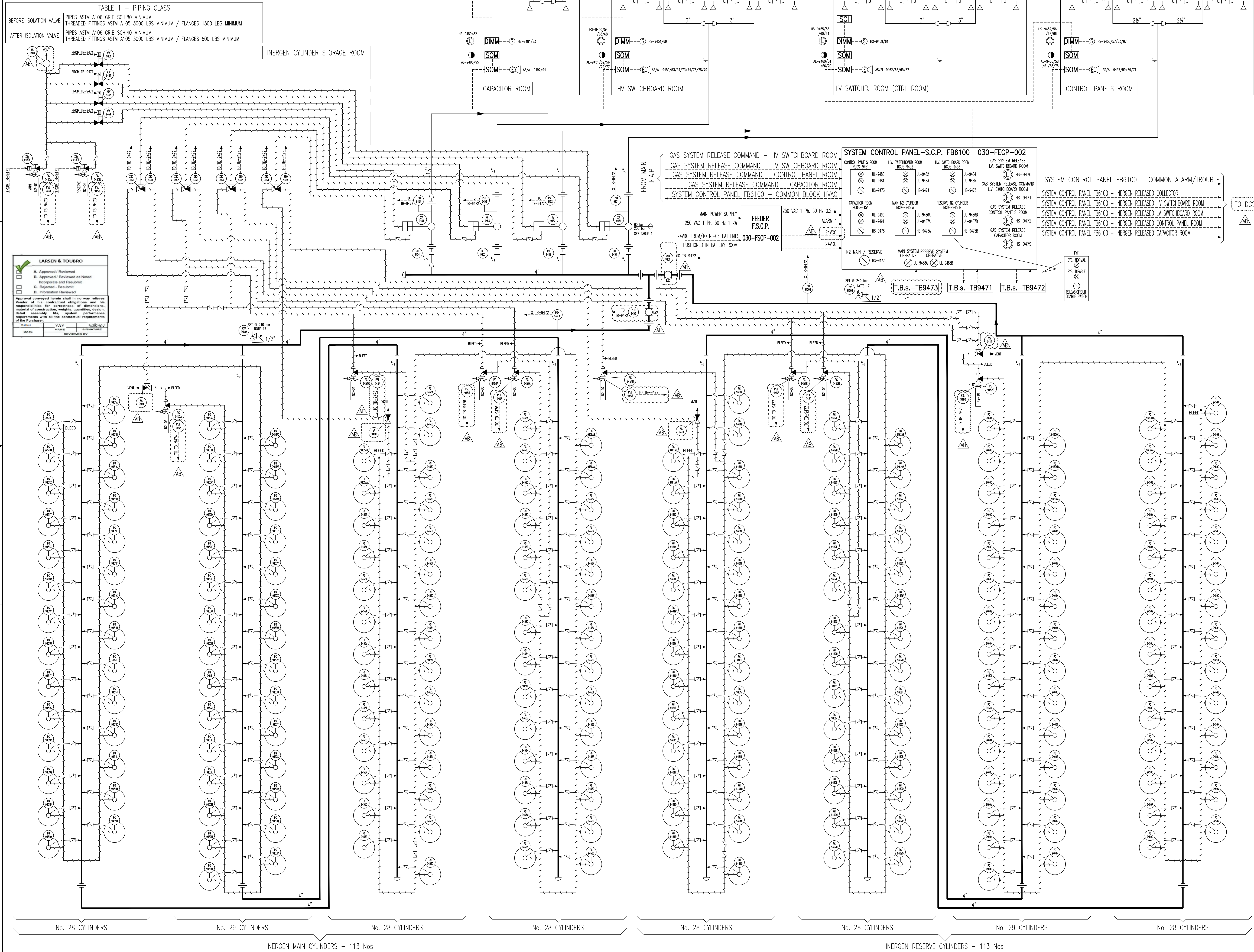


DESIGN TABLE										
PROTECTED BUILDING	PROTECTED AREA	VOLUME [c.m.]	DESIGN CONC. [%]	VOLUME FACTOR [c.m./c.m.]	SUPPLY AGENT [kg]	DESIGN AGENT [kg]	CYLINDER Q.TY		NOZZLE	
							MAIN	RESERVE	Q.TY	CONN.
MAIN SUBSTATION	HV SWITCHBOARD ROOM	3693,4	38,5	0,48854	2689,4	2556,5	113	113	16	02"
	LV SWITCHBOARD ROOM (CTRL ROOM)	3594,5			2546,6	2425,8	107	107	16	02"
	CONTROL PANEL ROOM	2709,1			1975,4	1875,2	83	83	16	01 1/4"
	CAPACITOR ROOM	436,3			301,5	316,6	14	14	2	01"



GENERAL NOTES

A. FOR STANDARD SYMBOLS AND NOMENCLATURE SEE DRAWINGS:
 - 50489-530-020-PD-1104.001 / PIPING AND INSTRUMENTATION DIAGRAM-STANDARD SYMBOL & NOMENCLATURE
 - 50489-530-020-PD-1106.002 / PIPING AND INSTRUMENTATION DIAGRAM-STANDARD SYMBOL & NOMENCLATURE
 - 50489-530-020-PD-1106.001 / PIPING AND INSTRUMENTATION DIAGRAM-STANDARD SYMBOL & NOMENCLATURE
 - 50489-530-020-PD-1106.004 / PIPING AND INSTRUMENTATION DIAGRAM-STANDARD SYMBOL & NOMENCLATURE (BY DETAIL)
 - 50489-530-020-PD-1108.001 / PIPING AND INSTRUMENTATION DIAGRAM-STANDARD SYMBOL & NOMENCLATURE (BY DETAIL)
 - 50489-530-020-PD-1108.001 / PIPING AND INSTRUMENTATION DIAGRAM-STANDARD SYMBOL & NOMENCLATURE (BY DETAIL)
 ALL INSTRUMENT TAG NO. SHOWN IN THIS PD ARE PRECEDED BY 030.

NOTES

- WHEN GAS SYSTEM IS DISCHARGED, RELATED HVAC SYSTEM SHALL BE SHUT DOWN SIMULTANEOUSLY IN MANUAL OPERATING DIRECT ON SYSTEM DISCHARGE. THERE IS DELAY OF 30 SEC. IF THE DISCHARGE SYS. IS ACTIVATED BY INERGEN RELEASE REQUEST.
- THE PRE-DISCHARGE HORN/STROBE AND ABORT STATION SHALL BE INSTALLED IN THE PROTECTED ROOM. THE DISCHARGE WARNING LAMP AND MANUAL STATION SHALL BE INSTALLED OUTSIDE OF EXIT DOOR.
- FOR SECONDARY POWER OF GAS SYSTEM CONTROL PANEL, THE BUILT-IN TYPE NI-Cd BATTERY SHALL BE SUPPLIED.
- FIRE DETECTION SYSTEM FOR GAS SUPPRESSION SYSTEM SHALL HAVE TWO CROSSED CIRCUITS PER PROTECTED AREA (NOT SANCO SCOPE OF SUPPLY).
- PRE DISCHARGE HORN SHALL BE OPERATED BEFORE THE GAS RELEASED FOR PERSONNEL EVACUATION.
- SOLENOID VALVE ON THE PILOT CYLINDER SHALL BE OPENED BY CROSSED CIRCUIT DETECTION AFTER 30 SEC. TIME DELAY.
- ALL SIGNAL CABLE FOR GAS SYSTEM SHALL BE FIRE RESISTANT AS PER KOC STANDARD KOC-I-011 FOR INSTRUMENT CABLE (SEE "FIRE ALARM SYSTEM - DATA SHEETS" DOC. No. 50489-530-080-00081-DAT-V002).
- MAIN POWER FOR GAS SYSTEM CONTROL PANEL WILL BE SUPPLIED FROM MAIN POWER IN NORMAL STAGE BUT, IN CASE OF EMERGENCY, IT WILL BE SUPPLIED BY NIKEL CADMIO BATTERIES.
- IS-541 CYLINDERS BASED ON 80 LITERS CAPACITY, 200 bar SYSTEM. (SEE "GASEOUS FIRE SUPPRESSION SYSTEM - DATA SHEET" DOC. No. 50489-530-080-00081-DAT-V001)
- GAS SUPPRESSION SYSTEM IS DESIGNED IN ACCORDANCE WITH NFPA 2001/NFPA 72 AND UL LISTED & FM APPROVED.
- DISCHARGE TIME FOR IS-541 SYSTEM IS 120 sec ACCORDING TO NFPA 2001 chap. 5.7.1.1.2
- TOTAL FLOODING SYSTEM
- RESERVE CYLINDERS ARE 100% OF MAIN CYLINDERS
- IS-541 DISCHARGE VALVES AND SELECTOR VALVES ARE A LATCHING SOLENOID ACTUATORS. ONLY DURING A FIRE ALARM INTO A PROTECTED ROOM THE RELEVANT SOLENOIDS ARE ENERGIZED AND SO BOTH DISCHARGE AND SELECTOR VALVES ARE OPENED. ONCE ENERGIZED AND SO ACTIVATED BOTH VALVES WILL REMAIN OPENED EVEN IF POWER FAILS AND IT MUST BE RESETTED DIRECTLY ON INSTRUMENT.
- TYPE OF VENDORS SCOPE OF SUPPLY CABLES:
 - SCF FROM/TO TB, TB FROM/TO SPECIALISTS MATERIALS (NOT IN INERGEN CYL. ROOM) - MC CABLE
 - SCF FROM/TO TB, TB FROM/TO INSTRUMENT (IN INERGEN CYL. ROOM) - MC CABLE
 - SCF FROM/TO FEEDER, FEEDER FROM/TO NI-Cd BATTERIES - UL OR UR CABLE
 ALL CABLE GLANDS FOR MC CABLE ARE IN MOD-15
- DESIGN PRESSURE BEFORE ISOLATION VALVE: 200 bar
 AFTER ISOLATION VALVE: 60 bar
- SET PRESSURE OF 240 bar CORRESPOND TO 55°C
- BLEED VALVE DISCHARGES THE LEAKAGE GAS IN SMALL QUANTITY. AUTOMATICALLY CLOSES WHEN DISCHARGE PRESSURIZING OCCURS. IT WILL OPEN MANUALLY BY PUSHING RELEASE BUTTON ON IT.
- 3-WAY-VENT VALVE TO BE OPERATED MANUALLY AFTER THE INERGEN SYSTEM DISCHARGE IN ORDER TO VENT TO ATMOSPHERE THE RESIDUAL N2 GAS IN PILOT LINE.

REFERENCE DOCUMENTS

50489-530-080-00081-DAT-V001	GASEOUS FIRE SUPPRESSION SYSTEM - DATA SHEET
50489-530-080-00081-DAT-V002	FIRE ALARM SYSTEM - DATA SHEETS
50489-530-031-00081-GAD-V002	GASEOUS FIRE SUPPRESSION SYSTEM - MAIN SUBSTATION BUILDING - CYLINDER ROOM ARRANGEMENT
50489-530-050-00081-LAD-V002	GASEOUS FIRE SUPPRESSION SYSTEM - MAIN SUBSTATION BUILDING - PIPING LAYOUT
50489-530-080-00081-LAD-V002	FIRE ALARM SYSTEM - MAIN SUBSTATION BUILDING - LAYOUT

LEGENDS

	CYLINDER VALVE c/w PNEUMATIC ACTUATOR HEAD
	N2 PILOT CYLINDER VALVE c/w ELECTRICAL ACTUATOR and MANUAL ACTUATOR HEAD
	ELECTRICAL-MANUAL ACTUATOR FOR SELECTOR VALVE
	DISCHARGE NOZZLE
	SYSTEM CONTROL PANEL SANCO FB 6100 (S.C.P.)
	FEEDER FOR SYSTEM CONTROL PANEL SANCO FB 6100 (F.S.C.P.)
	TERMINAL BOXES C/W TERMINAL
	ELECTRIC ACTUATOR
	LIMIT SWITCH
	HIGH PRESSURE SWITCH
	LOW PRESSURE SWITCH
	GAS EXTINGUISH MANUAL STATION
	GAS EXTINGUISH ABORT STATION
	PRE-DISCHARGE HORN/STROBE RED
	GAS-DISCHARGE LAMP STROBE RED
	DUAL INPUT MONITOR MODULE C/W TERMINAL BOX
	SUPERVISED OUTPUT MODULE C/W TERMINAL BOX
	SHORT CIRCUIT ISOLATOR C/W TERMINAL BOX
	SAFETY VALVE (DISCHARGE PIPING)
	RUPTURE DISC (CYLINDER VALVE)
	COPPER TUBING ø6mm
	CHECK VALVE
	THREE WAY VALVE
	BALL VALVE

GRAPHIC SCALE 1:XX

AB	IS BUILT	D.C.	L.C.	D.P.	D.P.	18.04.18
J	ISSUED FOR INCORPORATE CLIENT COMMENTS	S.B.	L.C.	D.P.	D.P.	04.12.17
I	ISSUED FOR INCORPORATE CLIENT COMMENTS	A.F.	L.C.	D.P.	D.P.	27.10.17
H	REVISED WHERE INDICATED (INTERNAL REVIEW)	A.A.	L.C.	D.P.	D.P.	22.09.17
G	ISSUED FOR INCORPORATE CLIENT COMMENTS	D.G.	L.C.	D.P.	D.P.	28.06.17
REV.	DESCRIPTION	DRAWN	CHECKED	HOOD	PEM	DATE

CONTRACTOR REVISION

KUWAIT OIL CO. K. S. C. 	
CONTRACTOR DETAILS:- LARSEN & TOUBRO LIMITED FARIDABAD	
SUPPLIER DETAILS:- SANCO Fire Protection and Safety Technology VIA RAVAZZA 13/A - 20066 GALLATE (NOVARA) ITALY	
PROJECT TITLE:- NEW GATHERING CENTRE GC-30 IN NORTH KUWAIT	
DOCUMENT TITLE:- PIPING & INSTRUMENTATION DIAGRAM MAIN SUBSTATION INERT GAS SUPPRESSION SYSTEM P&ID DIAGRAM	
PROJECT NO.	DRAWING NO.
CONTRACTOR DRG. NO.	REV. SUPPLIER DRG. NO.
50489-530-000-00081-PID-V002	SA-015859-002
SHEET NO. 1 OF 1	SHEET NO. 1 OF 1
COMPANY DRG. NO.	REV. UTC NO.
SHEET NO.	