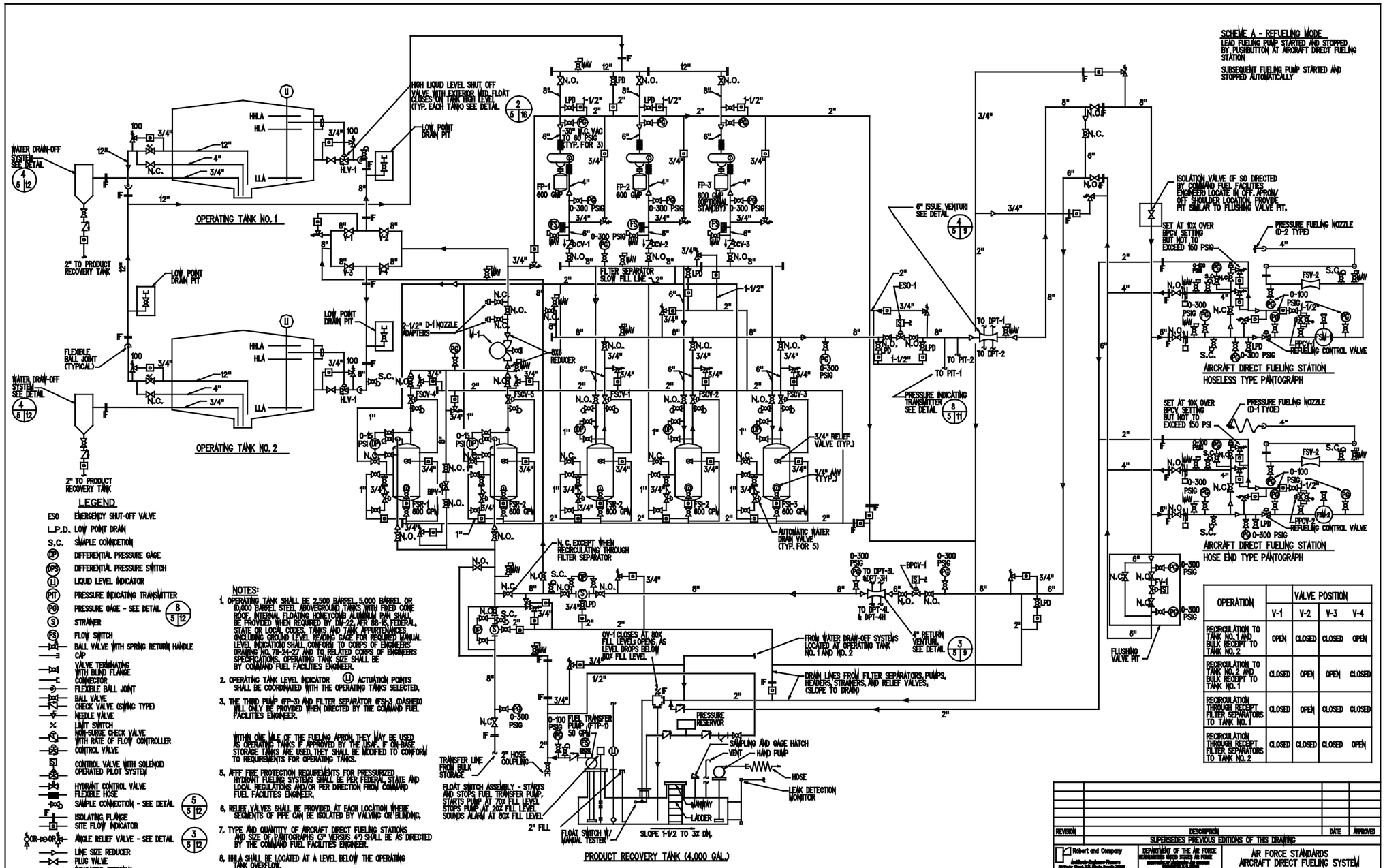

LEGEND

- ESO — EMERGENCY SHUT-OFF VALVE
- L.P.D. — LOW POINT DRAIN
- S.C. — SAMPLE CONNECTION
- DP — DIFFERENTIAL PRESSURE GAGE
- DPS — DIFFERENTIAL PRESSURE SWITCH
- LI — LIQUID LEVEL INDICATOR
- PIT — PRESSURE INDICATING TRANSMITTER
- PG — PRESSURE GAGE - SEE DETAIL 8/5/12
- S — STRAINER
- FS — FLOW SWITCH
- BALL VALVE WITH SPRING RETURN HANDLE
- CAP
- VALVE TERMINATING WITH BLIND FLANGE CONNECTOR
- FLEXIBLE BALL JOINT
- BALL VALVE
- CHECK VALVE (SWING TYPE)
- NEEDLE VALVE
- LIMIT SWITCH
- NON-SURGE CHECK VALVE WITH RATE OF FLOW CONTROLLER
- CONTROL VALVE
- CONTROL VALVE WITH SOLENOID OPERATED PILOT SYSTEM
- HYDRANT CONTROL VALVE
- FLEXIBLE HOSE
- SAMPLE CONNECTION - SEE DETAIL 5/5/12
- F — ISOLATING FLANGE
- SITE FLOW INDICATOR
- OR — ANGLE RELIEF VALVE - SEE DETAIL 3/5/12
- LINE SIZE REDUCER
- PLUG VALVE
- INDICATES OPTIONAL
- WYE STRAINER
- ANGLE TYPE CONTROL VALVE
- BUTTERFLY VALVE WITH FUSIBLE LINK OPERATOR
- 2-1/2" D-1 NOZZLE ADAPTER
- PRESSURE REFUELING NOZZLE

NOTES:

1. OPERATING TANK SHALL BE 2,500 BARREL, 5,000 BARREL OR 10,000 BARREL STEEL ABOVEGROUND TANKS WITH FIXED CONE ROOF. INTERNAL FLOATING HONEYCOMB ALUMINUM PAN SHALL BE PROVIDED WHEN REQUIRED BY DM-22, AFR 88-15, FEDERAL, STATE OR LOCAL CODES. TANKS AND TANK APPURTENANCES, (INCLUDING GROUND LEVEL READING GAGE FOR REQUIRED MANUAL LEVEL INDICATION) SHALL CONFORM TO CORPS OF ENGINEERS DRAWING NO. 78-24-27 AND TO RELATED CORPS OF ENGINEERS SPECIFICATIONS. OPERATING TANK SIZE SHALL BE BY COMMAND FUEL FACILITIES ENGINEER.
2. OPERATING TANK LEVEL INDICATOR (LI) ACTUATION POINTS SHALL BE COORDINATED WITH THE OPERATING TANKS SELECTED.
3. THE THIRD PUMP (FP-3) AND FILTER SEPARATOR (FSI-3) (DASHED) WILL ONLY BE PROVIDED WHEN DIRECTED BY THE COMMAND FUEL FACILITIES ENGINEER.

   WITHIN ONE MILE OF THE FUELING APRON, THEY MAY BE USED AS OPERATING TANKS IF APPROVED BY THE USAF. IF ON-BASE STORAGE TANKS ARE USED, THEY SHALL BE MODIFIED TO CONFORM TO REQUIREMENTS FOR OPERATING TANKS.
5. AFFF FIRE PROTECTION REQUIREMENTS FOR PRESSURIZED HYDRANT FUELING SYSTEMS SHALL BE PER FEDERAL, STATE AND LOCAL REGULATIONS AND/OR PER DIRECTION FROM COMMAND FUEL FACILITIES ENGINEER.
6. RELIEF VALVES SHALL BE PROVIDED AT EACH LOCATION WHERE SEGMENTS OF PIPE CAN BE ISOLATED BY VALVING OR BLINDING.
7. TYPE AND QUANTITY OF AIRCRAFT DIRECT FUELING STATIONS AND SIZE OF PANTOGRAPHS (3" VERSUS 4") SHALL BE AS DIRECTED BY THE COMMAND FUEL FACILITIES ENGINEER.
8. HHLA SHALL BE LOCATED AT A LEVEL BELOW THE OPERATING TANK OVERFLOW.
9. ALL THERMAL RELIEF VALVES, W/O SPECIFIED SET PRESSURE, SHALL BE SET AT A PRESSURE 10% GREATER THAN THE PUMP DEAD HEAD PRESSURE, NOT TO EXCEED 285 PSIG.
10. SEE SHEET 20, NOTE 19 FOR CATHODIC PROTECTION SYSTEM DESIGN REQUIREMENTS, A/E SHALL VERIFY "F" LOCATIONS.
11. PROVIDE HIGH POINT VENTS AND LOW POINT DRAINS AS REQUIRED TO ENSURE COMPLETE DRAINAGE AND COMPLETE AIR VENTING OF FUEL PIPING, LOCATE OFF-APRON WHENEVER POSSIBLE.

OPERATION	VALVE POSITION			
	V-1	V-2	V-3	V-4
RECIRCULATION TO TANK NO. 1 AND BULK RECEIPT TO TANK NO. 2	OPEN	CLOSED	CLOSED	OPEN
RECIRCULATION TO TANK NO. 2 AND BULK RECEIPT TO TANK NO. 1	CLOSED	OPEN	OPEN	CLOSED
RECIRCULATION THROUGH RECEIPT FILTER SEPARATORS TO TANK NO. 1	CLOSED	OPEN	CLOSED	CLOSED
RECIRCULATION THROUGH RECEIPT FILTER SEPARATORS TO TANK NO. 2	CLOSED	CLOSED	CLOSED	OPEN

REVISION	DESCRIPTION	DATE	APPROVED
	SUPERSEDES PREVIOUS EDITIONS OF THIS DRAWING		

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SUBMITTED BY: DATE: 30-3-80
EIC:
BR.HD.:
FPE:
APPROVED: DATE: 1/8/81
EFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS USAF, WASHINGTON, D.C. 20330
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ALEXANDRIA, VIRGINIA 22332

ACCEPTED: DATE: 1-22-81
USAF FUEL FACILITIES ENGINEER
APPROVED FOR CHIEF OF STAFF, U.S. AIR FORCE
CHIEF, ENGINEERING DIVISION
DATE: 1-22-81

AIR FORCE STANDARDS
AIRCRAFT DIRECT FUELING SYSTEM
TYPE IV

UNVERIFIED DRAFT

FLOW DIAGRAM

SCALE: AS NOTED
SPEC. NO. 78-24-29-00-AF
SHEET
DRAWING NO. AF 78-24-29