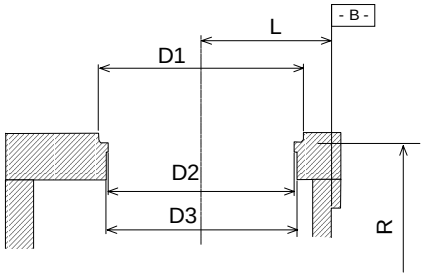
Order No. 5171315	INSPECTION REPORT	Brookhaven National Laboratory CERN/ATLAS Barrel Cryostat

Item	Outer Warm Vessel	Date		Inspector	

Transition Through Holes (END 'A')



Unit: mm

	Design Angle	Actual Angle *	L 206.3±1.5	D1 363±1	D2 302.45±0.1	D3 308.0±1.5	R 2765±1.5	Note
END 'A'	4.0 degree	+0.5	206.70	363.03	302.43	308.02	2765.10	
	18.5 degree	+0.1	206.69	363.10	302.42	308.04	2765.25	
	26.5 degree	+0.6	207.04	363.06	302.43	308.00	2765.21	
	41.0 degree	+0.3	207.05	363.35	302.48	308.00	2765.00	
	49.0 degree	+0.7	207.05	363.59	302.49	308.06	2765.25	
	63.5 degree	+0.8	207.06	363.23	302.49	308.05	2765.20	
	71.5 degree	+0.4	207.03	363.20	302.49	307.97	2765.24	
	86.0 degree	+0.5	207.03	363.20	302.49	308.00	2765.19	
	94.0 degree	-0.1	207.03	363.20	302.48	308.03	2765.28	
	108.5 degree	+0.6	207.04	363.20	302.49	308.02	2765.26	
	116.5 degree	+0.6	207.05	363.20	302.47	308.02	2765.23	
	131.0 degree	+0.2	207.07	363.19	302.47	308.05	2765.20	
	139.0 degree	+0.2	207.08	363.20	302.48	308.04	2765.19	
	153.5 degree	-0.6	206.98	363.19	302.50	308.04	2765.17	
	161.5 degree	+0.3	207.10	363.20	302.49	308.04	2765.16	
	176.0 degree	-0.6	207.10	363.23	302.49	308.03	2765.15	
	184.0 degree	0.0	207.13	363.23	302.47	308.03	2765.13	
	198.5 degree	-0.4	207.20	363.22	302.49	308.04	2765.10	
	206.5 degree	+0.1	207.14	363.22	302.49	308.04	2765.09	
	221.0 degree	+0.3	207.18	363.22	302.50	308.03	2765.08	
	229.0 degree	+0.2	207.17	363.22	302.49	308.03	2765.05	
	243.5 degree	-0.2	207.17	363.22	302.50	308.04	2765.07	
	251.5 degree	-1.1	207.20	363.22	302.50	308.03	2765.06	
	266.0 degree	-0.5	207.18	363.20	302.50	308.03	2765.36	
	274.0 degree	-0.1	207.18	363.24	302.51	308.03	2765.36	
	288.5 degree	-0.4	207.25	363.22	302.51	308.03	2765.36	
	296.5 degree	-0.4	207.22	363.24	302.50	308.03	2765.35	
	311.0 degree	+1.2	207.27	363.22	302.44	308.05	2765.36	
	319.0 degree	+0.2	207.25	363.22	302.47	308.06	2765.34	
	333.5 degree	+0.9	207.24	363.05	302.46	308.04	2765.34	
	341.5 degree	+0.3	207.27	363.10	302.48	308.04	2765.33	
	356.0 degree	-0.6	207.22	363.13	302.51	307.98	2765.33	

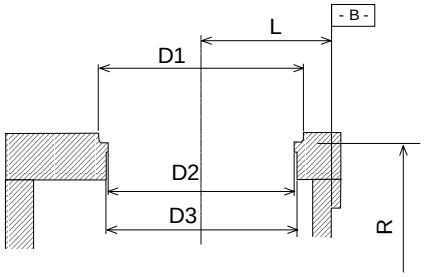
Note : The "Actual of angle" is difference from design value on outer circumference.

Judgement: _____

Order No. 5171315	INSPECTION REPORT	Brookhaven National Laboratory CERN/ATLAS Barrel Cryostat

Item	Outer Warm Vessel	Date		Inspector	

Transition Through Holes (END 'C')



Unit: mm

	Design Angle	Actual Angle *	L	D1	D2	D3	D4	Note
			206.3±1.5	363±1	302.45±0.5	308.0±1.5	2765±1.5	
END 'C'	4.0 degree	+0.5	206.39	362.95	302.45	308.03	2765.16	
	18.5 degree	-0.1	206.39	363.01	302.44	308.04	2765.03	
	26.5 degree	-0.5	206.37	363.03	302.44	308.04	2765.03	
	41.0 degree	+0.9	206.35	362.96	302.43	308.03	2765.04	
	49.0 degree	+0.4	206.36	363.05	302.45	308.10	2765.12	
	63.5 degree	-0.1	206.35	363.02	302.44	308.05	2765.22	
	71.5 degree	+1.4	206.34	363.10	302.45	308.06	2765.25	
	86.0 degree	-0.2	206.34	363.01	302.44	308.05	2765.24	
	94.0 degree	+0.4	206.31	363.00	302.45	308.03	2765.27	
	108.5 degree	-0.2	206.30	363.00	302.45	308.03	2765.24	
	116.5 degree	-0.7	206.31	363.00	302.46	308.05	2765.26	
	131.0 degree	+0.7	206.29	363.10	302.44	308.03	2765.25	
	139.0 degree	-0.7	206.30	362.97	302.48	308.03	2765.25	
	153.5 degree	-0.3	206.48	363.01	302.45	308.04	2765.24	
	161.5 degree	-0.3	206.46	362.96	302.45	308.02	2765.24	
	176.0 degree	+0.7	206.46	362.99	302.44	308.01	2765.22	
	184.0 degree	-0.8	206.46	363.03	302.43	308.03	2765.24	
	198.5 degree	+0.6	206.45	362.98	302.44	308.02	2765.25	
	206.5 degree	+0.2	206.43	363.00	302.44	308.06	2765.25	
	221.0 degree	+0.5	206.40	363.05	302.45	308.05	2765.27	
	229.0 degree	+0.1	206.39	363.40	302.47	308.05	2765.22	
	243.5 degree	+1.0	206.38	363.10	302.46	308.06	2765.21	
	251.5 degree	+1.5	206.37	363.20	302.44	308.04	2765.15	
	266.0 degree	+0.4	206.35	363.05	302.44	308.06	2765.16	
	274.0 degree	-0.5	206.35	363.65	302.42	308.05	2765.15	
	288.5 degree	+0.5	206.32	363.05	302.43	308.05	2765.17	
	296.5 degree	+0.4	206.33	363.25	302.42	308.05	2765.18	
	311.0 degree	-0.1	206.32	363.00	302.42	308.07	2765.20	
	319.0 degree	+0.5	206.31	363.60	302.43	308.10	2765.19	
	333.5 degree	+0.8	206.31	363.00	302.43	307.70	2765.16	
	341.5 degree	-0.1	206.12	363.23	302.44	308.03	2765.22	
	356.0 degree	0.0	206.37	364.70*	302.44	307.98	2765.25	* out of tolerance

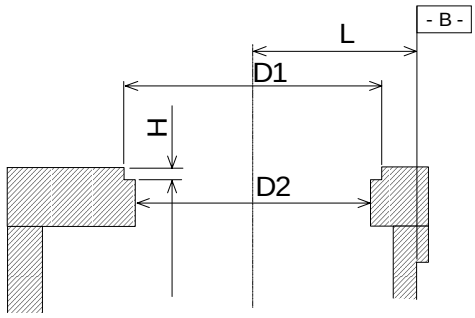
Note : The "Actual of angle" is difference from design value on outer circumference.

Judgement:

Order No. 5171315	INSPECTION REPORT	Brookhaven National Laboratory CERN/ATLAS Barrel Cryostat

Item	Outer Warm Vessel	Date		Inspector	

Through Holes without transitions (END 'A')



Unit: mm

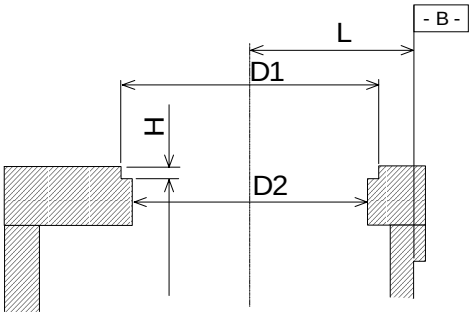
Side	Port	Value	Angle *refer to note	L Shift from -B- face	D1 Spot face Diameter	D2 Thru Diameter	H Spot face Depth
END "A"	Cooling port	Design	56.25 degree	340.5±1.5	230.0±1.5	150.0±0.5	5.0±1.5
		Actual	-0.1	341.10	229.95	150.04	5.10
		Design	123.75 degree	340.5±1.5	230.0±1.5	150.0±0.5	5.0±1.5
		Actual	-1.3	341.10	230.14	149.92	4.95
	Solenoid Services	Design	78.75 degree	225.5±1.5	321.0±1.5	250.0±0.5	9.0±1.5
		Actual	-0.6	226.21	321.10	250.50	8.90
	HV Lead Thru	Design	101.25 degree	325.5±1.5	230.0±1.5	115.0±0.5	5.0±1.5
		Actual	+1.1	326.10	229.95	114.92	5.10
	Cold Valve Port	Design	258.75 degree	315.5±1.5	321.0±1.5	244.0±0.5	9.0±1.5
		Actual	-0.6	316.20	321.05	244.30	8.90
	Heater Port	Design	281.25 degree	75.5±1.5	89.0±0.5	36.0±1.5	5.0±1.5
		Actual	-0.4	76.47	89.00	36.20	5.07
	Vacuum Port	Design	281.25 degree	351.5±1.5	290.0±1.5	213.0±0.5	5.0±1.5
		Actual	-0.4	352.24	290.20	212.95	5.20

Note : The "Actual of angle" is difference from design value on outer circumference.

Judgement: _____

Order No. 5171315	INSPECTION REPORT			Brookhaven National Laboratory CERN/ATLAS Barrel Cryostat	
Item	Outer Warm Vessel	Date		Inspector	

Through Holes without transitions (END 'C')



Unit: mm

Side	Port	Value	Angle *refer to note	L Shift from -B- face	D1 Spot face Diameter	D2 Thru Diameter	H Spot face Depth
END "C"	Cooling port	Design	56.25 degree	340.5±1.5	230.0±1.5	150.0±0.5	5.0±1.5
		Actual	-1.2	340.67	229.91	150.09	5.18
		Design	123.75 degree	340.5±1.5	230.0±1.5	150.0±0.5	5.0±1.5
		Actual	-0.2	340.67	230.50	150.02	5.09
	HV Lead Thru	Design	78.75 degree	325.5±1.5	230.0±1.5	115.0±0.5	5.0±1.5
		Actual	-1.6	325.48	230.00	115.02	4.88
	LAr Fill	Design	101.25 degree	275.5±1.5	321.0±1.5	250.0±0.5	9.0±1.5
		Actual	+0.8	275.51	321.10	250.31	9.28
	Heater Port	Design	258.75 degree	75.5±1.5	89.0±0.5	36.0±1.5	5.0±1.5
		Actual	0.0	75.50	89.35	35.99	5.03
	Vacuum Port	Design	258.75 degree	351.5±1.5	290.0±1.5	213.0±0.5	5.0±1.5
		Actual	+0.5	351.51	290.00	212.99	5.06
		Design	281.25 degree	351.5±1.5	290.0±1.5	213.0±0.5	5.0±1.5
		Actual	+0.5	351.51	290.00	212.99	5.16

Note : The "Actual of angle" is difference from design value on outer circumference.

Judgement: _____