

PROJECT :			DATE :	
PROJ. NO. :			BY :	S. R. M.
CLIENT :			REV :	
UNIT :			DOC NO.:	

HORIZONTAL THREE PHASE SEPRATOR SIZING CALCULATION SHEET (BOOT)

Input Data	Unit	Vapor	Light Phase	Heavy Phase
Volumetric Flow Rate	m3/hr	695.8	22.77	0.6
Density	kg/m3	10	750	990
Viscosity	CP	0.01	0.5	0.9
Particle Dia. Oil in Vapor	micron	150		
Oil in Water	micron	150		
Water in Oil	micron	150		

Light Droplet Terminal Velocity		
CR ^{e2}	----	13
Drag Coefficient	----	47.21
Terminal Velocity	m/sec	0.003

Heavy Droplet Terminal Velocity		
CR ^{e2}	----	32
Drag Coefficient	----	22.49
Terminal Velocity	m/sec	0.004

Trial Diameter	mm	1600
Inlet Nozzle Size	mm	200
Hv/D Ratio	----	0.2
Vapor Space	mm	450
Maximum Liquid Level Height	mm	1150
Vessel Cross sectional Area	m2	2.01

Separation Compartment		
Light Phase Outlet Nozzle	mm	100
BTM - LLLL	mm	300
LLLL - LLL	mm	150
LLL - NLL	mm	250
NLL - HLL	mm	350
HLL - HHLL	mm	100
Total Liquid level Height	mm	1150
Heavy Droplet Settling time		
Heavy Droplet Settling time	min	2.8
Light phase Cross Sec. Area	m2	0.9
Light phase Velocity	m/sec	0.007
Lmin heavy drop through light p	mm	1239
Separation Comp. Length		
Separation Comp. Length	mm	2200
Hold up Times		
BTM - LLLL Hold up Time	min	1.55
LLLL - LLL Hold up Time	min	1.17
LLL - NLL hold up Time	min	2.21
NLL - HLL hold up Time	min	3.21
HLL - HHLL hold up Time	min	0.86
Light Phase Hold up Time	min	5.42

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Boot Compartment		
Boot Diameter	mm	400
Heavy Phase Velocity	m/sec	0.0013
Light Phase Terminal Vel.	m/sec	0.0032
Boot TL - LLIL	mm	150
LLIL - LIL	mm	100
LIL - HIL	mm	400
HIL - HHIL	mm	100
HHIL - BTM	mm	50
Boot Height	mm	800
Boot L/D (2 - 5)		
	----	2.00
Boot TL - LLIL Hold up Time		
	min	1.88
LLIL - LIL Hold up Time		
	min	1.26
LIL - HIL hold up Time		
	min	5.02
HIL - HHIL hold up Time		
	min	1.26
HHIL - BTM hold up time		
	min	0.63
Hold up Time	min	5.02

Vapor Side		
K vlaue	m/sec	0.035
Terminal Velocity	m/sec	0.30
Mesh Pad Correction Factor	----	1.00
Drop out Time	sec	1.51
Av Cross sectional Area	m ²	0.47
Vapor Velocity	m/sec	0.41
Lmin light phase thr. vapor	mm	623

Vessel Length	mm	3820
L/D	----	2.39

