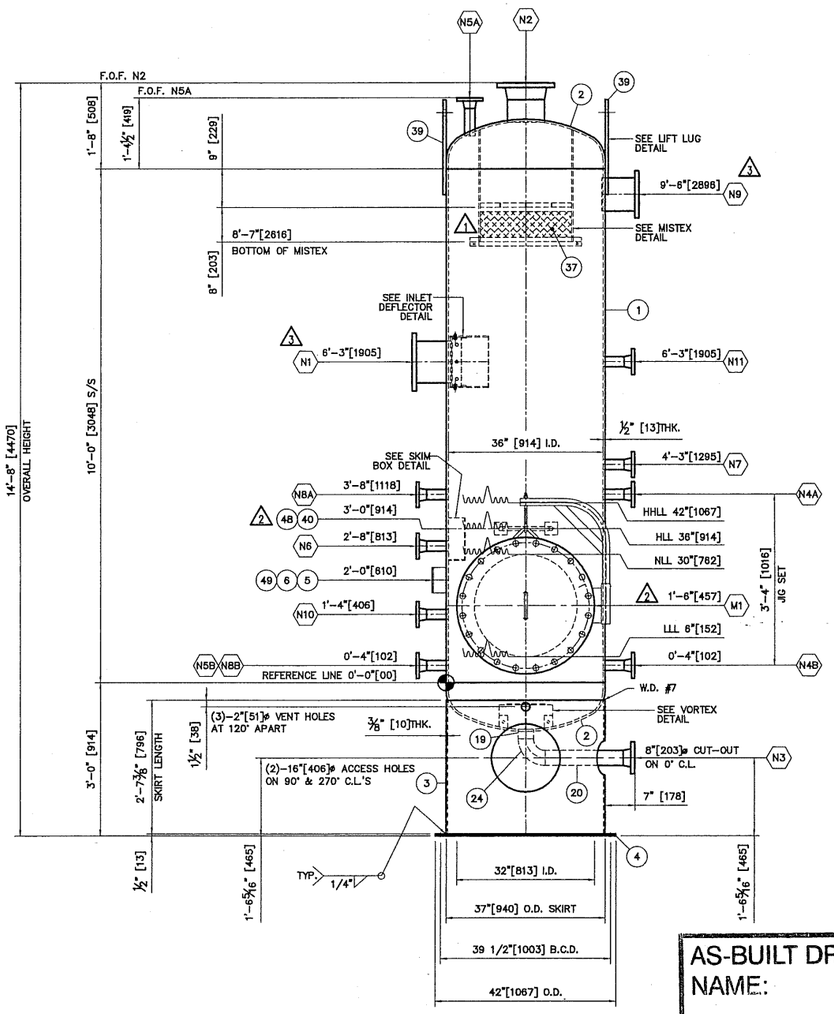
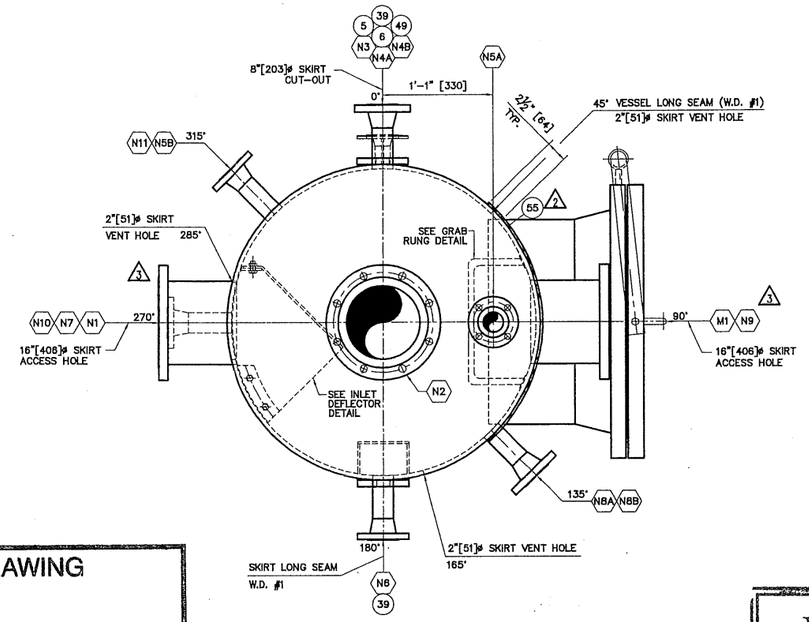
As Built Drawings and Calculations

3



ELEVATION VIEW
(NOT A TRUE ORIENTATION)
SCALE: 3/4"=1'-0"



ORIENTATION VIEW
SCALE: 1 1/2"=1'-0"

NOZZLE SCHEDULE

MARK	NO. REQ'D	SERVICE	SIZE	RTG.	TYPE	NOZZLE O.D.	NOZZLE BORE	WELD DETAIL	WELD SIZE "A"	WELD SIZE "B"	WELD SIZE "C"	PROJECTION INSIDE	PROJECTION OUTSIDE	ITEM	REMARKS
N1	1	INLET	8"	CL150	RFLWN	9 3/4"ø	8"	3	3/8"	–		SET FLUSH	8"	16	c/w INLET DEFLECTOR
N2	1	GAS OUTLET	8"	CL150	RFWN	8 5/8"	SCH.XH	2,3	3/8"	–		SET FLUSH	SHOWN	10,17	–
N3	1	LIQUID OUTLET	3"	CL150	RFWN	3 1/2"	SCH.160	2,3	3/8"	–		GRIND FLUSH	SHOWN	12,19,20,24	c/w VORTEX BREAKER
N4A	1	BRIDLE	2"	CL150	RFWN	2 3/8"	SCH.XXH	2,3	3/8"	–		SET FLUSH	7"	14,21	–
N4B	1	BRIDLE	2"	CL150	RFWN	2 3/8"	SCH.XXH	2,3	3/8"	–		SET FLUSH	7"	14,21	–
N5A	1	STEAM CONN.	2"	CL150	RFWN	2 3/8"	SCH.XXH	2,3	3/8"	–		SET FLUSH	SHOWN	14,23	–
N5B	1	STEAM CONN.	2"	CL150	RFWN	2 3/8"	SCH.XXH	2,3	3/8"	–		SET FLUSH	7"	14,21	–
N6	1	HC SKIM	2"	CL150	RFWN	2 3/8"	SCH.XXH	2,3	3/8"	–		SET FLUSH	7"	14,21	c/w SKIM BOX
N7	1	RECYCLE	2"	CL150	RFWN	2 3/8"	SCH.XXH	2,3	3/8"	–		SET FLUSH	7"	14,21	–
N8A	1	LIT	2"	CL150	RFWN	2 3/8"	SCH.XXH	2,3	3/8"	–		SET FLUSH	7"	14,21	–
N8B	1	LIT	2"	CL150	RFWN	2 3/8"	SCH.XXH	2,3	3/8"	–		SET FLUSH	7"	14,21	–
N9	1	VENT	6"	CL150	RFLWN	7 3/4"ø	6"	3	3/8"	–		SET FLUSH	8"	11	–
N10	1	TIT	2"	CL150	RFWN	2 3/8"	SCH.XXH	2,3	3/8"	–		SET FLUSH	7"	14,21	–
N11	1	PIT	2"	CL150	RFWN	2 3/8"	SCH.XXH	2,3	3/8"	–		SET FLUSH	7"	14,21	–
MI	1	MANWAY	24"	CL150	RFWN	24"	SCH.XH	1,2,4	3/8"	1/4"	3/8"	1"	10"	7,8,9,15,42,43,44,55	c/w BLIND,DAVIT & REPAD

BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	MATERIAL
1	1	SHELL: 36"[914] I.D. x 1/2"[13] THK. x 10'-0"[3048] LG. (BBE)	SA-516-70N
2	2	HEADS: 36"[914] I.D. x 1/2"[13] THK. (0.4375" MIN.) 2:1 S.E. w/2"[51] S.F.	SA-516-70N
3	1	SKIRT: 37"[940] O.D. x 3/8"[10] THK. x 2'-7 3/8"[796] ± LG. (PBE)	SA-516-70N
4	1	BASE PLATE: 42"[1067] O.D. x 1/2"[13] THK. x 32"[813] I.D.	SA-516-70N
5	1	PL: 1/4"[6] x 3"[76] WD. x 6"[152] LG. (NAME PLATE BRACKET)	SA-516-70N
6	1	FB.: 1/4"[6] x 6"[152] WD. x 8"[203] LG. (NAME PLATE BRACKET)	G40.21-300W
7	1	24"-CL150 ANSI RFWN FLG. c/w SCH.XH BORE 2 (M1)	SA-105N
8	1	24"-CL150 ANSI RF BLIND FLG. (M1)	SA-105N
9	1	24"-CL150 PYRAMID STD. MANWAY DAVIT ASSY. (B-08-3185-0000-003) (M1)	–
10	1	8"-CL150 ANSI RFWN FLG. c/w SCH.XH BORE (N2)	SA-105N
11 3	1	6"-CL150 ANSI RFLWN FLG. c/w 6" BORE x 12" LG. (TRIM AS NEEDED) (N9)	SA-105N
12	1	3"-CL150 ANSI RFWN FLG. c/w SCH.160 BORE (N3)	SA-105N
13		DELETED 3	
14	10	2"-CL150 ANSI RFWN FLG. c/w SCH.XXH BORE (N4A/B,N5A/B,N6,N7,N8A/B,N10,N11)	SA-105N
15 2	1	24" SCH.XH SMLS PIPE x 10 1/16"[256] LG. (BOE,POE) (M1)	SA-106-B
16 3	1	8"-CL150 ANSI RFLWN FLG. c/w 8" BORE x 12" LG. (TRIM AS NEEDED) (N1)	SA-105N
17	1	8" SCH.XH SMLS PIPE x 5 5/16"[135] LG. (BOE,POE) (N2)	SA-106-B
18		DELETED 3	
19	1	3" SCH.160 SMLS PIPE x 2 1/4"[57] LG. (BOE,POE) (N3)	SA-106-B
20	1	3" SCH.160 SMLS PIPE x 1'-6 1/4"[464] LG. (BBE) (N3)	SA-106-B
21	9	2" SCH.XXH SMLS PIPE x 5 1/16"[129] LG. (BOE,POE) (N4A/B,N5B,N6,N7,N8A/B,N10,N11)	SA-106-B
22	2	PL: 5 1/8"[130] WD. x 1/4"[6] THK. x 6 3/4"[172] LG. (SEE DETAIL)(REMOVABLE INLET DIVERTER SUPPORT)	SA-516-70N
23	1	2" SCH.XXH SMLS PIPE x 6 7/16"[164] LG. (BOE,POE) (N5A)	SA-106-B
24	1	3" SCH.160 BW 90° LR ELBOW (N3)	SA-234-WPB
25	2	PL.: 1/4"[6] THK. x 1'-0 7/16"[316] WD. x 1'-3 1/8"[384] LG. (SEE DETAIL)(INLET DIVERTER)	G40.21-300W
26	1	PL.: 1/4"[6] THK. x 11 1/2" [292] x 1'-3 11/16"[399] LG. (SEE DETAIL) (INLET DIVERTER)	G40.21-300W
27	1	PL.: 1/4"[6] THK. x 9"[229] O.D. (VORTEX BREAKER)	G40.21-300W
28	1	PL.: 1/4"[6] THK. x 5 3/8"[137] HG. x 12 1/2"[317] LG. (VORTEX BREAKER)	G40.21-300W
29	2	PL.: 1/4"[6] THK. x 5 3/8"[137] HG. x 4 1/4"[108] LG. (VORTEX BREAKER)	G40.21-300W
30	1	FB.: 1/4"[6] THK. x 1"[25] x 2'-2"[660] LG. (SEE DETAIL) (REMOVABLE MISTEX SUPPORT)	G40.21-300W
31	2	FB.: 1/4"[6] THK. x 1"[25] x 1'-11"[584] LG. (SEE DETAIL) (REMOVABLE MISTEX SUPPORT)	G40.21-300W
32	6	FB.: 1/4"[6] THK. x 2"[51] x 2"[51] LG. (SEE DETAIL) (REMOVABLE MISTEX SUPPORT)	G40.21-300W
–		1	
34	1	FB.: 1/4"[6] THK. x 1"[25] x 1'-9"[533] LG. (TOP MISTEX SUPPORT)	G40.21-300W
35	2	FB.: 1/4"[6] THK. x 1"[25] x 10 3/8"[264] LG. (TOP MISTEX SUPPORT)	G40.21-300W
36	4	FB.: 1/4"[6] THK. x 1"[25] x 8 9/16"[218] LG. (TOP MISTEX SUPPORT)	G40.21-300W
37	1	JONELL STYLE 115 #12 DEMISTER (21 1/4" OD x 6" THK.) (MISTEX)	316L SS
38	1	22" SCH.STD SMLS PIPE x 2'-2"[660] LG. (PBE) (MISTEX SUPPORT)	SA-106-B
39	2	PL.: 6"[152] WD. x 1/2"[13] THK. x 1'-10"[559] LG. (TRIM AS SHOWN) (LIFT LUG)	SA-516-70N
40	1	RB.: 7/8"[20]ø x 2'-1 1/2"[648] ± LG. (BEND AS PER DETAIL) (GRAB RUNG)	G40.21-300W
41	1	PL.: 2 1/2"[64] WD. x 1/4"[6] THK. x 11 1/2"[292] LG. (SEE DETAIL)(REMOVABLE INLET DIVERTER SUPPORT)	SA-516-70N
42	20	1 1/4"ø x 7" LG. STUD (24"-CL150) (M1)	SA-193-B7M
43	40	1 1/4"ø HEX HEAD NUTS (24"-CL150) (M1)	SA-194-2HM
44	1	24" ANSI CL150 RF FLEXITALLIC GASKET x 1/8" THK. (GREY STRIPE) (M1)	316 SS
45	1	PL.: 1/4"[6] THK. x 6"[152] HG. x 10"[254] LG. (SKIM BOX)	SA-516-70N
46	1	PL.: 1/4"[6] THK. x 3 3/4"[95] HG. x 6"[152] LG. (SKIM BOX)	SA-516-70N
47	2	PL.: 1/4"[6] THK. x 3 1/2"[89] HG. x 9 3/4"[248] LG. (SKIM BOX)	SA-516-70N
48	2	PL.: 3"[76] WD. x 1/4"[6] THK. x 3"[76] LG. (FORM TO VESSEL ID) (GRAB RUNG POISON PAD)	SA-516-70N
49	1	4 ENCANA/PYRAMID STANDARD NAME PLATE	AL.
–			
51	2	PL.: 1/4"[6] THK. x 2"[51] WD. x 3"[76] LG. (SEE DETAIL) (VORTEX BREAKER)	SA-516-70N
52	15	1/2"ø x 1 1/2" LG. HEX HEAD BOLT (INLET DIVERTOR, MISTEX, VORTEX BREAKER)	SA-193-B7M
53	15	1/2"ø HEX HEAD NUTS (INLET DIVERTOR, MISTEX, VORTEX BREAKER)	SA-194-2HM
54	15	1/2"ø FLAT WASHER (INLET DIVERTOR, MISTEX, VORTEX BREAKER)	316 SS
55	1	REPAD PL.: 3/8" THK. x 29" WD. x 37" LG. x 24 1/8" I.D. (FORM TO 37" I.D. ALONG LONG SIDE)	SA-516-70N

AS-BUILT DRAWING
NAME:
JAN 29 2009

REVISED DRAWING
ISSUED FOR CONSTRUCTION
DESTROY PREVIOUS ISSUE
DATE JAN 27 2009

PYRAMID PROCESS FABRICATORS
DOCUMENT CONTROL
RECEIVED
JAN 27 2009

SHOP NOTES

1. ALL BOLT HOLES STRADDLE NATURAL VESSEL CENTERLINES.
2. CLEAN ENTIRE VESSEL OF WELD SLAG AND OTHER FOREIGN MATERIAL
3. ALL MISCELLANEOUS AND ATTACHMENT WELDS SHALL BE 1/4" FILLET WELDS UNLESS SHOWN OTHERWISE.
4. COATING SPECIFICATIONS
   SURFACE PREP: – EXTERNAL: SSPC–SP10
   –INTERNAL: NONE
   PRIMING: – EXTERNAL: ONE (1) COAT OF DEVOE BAR RUST 236 EPOXY COAT TO TO A DFT OF 4–8mils
   – INTERNAL: NONE
   FINISH: – EXTERNAL: TWO (2) COATS OF DEVOE DEVITHANE 379 URETHANE TO A DFT OF 2–3mils (WARM GREY)
   – INTERNAL: NONE
   – THE WORDS "NO WELDING ALLOWED" ARE TO BE STENCIL PAINTED ON THE VESSEL IN LARGE WHITE LETTERS IN A CONSPICUOUS PLACE.
5. IMPACT TEST REQUIREMENTS:
   – HEADS & SHELLS ARE IMPACT TEST EXEMPT PER UCS–66 CURVE D
   – NOZZLES AND FLANGES ARE EXEMPT FROM IMPACT TESTING PER UCS–66(c) & FIG. UCS–66 CURVE B
   5 – STUDS & NUTS ARE EXEMPT FROM IMPACT TESTING PER FIG. UCS–66 NOTE(c)
6. ALL NOZZLE LENGTH INCLUDES 1/8" WELD GAP.
7. BLEND ALL INTERNAL ROOT AND FILLET WELDS. RADIUS ALL INTERNAL EDGES.
8. DIMENSIONS IN [] ARE IN mm.
9. ALL VESSELS MATERIALS COMING IN CONTACT WITH THE PROCESS FLUID SHALL COMPLY WITH THE LATEST EDITION OF NACE MR0175, AND HAVE A CARBON EQUIVALENCE LESS THAN OR EQUAL TO 0.45%.
10. FULL RT EXAMINATION OF ALL BUTT WELDS PER UW–11.
11. FULL MP, LP OR UT OF ALL PLATE EDGES PRIOR TO WELDING.
12. 100% UT EXAMINATION ON ALL CATEGORY 'D' WELDS. THIS IS TO BE DONE BEFORE REINFORCING PADS ARE WELDED TO THE NOZZLES.
13. 1 DELETED
14. FULL MP OR LP EXAMINATION OF LIFTING LUGS.
15. HYDROTEST SHALL BE HELD FOR A MINIMUM OF ONE (1) HOUR.
16. THE HYDROTEST WATER SHALL BE AT LEAST 59°F(15°C) THROUGHOUT THE TESTING CYCLE.
17. A MINIMUM OF TWO(2) PRESSURE GAUGES WILL BE USED FOR THE HYDROTEST, ONE(1) AT THE PUMP AND ONE(1) AT THE SYSTEM HIGH POINT.
18. GASKETS USED FOR THE HYDROTEST SHALL BE OF THE SAME MATERIAL AND DESIGN AS THE GASKETS TO BE FURNISHED WITH THE VESSEL.
19. THE USE OF SHELLAC, GLUE, COMPOUND, LEAD, ETC., ON HYDROTEST GASKETS IS NOT PERMITTED.
20. ONLY NEW, UNUSED, STUDS, NUTS AND GASKETS SHALL BE FURNISHED WITH THE VESSEL.
21. NO VESSEL OR ITS COMPONENT SHALL BE GIVEN A HYDROSTATIC TEST UNLESS APPROVAL IS OBTAINED IN WRITING FROM ENCANA FCCL OIL SANDS LTD. OR ITS REPRESENTATIVE.
22. REGISTER VESSEL IN ALBERTA.
23. NO FCAW ON WELDS.
24. HEAT NUMBERS REQUIRED FOR ALL MATERIALS.
25. AFTER WELDING OR AFTER FINAL POST WELD HEAT TREATMENT, HARDNESS IN THE BASE MATERIAL OR HEAT AFFECTED ZONE (HAZ) SHALL NOT EXCEED 225 BHN FOR LOW CARBON STEEL MATERIALS.
26. VESSEL TO BE BLOWN DRY AFTER HYDROTEST.

SHIPPING NOTES

1. ALL FLANGE SURFACES TO BE PROTECTED WITH AN ASPHALTIC RUST PREVENTIVE, TYPE B SUCH AS RUST VETO 344 OR TECTYL 891
2. EQUIPMENT SHALL BE ADEQUATELY PREPARED TO PROVIDE AGAINST ENTRY OF DIRT OR WATER DURING SHIPMENT.
3. ALL OPEN FLANGES TO BE COVERED WITH 12.5mm PLYWOOD COVERS SECURELY FASTENED WITH BOLTS OR CLAMPS.
4. ALL DRAINS, VENTS AND SMALL PIPING CONNECTIONS SHALL BE CAPPED OR PLUGGED.
5. BEFORE SHIPMENT, MARK ON, OR SECURELY ATTACH TO THE EQUIPMENT, OR IN THE SHIPPING CONTAINER, A LIST OF THE SPECIFIC RUST PREVENTIVES USED TO PROTECT THE EQUIPMENT. THIS LIST SHALL INCLUDE INTERNAL AS WELL AS EXTERNAL RUST PREVENTIVE, GIVING MANUFACTURER AND TYPE NUMBER, AND THE LOCATIONS WHERE EACH HAS BEEN APPLIED
6. INCLUDE WITH THE ABOVE LIST ANY SPECIAL INSTRUCTIONS NECESSARY FOR THE REMOVAL OR REPLACEMENT OF ANY RUST PREVENTIVE TOGETHER WITH ANY SPECIAL PRECAUTIONS TO BE TAKEN IN THE CARE OF THE EQUIPMENT DURING THE PERIOD OF JOBSITE STORAGE.
7. A COPY OF THIS INFORMATION SHALL BE SUPPLIED, UNDER SEPARATE COVER, TO THE BUYER AT THE JOBSITE

DESIGN DATA

CONSTRUCTION:	ASME SECTION VIII DIV 1 2007 EDITION		
INTERNAL DESIGN PRESSURE:	50 PSIG @ 300°F [345 kPag @ 149°C] (MAX)		
EXTERNAL DESIGN PRESSURE:	15 PSIG @ 300°F [103 kPag @ 149°C] (MAX)		
HYDROTEST PRESSURE:	65 PSIG @ 60°F [448 kPag @ 16°C] (ONE HOUR MIN.) SEE NOTE #26		
MINIMUM DESIGN METAL TEMP.:	6 –20°F @ 50 PSIG [–29°C @ 345 kPag]		
CORROSION ALLOWANCE:	1/4"[6.4]	RADIOGRAPHY:	FULL PER UW–11
P.W.H.T.:	75 MIN. @ 1150°F[621°C]	VOLUME:	80.17 ft3 [2.27 m3]
WEIGHT (EMPTY): 3969 lbs [1800 kg]		WEIGHT (TEST): 9052 lbs [4108 kg]	
C.R.N.: PENDING	SERIAL NO.: 08–3185–0000	SERVICE:	SOUR

1. SEAMS	2. NOZZLE TO WN FLG.	3. SET-THRU NOZZLE/CPLG	4. SET-THRU NOZZLE/CPLG W/RETAIN	5. SET-ON NOZZLE/CPLG	6. O'LET	7. SKIRT TO HEAD	8. MISCELLANEOUS
WPS: PEC 22R2/PPF-02	WPS: PEC 22R2/PEC-11/PPF-02	WPS: PEC-11	WPS: PEC 22R2	WPS: PEC 22R2	WPS: PEC 22R2	WPS: PEC-11	WPS: PEC-11

DRAWING NO.	DESCRIPTION
D–08–3185–0000–002	INTERNAL DETAILS

REFERENCE DRAWINGS

REV.	BY	CHECKED BY	DESIGN ENGR	PROJECT MGR.	DESCRIPTION	DATE
5	RG	MA	DM	MA	REVISED AS SHOWN	JAN.26/09
4	RG	RJ	DM	MA	REVISED ITEM #55	DEC.11/08
3	RG	RJ	DM	MA	REVISED NOZZLES N1 & N9 AS SHOWN	DEC.02/08
2	RG	RJ	DM	MA	REVISED AS SHOWN	NOV.27/08

REVISIONS

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PYRAMID PROCESS FABRICATORS

PYRAMID PROCESS FABRICATORS
NISKU . ALBERTA . CANADA / www.pyramidfabricators.com

DRAWING TITLE: 36"[914] I.D. x 10'-0"[3048] S/S x 50 PSIG[345 kPag] AMINE REFLUX DRUM (V-5864)

JOB NO.:	3185–0000	CLIENT:	ENCANA FCCL OIL LTD. c/o DPH FOCUS
PS NO.:	FCSR–DPH–40108	SITE:	FOSTER CREEK
SHEETS REQ'D: (1)–ONE	SCALE: 3/4"=1'–0"	DWG NO.:	D–08–3185–0000–001
		REV NO.:	5