



ENGINEERING INSPECTION SPECIALISTS LIMITED
Unit 734, Northwest Business Park, Kilshane Drive, Blanchardstown, Dublin 15
Tel 01 861 2011 Fax 01 861 2024 www.eisl.ie

Sigma Aldrich Ireland Limited

Arklow, Co.Wicklow

Tank details:

Tank No. 10

2 x course carbon steel vertical storage tank
2500 diameter x 3000 high

Product: Waste Flammable Liquid

Manufactured: Circa 1980

Inspected: October 2018 (Post Grit Blast)

Report No. 10017





ULTRASONIC INSPECTION REPORT

Form No 16.10 Rev 1

REPORT NO: 10017

DATE: 11.10.18

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CLIENT			SIGMA ALDRICH VALE ROAD ARKLOW WICKLOW		ORDER NO.	N/A
			ATTN: RAYMOND WALKER	DRG NO	N/A	
				STORAGE TANK	FLAMMABLE LIQUIDS TANK No. 10	
OUR JOB NO			22365		SITE	SIGMA ALDRICH ARKLOW
WELD IDENT.			N/A		SKETCH	YES
DESIGN CODE			API 650		ACCEPTANCE CRITERIA	REPORT ALL FINDINGS / API 653
WELD PROCEDURE NO			-		UT PROCEDURE NO	QC 9.2
MATERIAL			CARBON STEEL		SURFACE CONDITION	GRIT BLASTED
EQUIPMENT			OLYMPUS EPOCH 600		SERIAL NO	
PROBES			GE		CAL. BLOCK	V2 / IOW / ASME
SERIAL NO		ANGLE	SIZE	FREQ.	TYPE	CHECKED BS EN 12668 PT.1-3
3425/8		0°	10mmDIA	5MHz	TWIN	ACCEPTABLE
SENSITIVITY			0° 2 ND BWEFSH. TRANSFER 1-2 dB		COUPLANT	SONAGEL
SCAN PLAN			ALL LISTED BELOW		% OF INSPECTION	AS OUTLINED

SIGMA ALDRICH ARKLOW – TANK No. 10

A VISUAL AND ULTRASONIC INSPECTION WAS CARRIED OUT ON THE ABOVE MENTIONED TANK:
THIS INSPECTION WAS CARRIED OUT AFTER **GRIT BLASTING** AS RECOMMENDED IN **EIS PRELIMINARY REPORT # 10007**.

THE SCOPE OF INSPECTION WAS AS FOLLOWS:

- VISUAL INSPECTION OF ALL OUTER SHELL & ROOF PLATES INCLUDING NOZZLE ATTACHMENTS.
- ULTRASONIC INSPECTION OF ALL SHELL & ROOF PLATES INCLUDING NOZZLE ATTACHMENT SPOT CHECKS.

SUMMARY OF RESULTS

- SEVERE PITTED CORROSION TO OUTER SHELL, ROOF PLATES & NOZZLE ATTACHMENT.
- PATCHES OF SIGNIFICANT PITTED CORROSION ON ROOF PLATES – 2.0mm – 2.5mm DEEP (**6.0mm NOMINAL “t” – 33% - 41% LOSS IN WALL THICKNESS**)
- MINIMUM READING OF 2.8mm BOTTOM OF OUTER SHELL (**6.0mm NOMINAL “t” – 53% LOSS IN WALL THICKNESS**)
- MINIMUM READING ON BOTTOM OUTLET NOZZLE OF 1.7mm (**5.4mm NOMINAL “t” – 68% LOSS IN WALL THICKNESS**)

RECOMMENDATIONS

- AS THE TANK IS IN SUCH POOR CONDITION WITH MAJOR LOSS IN WALL THICKNESS AND TAKING INTO ACCOUNT THE MAJOR SAFETY CONCERNS INVOLVED WITH REPAIRING THE TANK IN-SITU, (WELDING IN AN Ex RATED AREA AND WELDING ON TO A TANK WITH THE POSSIBILITY OF FLAMMABLE LIQUIDS / SOLIDS INSIDE) IT IS RECOMMENDED THAT THE TANK BE TAKEN OUT OF SERVICE IMMEDIATELY.

OPERATOR DAVID BULLOCH PCN LEVEL II & CSWIP 3.2.1 LEVEL II DATE 11.10.18

SIGNATURE 

INSPECTION AUTHORITY E.I.S. LTD. / REPORT ALL FINDINGS

CUSTOMER WITNESS DATE

ULTRASONIC INSPECTION REPORT

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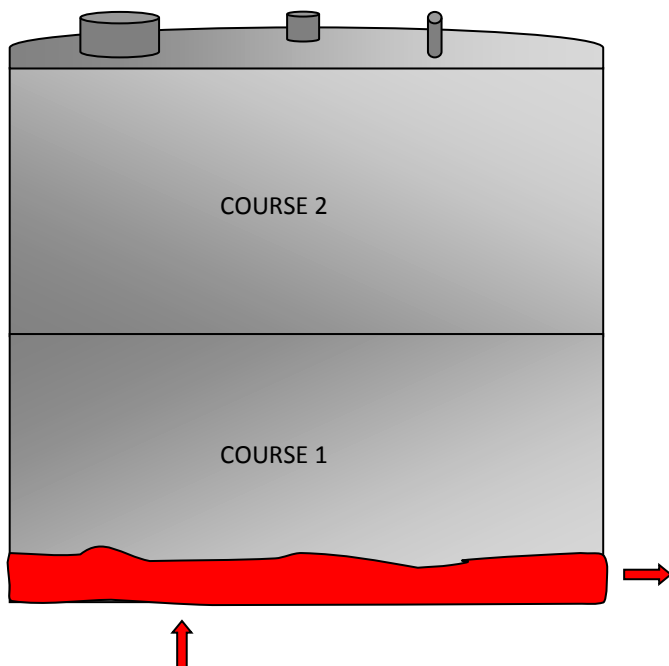


SIGMA ALDRICH ARKLOW – TANK No. 10

OUTER SHELL THICKNESS SURVEY

2 COURSE TANK

3 READINGS PER COURSE @ N,S, E & W



BAND OF SEVERE PITTED CORROSION AROUND THE BOTTOM OF COURSE 1 – MINIMUM VALUE 2.8mm

CARDINAL DIRECTION	NORTH	SOUTH	EAST	WEST
C2	5.4	5.2	5.2	4.1
	4.7	4.3	4.5	4.1
	4.7	3.6	4.5	4.2
C1	4.2	4.3	5.2	4.8
	3.6	4.5	4.5	4.7
	3.0	2.9	3.0	2.8
ALL READINGS IN mm's (ORIGINAL SHELL THICKNESS = 6.0mm)				

ULTRASONIC INSPECTION REPORT



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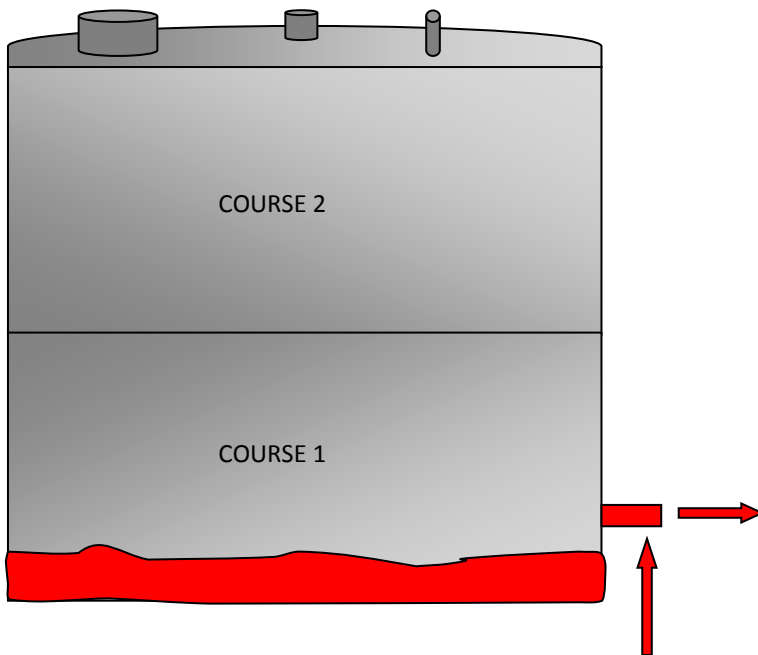
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SIGMA ALDRICH ARKLOW – TANK No. 10

ULTRASONIC THICKNESS SURVEY

BOTTOM COURSE OUTLET NOZZLE ATTACHMENT



SEVERLY PITTED OUTLET NOZZLE

CLOCK POSITION	12	3	6	9
3" Ø PIPE OUTLET NOZZLE	1.7	2.4	3.1	2.3
ALL READINGS IN mm's – NOMINAL THICKNESS 5.4mm				

INSPECTION AUTHORITY: EIS

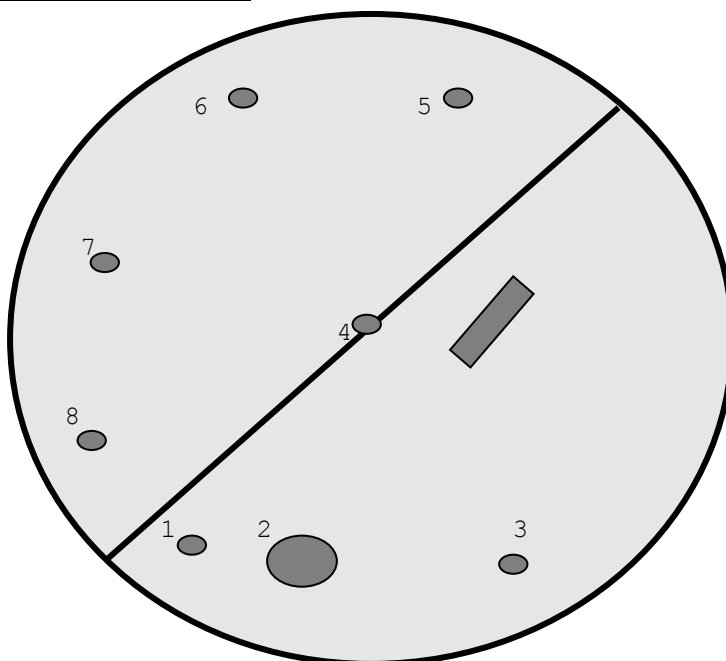
APPROVED BY: DAVID BULLOCH

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SIGMA ALDRICH ARKLOW – TANK No. 10

ULTRASONIC THICKNESS SURVEY – ROOF PLATES & NOZZLES



ITEM	ULTRASONIC SPOTCHECK	VISUAL INSPECTION
ROOF PLATES	3.5mm – 6.0mm	POOR CONDITION – PITTED CORROSION PATCHES 2.0mm – 2.5mm DEEP
NOZZLE 1 – 4" ϕ	5.8mm	GOOD
NOZZLE 2 – MANWAY	HEAVILY PITTED >50% LOSS	POOR CONDITION – PITTED CORROSION- 3.0mm DEEP – 6.0mm NOMINAL
NOZZLE 3 – 2" ϕ	4.1mm	GOOD
NOZZLE 4 – 3" ϕ	HEAVILY PITTED >50% LOSS	POOR CONDITION – PITTED CORROSION- 2.8mm DEEP – 5.4mm NOMINAL
NOZZLE 5 – 2" ϕ	4.2mm	GOOD
NOZZLE 6 – 1 1/2" ϕ	3.9mm	MINOR PITTED CORROSION
NOZZLE 7 – 3" ϕ	HEAVILY PITTED >50% LOSS	POOR CONDITION – PITTED CORROSION- 2.8mm DEEP – 5.4mm NOMINAL
NOZZLE 8 – 2" ϕ	4.0mm	GOOD