



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





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ULTRASONIC INSPECTION REPORT

Form No 16.10 Rev 1

REPORT NO: 10017

DATE: 11.10.18

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CLIENT			ORDER NO.	N/A	
SIGMA ALDRICH VALE ROAD ARKLOW WICKLOW ATTN: RAYMOND WALKER			DRG NO	N/A	
			STORAGE TANK	FLAMMABLE LIQUIDS TANK No. 10	
OUR JOB NO			SITE	SIGMA ALDRICH ARKLOW	
WELD IDENT.			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 CONCERN INVOLVED WITH REPAIRING THE TANK IN-SITU, (WELDING IN AN Ex RATED AREA AND WELDING ON TO A TANK WITH THE POSSIBILTY 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			E.I.S. LTD. / REPORT ALL FINDINGS ENGINEERING INSPECTION SPECIALISTS LIMITED			
INSPECTION AUTHORITY						
CUSTOMER WITNESS					DATE	

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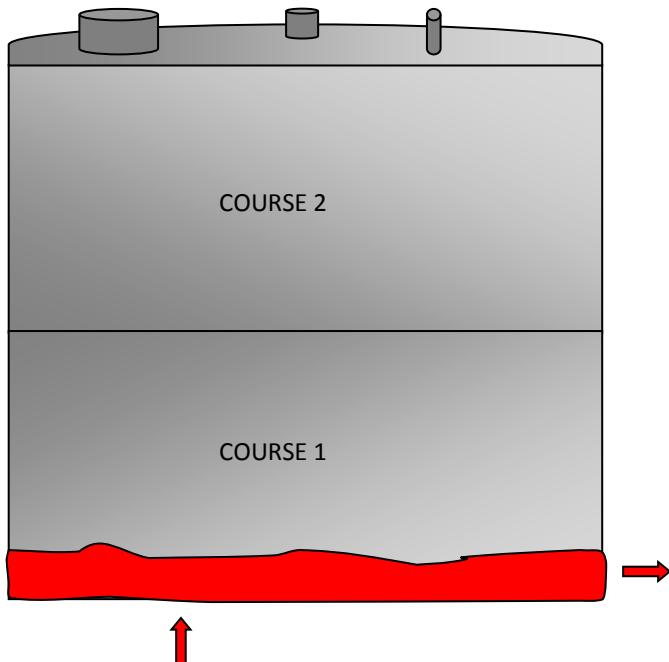
ENGINEERING INSPECTION
 SPECIALISTS LIMITED

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				
ALL READINGS IN mm's (ORIGINAL SHELL THICKNESS = 6.0mm)				

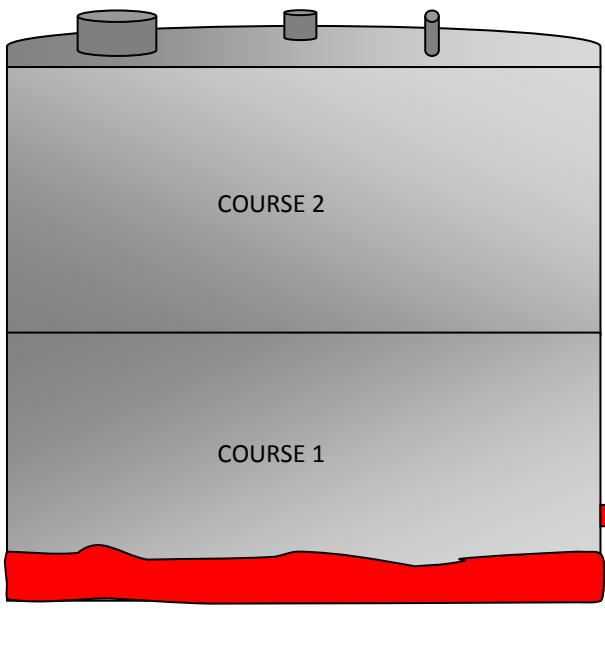
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SIGMA ALDRICH ARKLOW – TANK No. 10

ULTRASONIC THICKNESS SURVEY

BOTTOM COURSE OUTLET NOZZLE ATTACHMENT



SEVERELY 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

ULTRASONIC INSPECTION REPORT

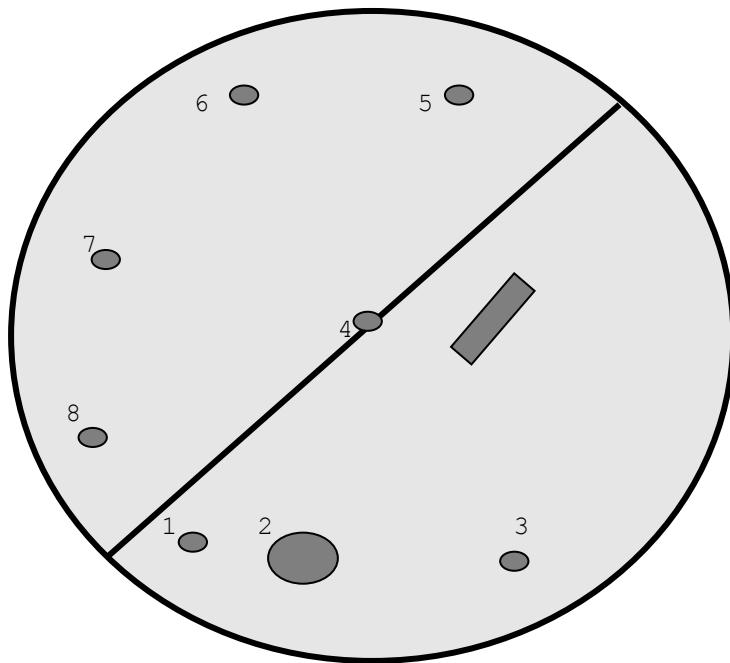
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SIGMA ALDRICH ARKLOW – TANK No. 10

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" Ø	5.8mm	GOOD
NOZZLE 2 – MANWAY	HEAVILY PITTED >50% LOSS	POOR CONDITION – PITTED CORROSION- 3.0mm DEEP – 6.0mm NOMINAL
NOZZLE 3 – 2" Ø	4.1mm	GOOD
NOZZLE 4 – 3" Ø	HEAVILY PITTED >50% LOSS	POOR CONDITION – PITTED CORROSION- 2.8mm DEEP – 5.4mm NOMINAL
NOZZLE 5 – 2" Ø	4.2mm	GOOD
NOZZLE 6 – 1 ½ " Ø	3.9mm	MINOR PITTED CORROSION
NOZZLE 7 – 3" Ø	HEAVILY PITTED >50% LOSS	POOR CONDITION – PITTED CORROSION- 2.8mm DEEP – 5.4mm NOMINAL
NOZZLE 8 – 2" Ø	4.0mm	GOOD