



BUREAU VERITAS INDUSTRIAL SERVICES
Technical and Commercial proposal: BVLit15092025/1
Dated 2025 09 15



**Expert diagnostics performance and lifetime determination for
AB ORLEN Lietuva Power House pipelines K-3;4 AG 399, T-3
MV 372 and K-3 MV 356 in 2026**

No. OL/2/000867/25

Location: ORLEN Lietuva AB, Lithuania

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1.4 Preliminary test program

Please see attached preliminary program sketch in Annex 1, Annex 2.

Table 4.1. V.K-3;4 AG 399

No	Code	Type of test	Scope of testing
1	K - elbow	UTT (ultrasonic thickness measurement)	17 elbows (see Fig.2)
		DM (diameter measurement)	
		MMS (metal micro structure-replica test)	17 elbows
		MT (magnetic particle test)	17 elbows (surface of elbow and welds, see fig. 7)
		HT (hardness test)	17 elbows (in place of MMS and for welds, see Fig 1)
2	T - tee	UTT (ultrasonic thickness measurement)	3 tee
		MT (magnetic particle test)	
		MMS (metal micro structure-replica test)	
		HT (hardness test)	
3	V - valve	UTT (ultrasonic thickness measurement)	1 valves
		MT (magnetic particle test)	
		MMS (metal micro structure-replica test)	
		HT (hardness test)	
4	S - weld	MT (magnetic particle test)	9 welded joints
		HT (hardness test) of weld	
5	U – ultrasonic thickness point	UTT (ultrasonic thickness measurement)	3 points
7	All pipework	VT (visual testing)	All elements (elbow, tee, valve, pipe support)
		PMI – chemical composition	
		Service life calculations	
		Review and evaluation of the work of the suspensions	
		If defective parts of pipelines need to be replaced, metallographic and strength tests will be performed on the prepared samples.	

Table 4.2. K-3 MV 356

No	Code	Type of test	Scope of testing
1	K - elbow	UTT (ultrasonic thickness measurement)	3 elbows (see Fig.2)
		DM (diameter measurement)	
		MMS (metal micro structure-replica test)	3 elbows
		MT (magnetic particle test)	3 elbows (surface of elbow and welds, see fig. 7)
		HT (hardness test)	3 elbows (in place of MMS and for welds, see Fig 1)
2	T - tee	UTT (ultrasonic thickness measurement)	3 tee
		MT (magnetic particle test)	9 welded joints
		MMS (metal micro structure-replica test)	3 tee
		HT (hardness test)	3 tee
3	V - valve	UTT (ultrasonic thickness measurement)	6 valve
		MT (magnetic particle test)	8 welded joints
		MMS (metal micro structure-replica test)	4 valve
		HT (hardness test)	6 valve
4	S - welds	MT (magnetic particle test)	13welds
		HT (hardness testing)	13welds
5	R - reduction	MT (magnetic particle test)	1 reduction – 100% surface + welds
		HT (hardness test) of weld	2 welds
6	U – ultrasonic thickness point	UTT (ultrasonic thickness measurement)	13 points
9	All pipework	VT (visual testing)	All elements (elbow, tee, valve, pipe support)
		PMI – chemical composition	
		Service life calculations	
		Review and evaluation of the work of the suspensions	
		If defective parts of pipelines need to be replaced, metallographic and strength tests will be performed on the prepared samples.	

Table 4.3. T-3 MV 372

No	Code	Type of test	Scope of testing
1	K - elbow	UTT (ultrasonic thickness measurement)	8 elbows (see Fig.2)
		DM (diameter measurement)	
		MMS (metal micro structure-replica test)	8 elbows
		MT (magnetic particle test)	8 elbows (surface of elbow and welds, see fig. 7)
		HT (hardness test)	8 elbows (in place of MMS and for welds, see Fig 1)
2	T - tee	UTT (ultrasonic thickness measurement)	3 tee
		MT (magnetic particle test)	9 welded joints
		MMS (metal micro structure-replica test)	3 tee
		HT (hardness test)	3 tee
3	V - valve	UTT (ultrasonic thickness measurement)	1 valve
		MT (magnetic particle test)	2 welded joints +100% surface
		MMS (metal micro structure-replica test)	1 valve
		HT (hardness test)	1 valve
4	S - welds	MT (magnetic particle test)	5 welds
		HT (hardness test) of weld	5 welds
5	U – ultrasonic thickness point	UTT (ultrasonic thickness measurement)	23 points
9	All pipework	VT (visual testing)	All elements (elbow, tee, valve, pipe support)
		PMI – chemical composition	
		Service life calculations	
		Review and evaluation of the work of the suspensions	
		If defective parts of pipelines need to be replaced, metallographic and strength tests will be performed on the prepared samples.	

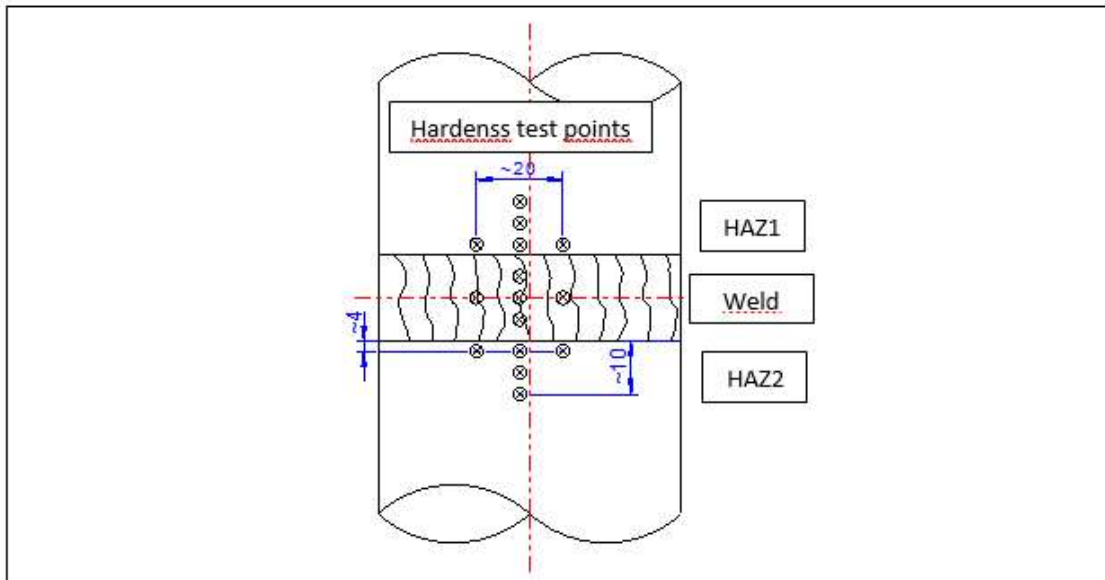


Fig. 1. Scheme of hardness measurement in the area of the welded joint (circumferential weld).

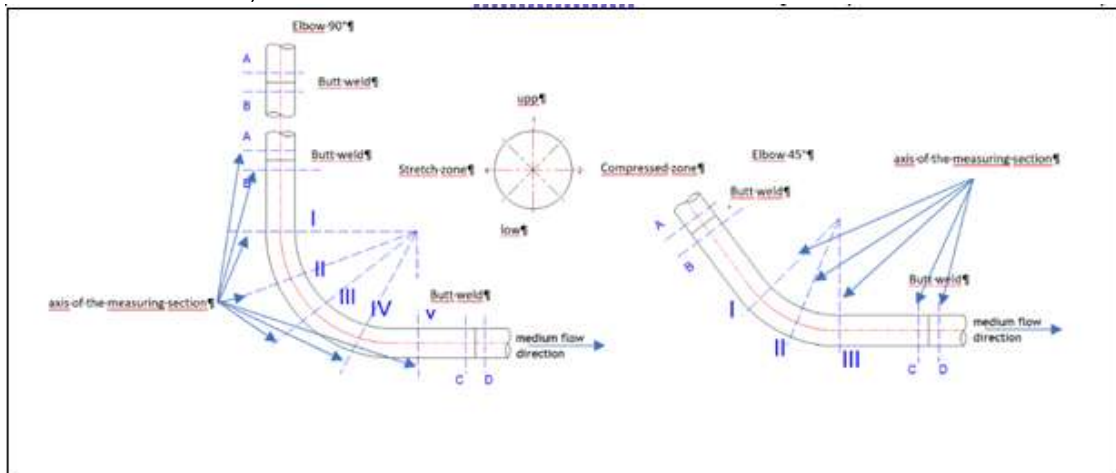


Fig 2. Scheme of the location of places for measuring the diameter and thickness of the pipeline walls.



Fig.3. Example of cleaning preparation for MT testing of elbow – surface and welds



Fig.4. Example of cleaning preparation for MT testing of tee – surface and welds



Fig.5. Example of cleaning preparation for MT testing of tee – and welds



Fig.6. Example of cleaning preparation for MT testing of S – veldolet



Fig.7. Example of cleaning preparation for MT testing of V – valve.

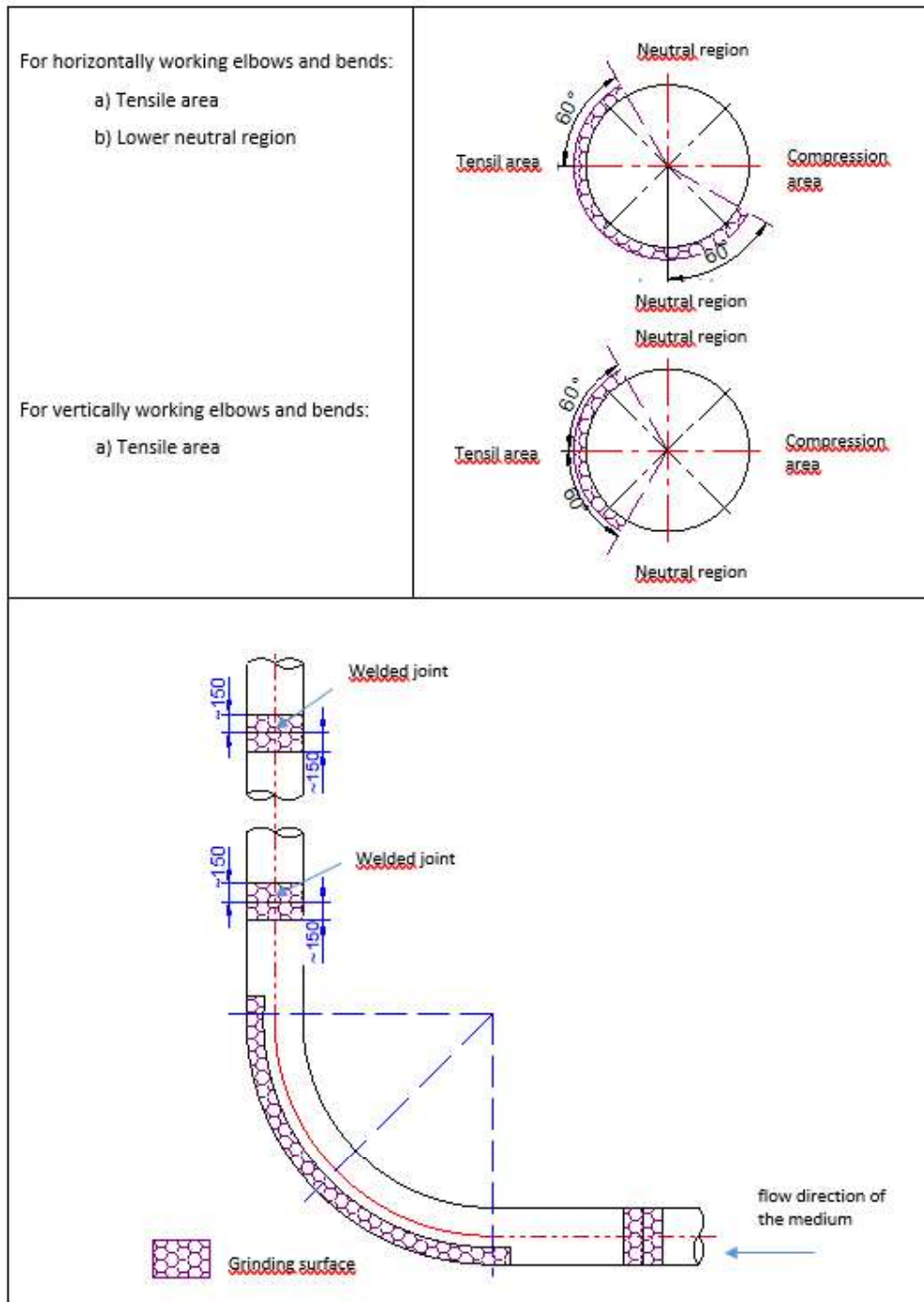
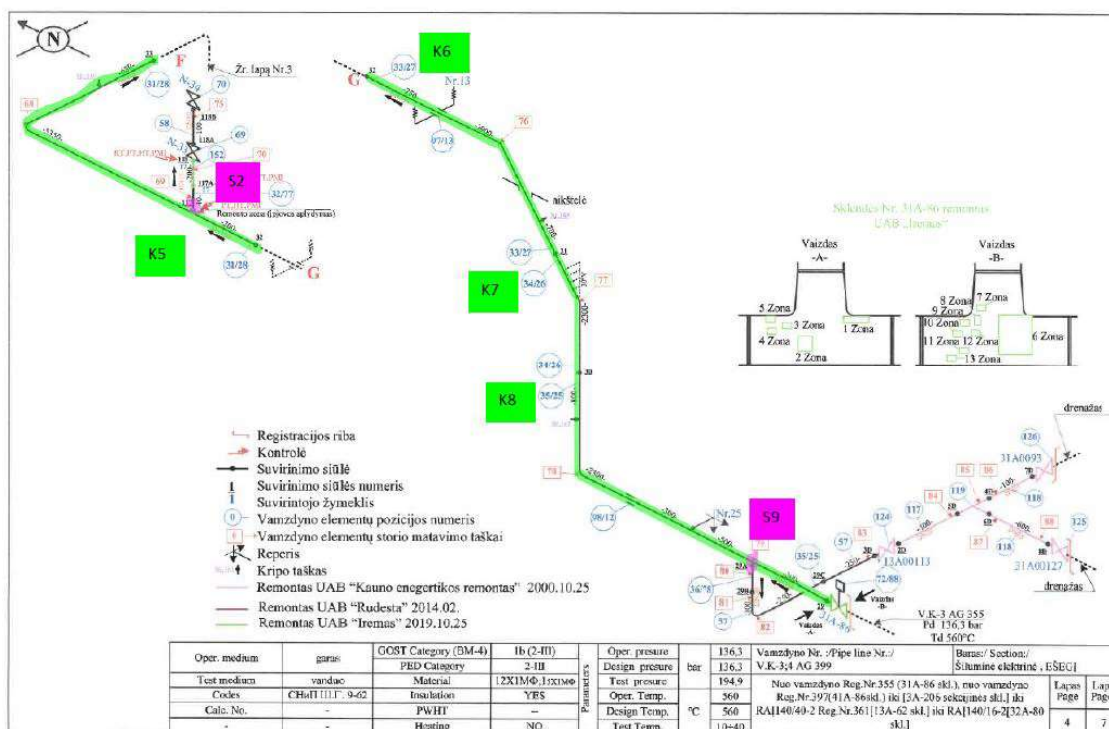
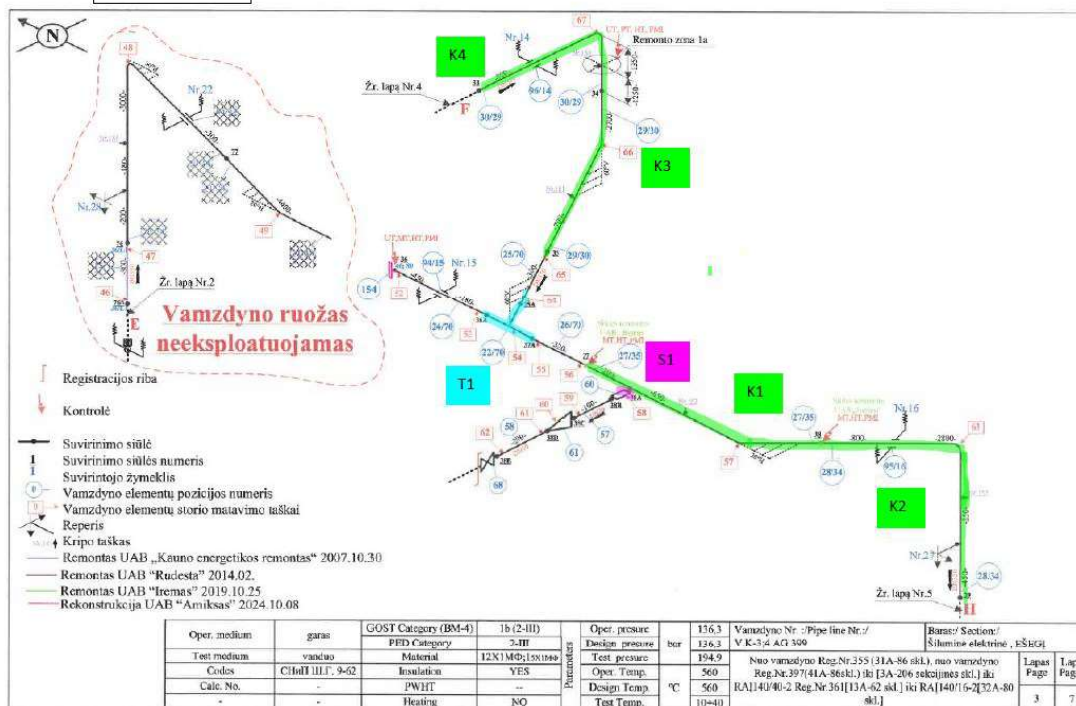
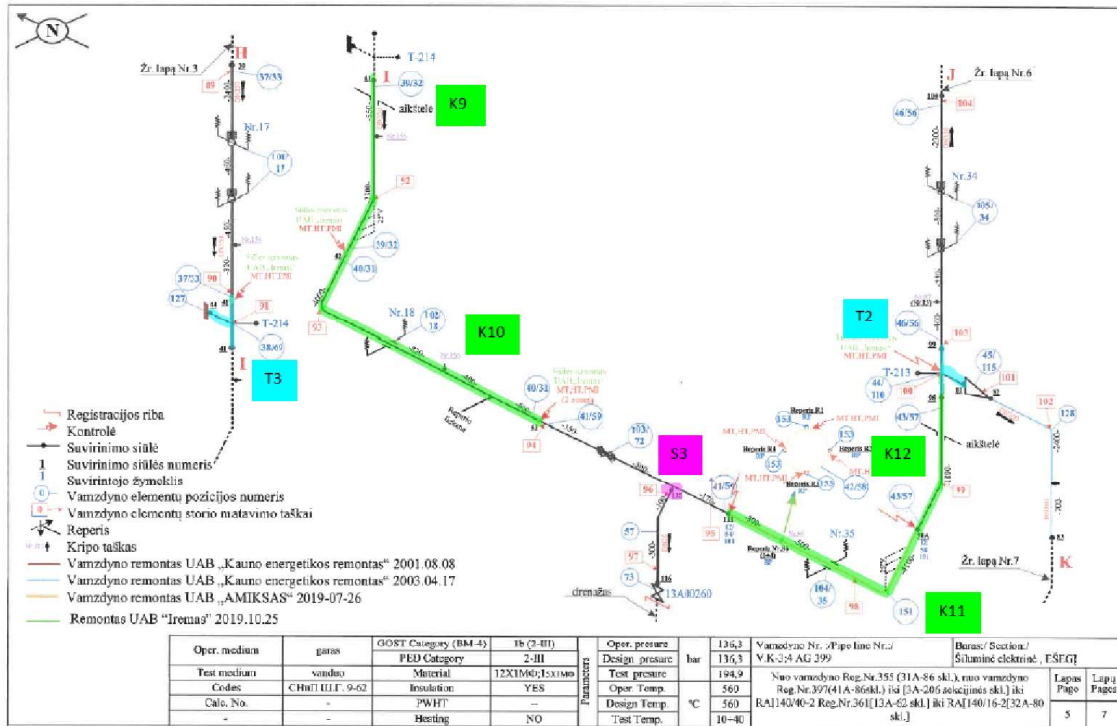
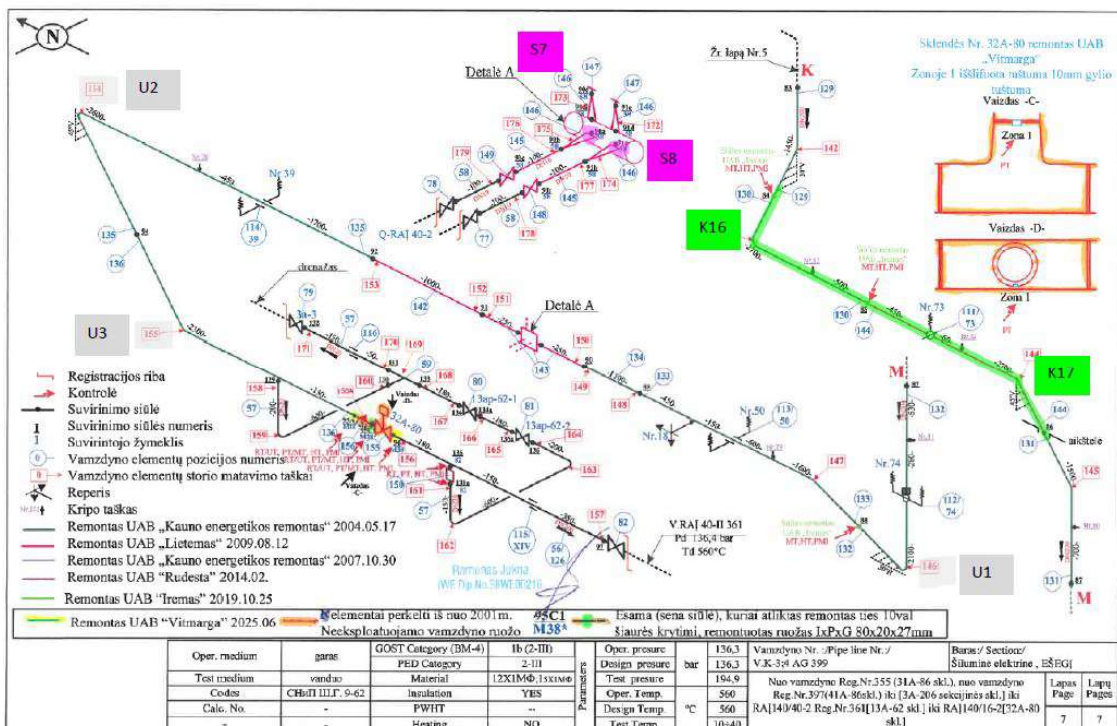
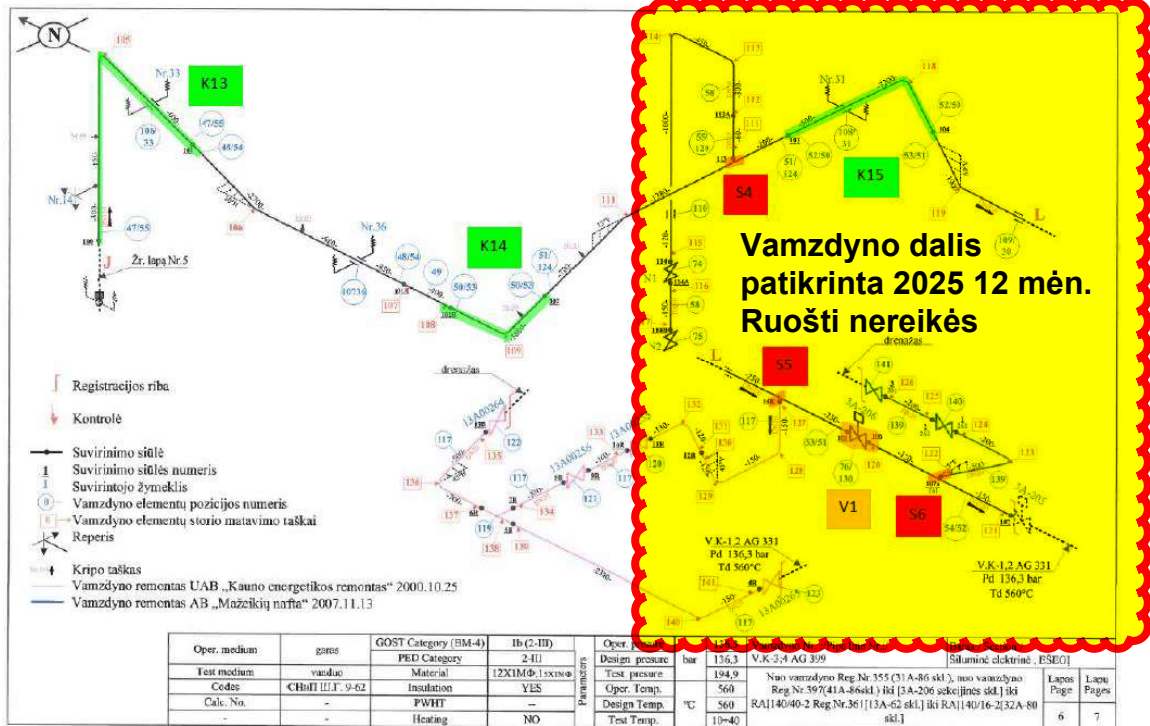


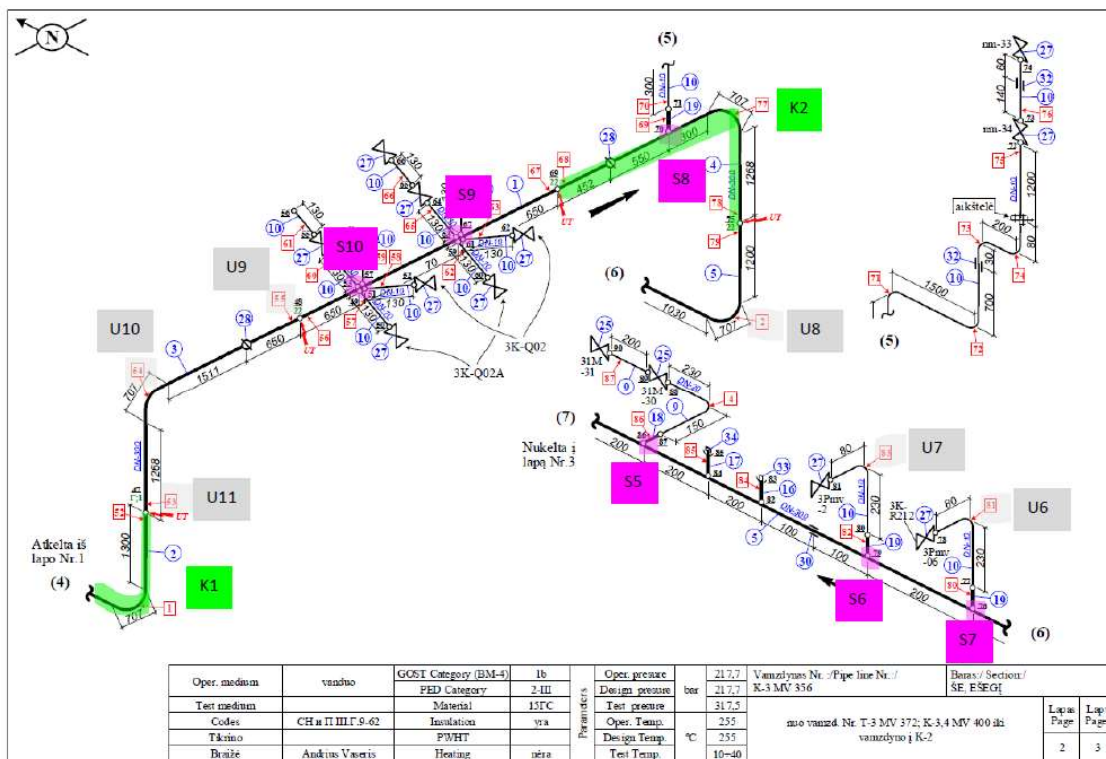
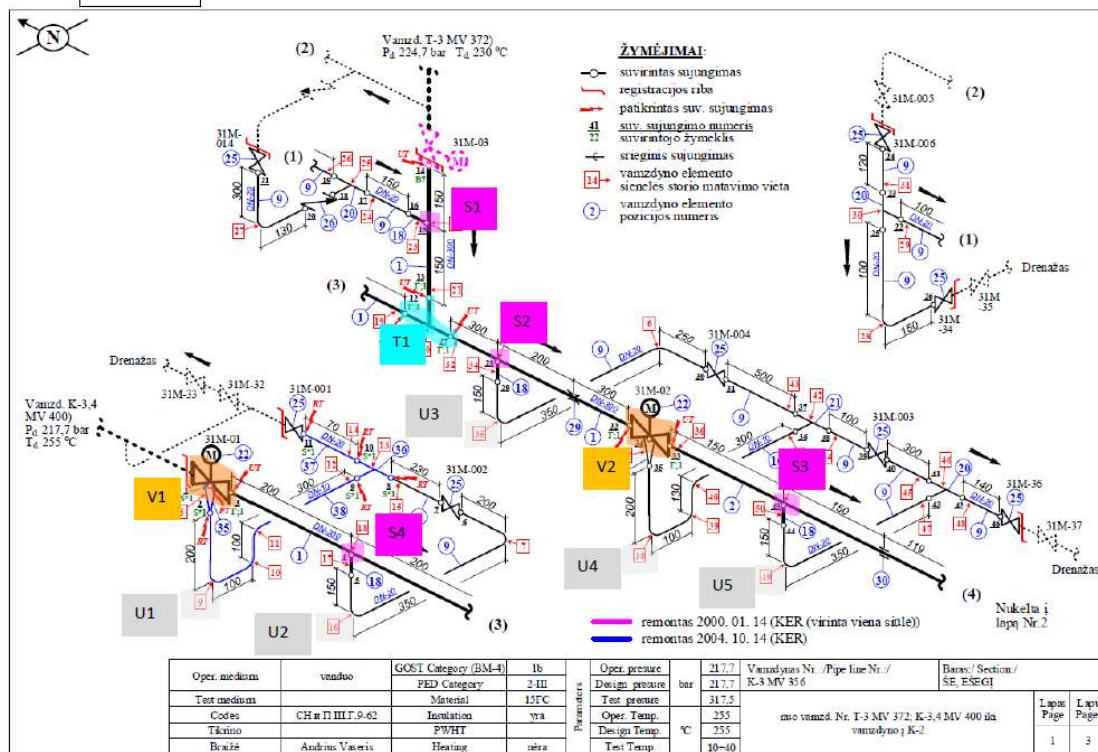
Fig.7. Scheme of the areas for testing the elbow, arc and welded joint (circumferential weld).

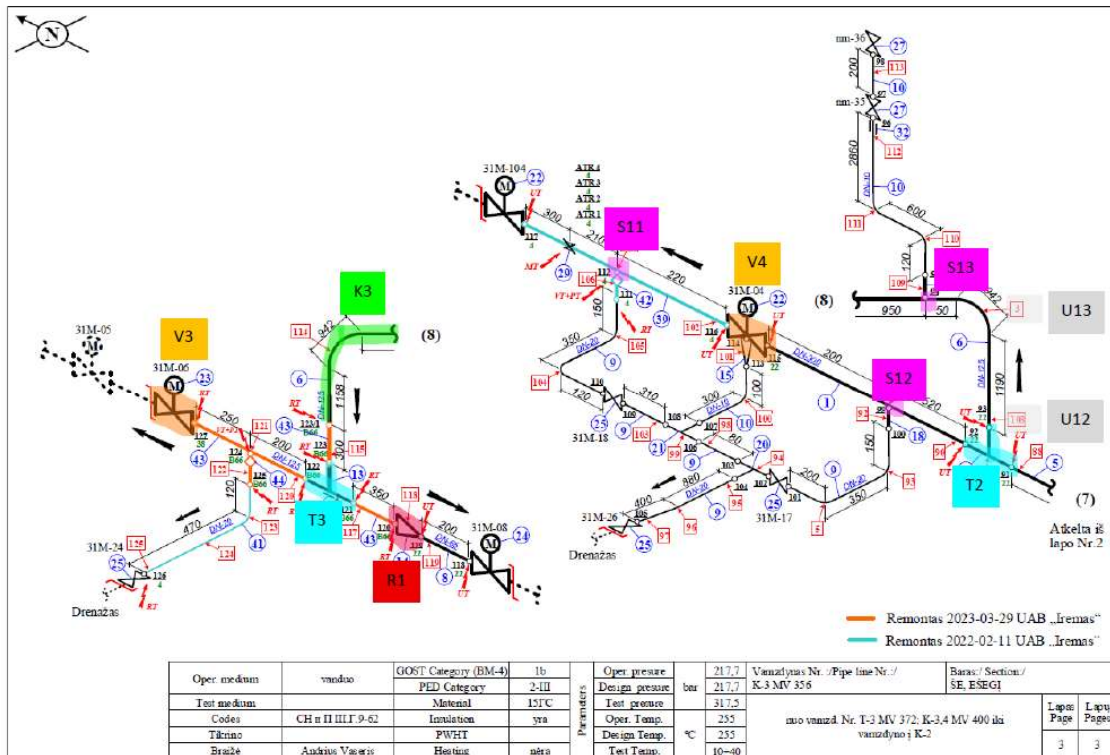






K-3 MV 356





T-3 MV 372

