Piping Repair Technologies – Sample Summary Sheet

DESIGN SUMMARY SHEET

CUSTOMER	DATE	CONTACT

THIS SHEET SUMMARIZES THE DESIGN PARAMETERS AND CALCULATIONS

PIPE DATA		DESIGN FACTORS	
PIPE DIAMETER (in.)	24	MATERIAL SYSTEM SELECTED	g-03
WALL THICKNESS (in.)	0.375	STEEL DESIGN FACTOR F	0.72
SMYS (psi)	50000		
DEFECT DATA		DESIGN DETAILS	
WALL LOSS (in.)	0.29	LONG TERM PER PLY WRAP STRENGTH (pounds per inch of width)	400
PERCENT WALL LOSS	77.33%	COMPOSITE DERATING FACTOR	0.67
AXIAL LENGTH OF DEFECT (in.)	16	ADDITIONAL SAFETY FACTOR	1
OTHER OPERATING DATA		AXIAL LENGTH OF REPAIR (in.)	27
MAOP OF ORIGINAL PIPE (psi)	1125	NUMBER OF LAYERS OF WRAP TO RESTORE	
MAOP WITH DEFECT (psi)	255	THE SYSTEM TO ITS OPERATING PRESSURE	8
SYSTEM OPERATING PRESSURE (psi)	420	SYSTEM OPERATING PRESSURE WITH THE	
		SUGGESTED NUMBER OF WRAPS (psi)	434

MATERIAL REQUIREMENTS		
MATERIAL SELECTED	g-03	Glass tape
ROLL SIZE WIDTH (in.)	6	
LENGTH (ft.)	60	
NUMBER OF ROLLS	6	
WRAP METHOD	S	

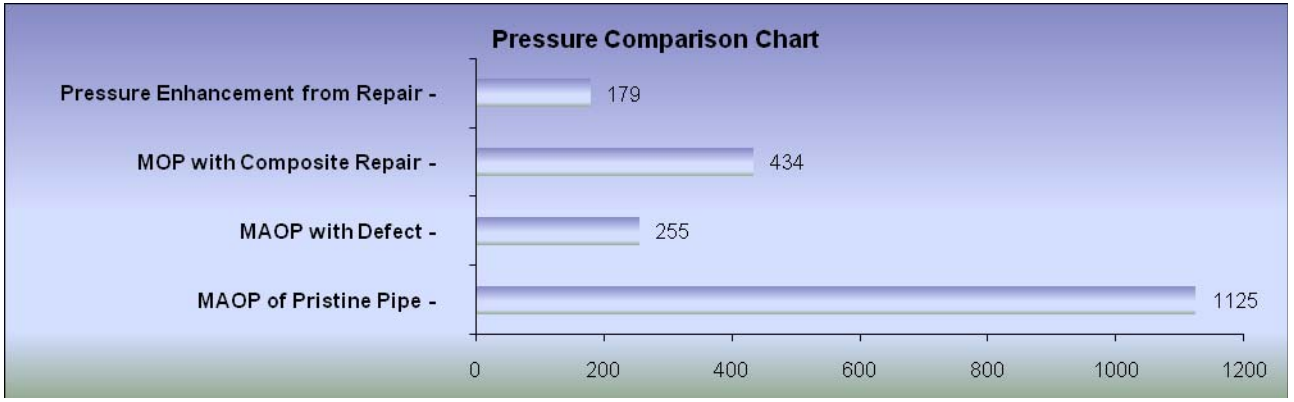
Piping Repair Technologies – Sample Detail Calculation Summary

PIPE DATA

PARAMETER	SYMBOL	VALUE
OUTSIDE DIAMETER, D (INCHES)	D	24
ORIGINAL WALL THICKNESS, t (INCHES)	t	0.375
SPECIFIED MINIMUM YIELD STRENGTH - SMYS (PSI)	SMYS	50000
DESIGN FACTOR, F (0.72 per ASME B31.4, a lower value may be entered if appropriate)	F	0.72
MAXIMUM ALLOWABLE OPERATING PRESSURE OF THE ORIGINAL PIPE - MAOP (PSI) MAOP=F * SMYS * t * 2/D	MAOP	1125
MAXIMUM SYSTEM DESIGN OPERATION PRESSURE OR ACTUAL PRESSURE $P_{O\ (psi)}$	P_O	420
DEFECT DATA		
MAXIMUM WALL LOSS, W (INCHES)	W	0.29
MAXIMUM SYSTEM OPERATION PRESSURE WITH DEFECT, $MAOP_D$ (psi) $MAOP_D$ =F * SMYS* W * 2/D	$MAOP_D$	255
AXIAL LENGTH OF DEFECT AREA (INCHES), L_D	L_D	16

WRAP MATERIAL PROPERTIES		
SERVICE FACTOR FOR COMPOSITE, f	f	0.67
SELECT WRAP TYPE, G-03 (TAPE) OR G-05 (WOVEN ROVING)		g-03
ADDITIONAL SAFETY FACTOR, S IF GREATER THAN 1.	S	1

SUGGESTED REPAIR DESIGN		
AXIAL LENGTH OF REPAIR (INCHES), $L_W = L_D + 2 * 2.5*SQRT(D * t / 2)$	L_W	27
NUMBER OF LAYERS FOR RESTORATION TO FULL MAOP, $N_M = (MAOP - MAOP_D)*S*D/2*f*SPP$, or 4 whichever is greater	N_M	39
NUMBER OF LAYERS FOR RESTORATION TO THE OPERATION PRESSURE OR THE ACTUAL PRESSURE, $N_O = (P_O - MAOP_D)*S*D/2*f*S_{PP}$, or 4 whichever is greater.	N_O	8
MAXIMUM SYSTEM OPERATION PRESSURE USING THE MINIMUM NUMBER OF SUGGESTED RESTORATION LAYERS FROM ABOVE $P_R = MAOP_D + S_{PP}*N_O*f*2/S*D$	P_R	434


Pressure Comparison Chart
Pressure Enhancement from Repair -
179
MOP with Composite Repair -
434
MAOP with Defect -
255
MAOP of Pristine Pipe -
1125
0
200
400
600
800
1000
1200