1 A	В	С	D	E	F	G	Н	I	J	K	L	ΜN
	MAT	TLAR P	roject (#2) - Metallic	Failure A	nalysis							
3			ace Structural Analysis, Uni			go (Copyright	J.B. Kosmati	ka, 2020)				_
5		Version:	Winter, 2020 (v1)									
6		• • • • • • • • • • • • • • • • • • • •	VIII(CI) 2020 (V2)									
7	Pr	oject Title:	Reader Example, Volume 1,	page 183 (3.57),	2-D Strain Rose	ette (0, 45, 90)	1				-	
8												
9		Variable	Description	Value	Units				Units Re			
10		ilnput	Input Units	1	1 = US, 2 = SI				US	SI		
11		iOutput	Output Units	1	1 = US, 2 = SI			σ, τ	$10^{3} lb/in^{2}$	МРа	***************************************	rananananan-
12		ioption	Analysis Option	2	1 = Stress, 2 =	Strain		<i>E</i> , <i>G</i>	10 ⁶ lb/in ²	GPa		
13 14		Material Pr	opartias									
15	,	Variable	Description	A-Basis	B-Basis	Units						
16		E	Young's Modulus	10.3	10.3	Msi						
17		G	Shear Modulus	3.9	3.9	Msi						
18		$\sigma_{\scriptscriptstyle yT}$	Yield strength - tension	68	70	Ksi						
19		$\sigma_{\scriptscriptstyle uT}$	Ultimate strength - tension	78	80	Ksi						
20		$\sigma_{\it yC}$	Yield strength - compressio	-70	-73	Ksi						
21		$\sigma_{\sf uC}$	Uultimate strength - compr	-78	-80	Ksi						
22		τ_{y}	Yield strength - shear	35.25	35.25	Ksi	enenenenenenenenenenenenenenenenenenen	***		enenennenenenenenenenenenenenenenenene		
23		τ_u	Ultimate strength - shear	46	48	Ksi					-	
24 25		Safety Facto										
26		Variable	Description	Value	Units							*****
27	-	SF _v	Safety Factor - yield	1.1	1						-	
28	******	SF "	Safety Factor - ultimate	1.5	1						-	
29			,								-	
30												
31	Х	Option 1:	Applied Stress State		,		ř	,			,	
32 33		A l!l C+	644-									
34		Applied Stre Variable	Description Description	Value	Units							
35		σ _{xx}	Stress (σ_{xx})	Value	Ksi	********************************						
36		σ_{yy}	Stress (σ_{yy})		Ksi						-	
37		σ _{zz}	Stress (σ_{zz})		Ksi							
38		τ _{yz}	Stress (τ _{yz})		Ksi							
39		τ _{xz}	Stress (τ _{xz})		Ksi							
40		τ_{xy}	Stress (τ _{xy})		Ksi							
41												
42	Х	O=4i== 2:	Massured Strain State From	Dagettaa			Table 1					
43 44	۸	Option 2:	Measured Strain State From	Rosettes			-		-			
45		Strain Gage	Rosette								-	
46		Variable	Description	Value	Units		and the second s					
47		$ heta_{A}$	Orientation Angle (A)	0	degree				Name of the second seco			
48		$\theta_{\mathtt{B}}$	Orientation Angle (B)	45	degree							
49		$ heta_{C}$	Orientation Angle (C)	90	degree							
50		θ	Gage Rotation Angle	0	degree							
51 52		Measured S	trains									
53		Variable	Description Description	Value	Units			***				
54		\mathcal{E}_{A}	Strain (A)	1000	μ in/in	***************************************				***************************************		
55		\mathcal{E}_{B}	Strain (B)	900	μ in/in		The state of the s					
56		€ _C	Strain (C)	-400	μ in/in			***************************************				
57												
58		nenemenenenenenenenenenenenenenen				our/percenterenterenterenterenterenterenteren					m/nenenenenenenenenenenen	***************************************
59 0		END OF F	ILE									

A	В	С	D	E	F	G	Н	I	J	К	L	MN
1	MA	TIADD	roject (#2) - Metallio	. Failure M	oggurad Str	ain Ana	lucia			***************************************		
2			roject (#2) - Metatio ace Structural Analysis, Uni				<u> </u>	the 2020)		and		+ 1
3	3E-10				rnia, san Diego) (Copyright	J.B. KOSIIIU	.Ku, 2020)				
5		Version:	Winter, 2020 (v2) - Input: US	, Output: US/SI								
7	Stu	dent Name:	John Kosmatka									
8	ļ	,	A0123456789									
9	ļ							***************************************				
10	P	roject Title:	Reader Example, Volume 1,	page 183 (3.57), 2	2-D Strain Rosett	te (0, 45, 90)	an and an					
11 12	INDIT	ECHO:								amanana		
13	INFO	ECHO.					A. A			***************************************		
14		Variable	Description	Value	Units			Units Re	ference			
15		ilnput	Input Units	1	1 = US, 2 = SI			US	SI			
16		iOutput	Output Units	1	1 = US, 2 = SI		σ, τ	$10^3 lb/in^2$	МРа			
17		Ioption	Analysis Option	2	1 = Stress, 2 = St	train	E, G	10 ⁶ lb/in ²	GPa			
18 19		Material Pr										
20		Variable	Description	A-Basis	B-Basis	Units						
21		E	Young's Modulus	10.3000	10.3000	Msi						
22		G	Shear Modulus	3.9000	3.9000	Msi						
23		$\sigma_{\it yT}$	Yield strength - tension	68.0000	70.0000	Ksi						
24		$\sigma_{\it uT}$	Ultimate strength - tension	78.0000	80.0000	Ksi						
25 26		σ_{yc}	Yield strength - compressio Uultimate strength - compr	-70.0000 -78.0000	-73.0000 -80.0000	Ksi Ksi						
27		σ_{uc}	Yield strength - shear	35.2500	35.2500	Ksi						-
28		τ_u	Ultimate strength - shear	46.0000	48.0000	Ksi					***************************************	
29												
30		Safety Facto										
31		Variable	Description	Value	Units							
33		SF _y	Safety Factor - yield Safety Factor - ultimate	1.1	1							
34		31 _U	Safety Factor - ultimate	1.5	1							
35		Strain Gage	Rosette									
36		Variable	Description	Value	Units							***************************************
37		$\theta_{\mathtt{A}}$	Orientation Angle (A)	0	degrees							
38		θ_{B}	Orientation Angle (B)	45	degrees					Transaction of the Control of the Co		
39 40		θ_{C}	Orientation Angle (C) Gage Rotation from (x,y)	90	degrees							+-
41		U	dage Rotation from (x,y)	U	degrees							-
42		Measured S	Strains									
43		Variable	Description	Value	Units							
44		\mathcal{E}_{A}	Strain (A)	1000	μ in/in							
45 46		€ _B	Strain (B)	900 -400	μ in/in μ in/in	***************************************						
47		€ _C	Strain (C)	-400	μπηπ					-		
48							non-					
49	OUTP	UT:								,	Ļ	
50			hiiii	,			National Association (Control of Control of			nanana	name and a second	
51 52	1.)	ivieasured s	trains in structural frame (x,	")			-			14000000		
53		Variable	Description	Value	Units		The state of the s			200		-
54		\mathcal{E}_{XX}	normal strain (x)	1000.000								+
55		ε_{yy}	normal strain (y)	-400.000								
56		γ_{xy}	shear strain	1200.000	μ in/in					-		
57							Anna Anna					
58	2.)	Principal St	rains									
59			_							-		
60		Variable	Description	Value	Units		To a constant of the constant					
61		£ 11	normal strain (1)	-621.954 1221.954								_
62	-	€ ₂₂	normal strain (2)	1221.954	μ my m		The state of the s			and a second		
63 64	3 /	Allowable S	trains				transaca			nanne	Table 1	
04	3.)	Allowable 5	nu an 15									

	Α	В	С	D	E	F	G	Н	I	J	K	L	ΜN
65											000000000000000000000000000000000000000		
66			Variable	Description	A-Basis	B-Basis	Units				***************************************		
67			ϵ_{T}^*	Allowable Tension	5048.544	5177.994	μ in/in						
68			$\epsilon_{\rm c}^*$	Allowable Compression	-5048.544	-5177.994	μ in/in						
69			γ_R^*	Allowable Shear	7863.248	8205.128	μ in/in						
70			γ_T^*	Allow Shear Tresca Mixed	2524.272	2588.997	μ in/in				annonana a		
71													
72		4.)	Margin of S	afety (Saint Venant Failure C	Criteria)								
73													
74			Variable	Description	A-Basis	B-Basis	Units						
75			MS	Margin of Safety	3.1315	3.2375	1						
76											- Characteristics		
77		End of	Output										