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## **ELECTRICAL CALCULATION SHEET**

Doc. No: 252-0214-EMEL-CS00-0008

Job No. : 252

: BANGLADESH GAS FIELDS COMPANY LIMITED Client

: LOCATION J Location

Item No. : -

: FAULT LEVEL CALCULATION Description

: 2 x 75 MMSCFD GLYCOL DEHYDRATION TYPE GAS PROCESS PLANT Project Title.

Year Built : 2015

Α	28/10/2015	3	ISSUED FOR APPROVAL	AS	MH	VG
Rev.	Date	Page	Description of Revision	Prepared	Checked	Approved

15	BANGLADESH GAS FIELDS COMPANY LIMITED
USER	
LOCATION	
PROJECT	
JOB NO	
	Generator KVA Rating
	Line to Line Voltag
	Line to Neutral Voltage
	Full Load Amper
Genset Alter	nator Percentage Impedanc
·	
Fault at zero	distance/terminal
	Full Load Amprere

**Electrical Calculation** Sheet



## CONSORTIUM OF ZICOM EQUIPMENT PTE LTD.





	SINOPEC PETROLEUM ENGINEERING CORPORATION							
JSER	BANGLADESH GAS	S FIELDS CO	MPANY LIMITED		DOC NO <b>252-0214-EMEL-CS</b>		MEL-CS00-000	
OCATION	TITAS GAS FIELD, BRAHMANBARIA, BANGLADESH				SERVICE	FAULT LEVEL CALCULATION		
PROJECT	2 x 75 MMSCFD GL	YCOL DEHY	DRATION TYPE GAS PROCE	RATION TYPE GAS PROCESS PLANT				
JOB NO	252	LOCATION	J					
Generator KVA Rating	345	kVA						
Line to Line Voltage	400	V						
Line to Neutral Voltage	230	V						
Full Load Ampere	497.98	Α						
Genset Alternator Percentage Impedance	12.5	%						
Fault at zero distance/terminal			Fault at zero o	distance/terminal				
Full Load Ampreres		A		Full Load Ampreres	498			
Multiplier,M1	-			Multiplier,M1	8			
Fault at Generator terminal	3984		1 1 = 1	Fault at Generator terminal	5976			
L-L Fault	3.98		L-N Fault		5.98	kA		
L-L-L Fault(AFC)	4.58	kA						
For BUSBAR B, C& D					1			
Fault at some distance from terminal			Fault at some	distance from terminal				
Biston from the control of the				Distance for a family				
Distance from terminal, L	230	π		Distance from terminal, L	230	π		
No. of Conductor,N  Conductor factor,C				No. of Conductor,N  Conductor factor,C	799		-	
Conductor factor,C Factor,f				Factor, f			-	
Multiplier,M2	4.9658 0.1676			Multiplier,M2	14.9587 0.0627			
Fault after 1st distance	0.1676	٨		Fault after 1st distance	0.0627 <b>374.7</b>	۸	-	
			I N Foult	i auit aitel 15t UiStdIICE	_		-	
L-L Fault	0.67		L-N Fault		0.37	kA		
L-L-L Fault(AFC)	0.77	kA					+	
Noto	Formula							
Note			rormula					

## Reff. Drawing: 252-0214-EMEL-DW00-0008-J POWER DISTRIBUTION SYSTEM FOR LOCATION J

For conductor factor, C reff. document is attached

FLA=Full Load Ampere

AFC=Available Fault Current

L-L Fault=Approx. 87% L-L-L Fault

Sub-transient Reactance Per Unit,Xd"=0.125 For low resistance Percent Impedance≈12.5%

Percent Reactance data is found from Generator

datasheet of Model No: PG345B3

For L-L Fault

$$FLA_{L-L} = \frac{KVARating*1000}{L-LVoltags}$$

$$\mathsf{FLA}_{\mathsf{L-N}} = \frac{\mathit{KVARating} {*} 1000}{\mathit{L-NVoltags}}$$

Multipier, M2 = 
$$\frac{1}{1+f}$$

Factor, 
$$f = \frac{1.732*L*I(SCA)}{N*C*E(L-L)}$$

Factor, f = 
$$\frac{1.732*L*I(SCA)}{N*C*E(L-N)}$$

I(SCA)= Short Circuit Current at the beginning of the circuit

L=Length of Cable

N=No. of Conductor Per Phase

C=Conductor factor(One over the impedance per foot)

E(L-L)=Phase to Phase Voltage or L-L Voltage

E(L-N)=Phase to Neutral Voltage or L-N Voltage

BANGLADESH GAS FIELDS COMPANY LIMITED	Electrical Calculation Sheet		CONSORTIUM OF ZICOM EQUIPMENT PTE LTD. AND ZICOM SINOPEC PETROLEUM ENGINEERING CORPORATION				onec	
USER	BANGLADESH GAS	FIELDS CO	MPANY LIMIT			DOC NO	252-0214-EMEL-CS00-0008	
LOCATION	TITAS GAS FIELD, B	RAHMANB/	ARIA, BANGL	ADESH		SERVICE	FAULT LEVEL CALCULATION	
PROJECT	· · · · · · · · · · · · · · · · · · ·		,	PE GAS PROCESS P	LANT	TAG NO		
JOB NO	252	LOCATION	J			QUANTITY	f	
Generator KVA Rating		kVA						
Line to Line Voltage								
Line to Neutral Voltage								
Full Load Ampere	497.98	A				<u> </u>		
Genset Alternator Percentage Impedance	12.5	%						
Fault at zero distance/terminal				Fault at zero dista	ance/terminal			
	†						<del>                                     </del>	
Full Load Ampreres	498	A			Full Load Ampreres	498	A	
Multiplier,M1			†		Multiplier,M1	8		
Fault at Generator terminal	3984			Fi	ault at Generator terminal	5976		
L-L Fault	3.98			L-N Fault		5.98		
L-L-L Fault(AFC)	4.58							
·							<u> </u>	
For BUSBAR E								
Fault at some distance from terminal				Fault at some dis	tance from terminal			
	, ,		1					
Distance from terminal, L	. 65	ft			Distance from terminal, L	65	ft	
No. of Conductor,N	1			No. of Conductor,N		1		
Conductor factor,C	981			Conductor factor,C		981	<u> </u>	
Factor,f	1.143				Factor,f	3.4432		
Multiplier,M2	0.4666				Multiplier,M2	0.2251		
Fault after 1st distance	1859				Fault after 1st distance	1345.2		
L-L Fault	1.86	kA		L-N Fault		1.35	kA	
L-L-L Fault(AFC)	2.14	kA						
, ,								
Note		Formula						
Reff. Drawing: 252-0214-EMEL-DW00-0008 DISTRIBUTION SYSTEM FOR LOCATION	For L-L Fault For L-N Fault							
For conductor factor, C reff. document is	$FLA_{L-I} = \frac{\mathit{KVARating} * 1000}{\mathit{L-LVoltage}} \qquad \qquad FLA_{L-N} = \frac{\mathit{KVARating} * 1000}{\mathit{L-NVoltage}}$							
FLA=Full Load Ampere	_							
AFC=Available Fault Current	Multipier, M1 = $\frac{100}{\% Percent Impedence}$ Multipier, M2 = $\frac{1}{1+f}$							
L-L Fault=Approx. 87% L-L-L Fault	% Percent Impedence 1+f							
	Factor, $f = \frac{1.732*L*I(SCA)}{N*C*F(L-1)}$ Factor, $f = \frac{1.732*L*I(SCA)}{N*C*E(L-N)}$							
Sub-transient Reactance Per Unit,Xd"=0.125		Factor, $f = \frac{1.732*L*I(SCA)}{N*C*E(L-L)}$ Factor, $f = \frac{1.732*L*I(SCA)}{N*C*E(L-N)}$						
For low resistance Percent Impedance≈12.5%								

I(SCA)= Short Circuit Current at the beginning of the circuit

C=Conductor factor(One over the impedance per foot)
E(L-L)=Phase to Phase Voltage or L-L Voltage
E(L-N)=Phase to Neutral Voltage or L-N Voltage

L=Length of Cable

N=No. of Conductor Per Phase

For low resistance Percent Impedance≈12.5%
Percent Reactance data is found from Generator

datasheet of Model No: PG345B3