BANGLADESH GAS FIELDS COMPANY LIMITED.

CONSORTIUM OF
SINOPEC PETROLEUM ENGINEERING CORPORATION.
AND
ZICOM EQUIPMENT PTE. LTD.

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ELECTRICAL CALCULATION SHEET

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

Job No. : **252**

Client : **BANGLADESH GAS FIELDS COMPANY LIMITED**

Location : **LOCATION J**

Item No. : **-**

Description : **FAULT LEVEL CALCULATION**

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

Year Built : **2015**

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

BANGLADESH GAS FIELDS COMPANY LIMITED	Electrical Calculation Sheet	CONSORTIUM OF ZICOM EQUIPMENT PTE LTD. AND SINOPEC PETROLEUM ENGINEERING CORPORATION		
USER	BANGLADESH GAS FIELDS COMPANY LIMITED		DOC NO	252-0214-EMEL-CS00-0008
LOCATION	TITAS GAS FIELD, BRAHMANBARIA, BANGLADESH		SERVICE	FAULT LEVEL CALCULATION
PROJECT	2 x 75 MMSCFD GLYCOL DEHYDRATION TYPE GAS PROCESS PLANT		TAG NO	
JOB NO	252 LOCATION J		QUANTITY	

Generator KVA Rating	345	kVA					
Line to Line Voltage	400	V					
Line to Neutral Voltage	230	V					
Full Load Ampere	497.98	A					
Genset Alternator Percentage Impedance	12.5	%					
Fault at zero distance/terminal				**Fault at zero distance/terminal**			
Full Load Ampreres	498	A		Full Load Ampreres	498	A	
Multiplier,M1	8			Multiplier,M1	8		
Fault at Generator terminal	**3984**	A		Fault at Generator terminal	**5976**	A	
L-L Fault	**3.98**	kA		**L-N Fault**	**5.98**	kA	
L-L-L Fault(AFC)	**4.58**	kA					
For BUSBAR B, C& D							
Fault at some distance from terminal				**Fault at some distance from terminal**			
Distance from terminal, L	230	ft		Distance from terminal, L	230	ft	
No. of Conductor,N	1			No. of Conductor,N	1		
Conductor factor,C	799			Conductor factor,C	799		
Factor,f	4.9658			Factor,f	14.9587		
Multiplier,M2	0.1676			Multiplier,M2	0.0627		
Fault after 1st distance	**668**	A		Fault after 1st distance	**374.7**	A	
L-L Fault	**0.67**	kA		**L-N Fault**	**0.37**	kA	
L-L-L Fault(AFC)	**0.77**	kA					

Note

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

Formula

For L-L Fault

$$\text{FLA}_{\text{L-L}} = \frac{KVA\,Rating * 1000}{L-L\,Voltage}$$

$$\text{Multipier, M1} = \frac{100}{\%\,Percent\,Impedence}$$

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

For L-N Fault

$$\text{FLA}_{\text{L-N}} = \frac{KVA\,Rating * 1000}{L-N\,Voltage}$$

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

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

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

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L-L-L Fault(AFC)	**4.58**	kA					
For BUSBAR E							
Fault at some distance from terminal				**Fault at some distance from terminal**			
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		
Factor,f	1.143			Factor,f	3.4432		
Multiplier,M2	0.4666			Multiplier,M2	0.2251		
Fault after 1st distance	**1859**	A		Fault after 1st distance	**1345.2**	A	
L-L Fault	**1.86**	kA		**L-N Fault**	**1.35**	kA	
L-L-L Fault(AFC)	**2.14**	kA					

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