PACIFIC GAS AND ELECTRIC COMPANY
San Bruno Gas Transmission Line Incident
Data Response

PG&E Data Request No.:	NTSB_056-001		
PG&E File Name:	San Bruno GT Line Incident_DR_NTSB_056-001		
Request Date:	March 16, 2011	Requesting Party:	NTSB
Date Sent:	March 25, 2011	Requestor:	Operations (Chhatre/ Nicholson)

QUESTION 1

Provide calculations or models used in calculating volume of gas released after the rupture.

ANSWER 1

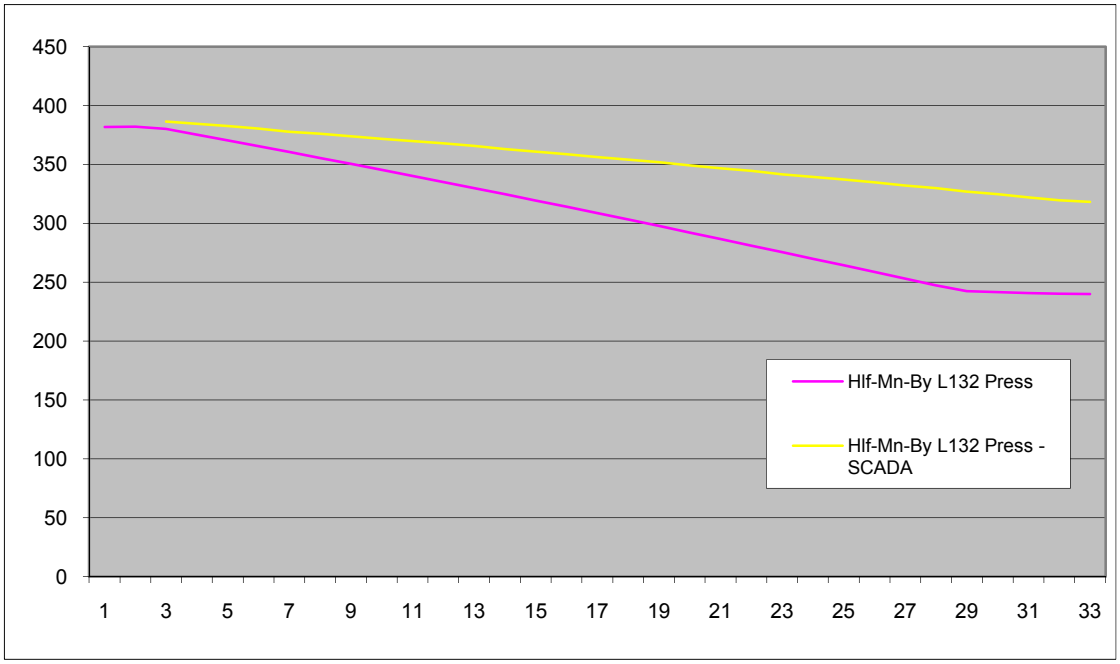
The analysis was performed using SynerGee® Gas V4.4.2 by GL Noble Denton. SynerGEE® Gas is used by PG&E to model and analyze its pipeline networks. See Excel attachment file named L132_Gas_to_Atm_Calc.

This Excel file is the "model" read by SynerGee V4.4.2 to perform the calculations and determine the pressures and flows in the network and the gas loss to the atmosphere.

The data used to generate the Excel file is contained in SynerGee® Gas V4.4.2 and is accessible and readable only when collaboratively used with this software. For this reason, a copy of the SynerGee V4.4.2 database has not been included.

Time (hours)	HFMBYTAP Nodes Result Pressure psig	SULLIVNU Nodes Result Pressure psig	MARTINU Nodes Result Pressure psig	L109MeterM1 Pipes Flow mscfh	L132MeterM1 Pipes Flow mscfh
Time	Hlf-Mn-By L132 Press	Slvn-Ave L109 U/S Press	Mrtin-Sta L132 U/S Press	L109 Meteite M-1 Flow	L132 Meteite M-1 Flow
18.1	382	380	381	2.0	1.9
18.15	382	380	381	2.0	1.9
18.2	380	378	328	2.2	2.2
18.25	375	365	183	3.8	4.1
18.3	370	348	118	5.0	5.4
18.35	366	331	90	5.8	6.4
18.4	361	316	77	6.5	7.1
18.45	356	303	70	7.0	7.7
18.5	351	291	66	7.4	8.1
18.55	345	281	63	7.8	8.5
18.6	340	273	61	8.0	8.8
18.65	335	266	58	8.3	9.0
18.7	330	259	57	8.5	9.2
18.76	325	254	55	8.6	9.4
18.81	319	249	54	8.8	9.5
18.86	314	244	53	8.9	9.7
18.91	309	241	52	9.0	9.8
18.96	303	237	51	9.1	9.9
19.01	298	234	50	9.2	10.0
19.06	292	232	49	9.2	10.0
19.11	287	229	49	9.3	10.1
19.16	281	227	48	9.3	10.2
19.21	276	225	48	9.4	10.2
19.26	270	223	47	9.4	10.3
19.31	264	222	47	9.5	10.3
19.36	259	221	47	9.5	10.3
19.41	253	219	46	9.5	10.4
19.46	247	218	46	9.5	10.4
19.51	242	217	46	9.6	10.4
19.56	242	216	46	9.6	10.4
19.61	241	216	46	9.6	10.4
19.66	240	215	45	9.6	10.5
19.68	240	215	45	9.6	10.5
					20.1

BREAK Variables Result	L132Break Valves Flow mscfh	Hlf-Mn-By L132 Press	Slvn-Ave L109 U/S Press	Mrtin-Sta L132 U/S Press	L109 Meteite M-1 Flow	L132 Meteite M-1 Flow
		Hlf-Mn-By L132 Press - SCADA	Slvn-Ave L109 U/S Press - SCADA	Mrtin-Sta L132 U/S Press - SCADA	L109 Meteite M-1 Flow - SCADA	L132 Meteite M-1 Flow - SCADA
501	0					
501	0					
2174	98604	386.4	382.4	361.4	1.7	1.9
6228	65846	384.6	377.7	197.3	4.2	2.6
9077	49180	382.5	368.0	115.3	3.3	3.9
11324	40859	380.3	356.6	86.3	4.3	5.0
13262	36476	377.6	336.8	70.1	4.6	5.4
15032	33968	376.1	325.0	61.4	5.0	5.7
16700	32316	373.9	315.1	57.1	5.5	6.6
18296	31088	371.9	303.8	54.4	6.0	7.0
19838	30103	369.9	290.4	52.5	6.0	7.2
21334	29280	367.9	282.6	51.4	6.3	7.8
22791	28577	365.9	271.1	50.8	6.6	7.7
24216	27970	363.1	263.2	50.3	7.1	8.3
25612	27444	361.0	255.0	50.3	7.2	8.3
26983	26986	358.6	248.6	49.7	7.4	8.7
28333	26586	356.3	242.8	49.7	7.3	8.8
29664	26235	354.1	235.4	49.7	7.3	9.1
30978	25927	351.9	229.9	49.7	7.3	8.9
32278	25656	349.2	224.9	49.5	7.7	9.0
33565	25417	346.8	220.2	49.5	7.9	9.0
34840	25205	344.6	215.8	49.5	7.6	9.0
36106	25019	341.6	209.6	49.6	8.0	9.4
37363	24853	339.5	204.8	49.6	7.8	9.5
38611	24707	337.1	200.9	49.6	7.7	9.3
39853	24577	334.9	197.6	49.5	8.1	9.5
41089	24461	332.1	194.1	49.5	7.9	9.6
42319	24359	329.8	189.2	49.5	7.9	9.6
43545	24267	326.9	187.8	48.2	7.9	9.5
44766	24184	324.7	186.6	46.8	7.9	9.8
45982	24105	321.9	183.4	46.8	7.7	9.2
47195	24032	319.5	181.4	46.8	7.3	8.7
47621	24008	318.3	182.2	46.7	7.3	9.0
						16.3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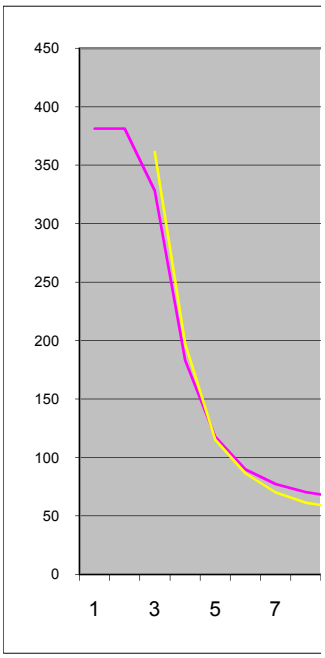
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
Hlf-Mn-By L132 Press
Hlf-Mn-By L132 Press - SCADA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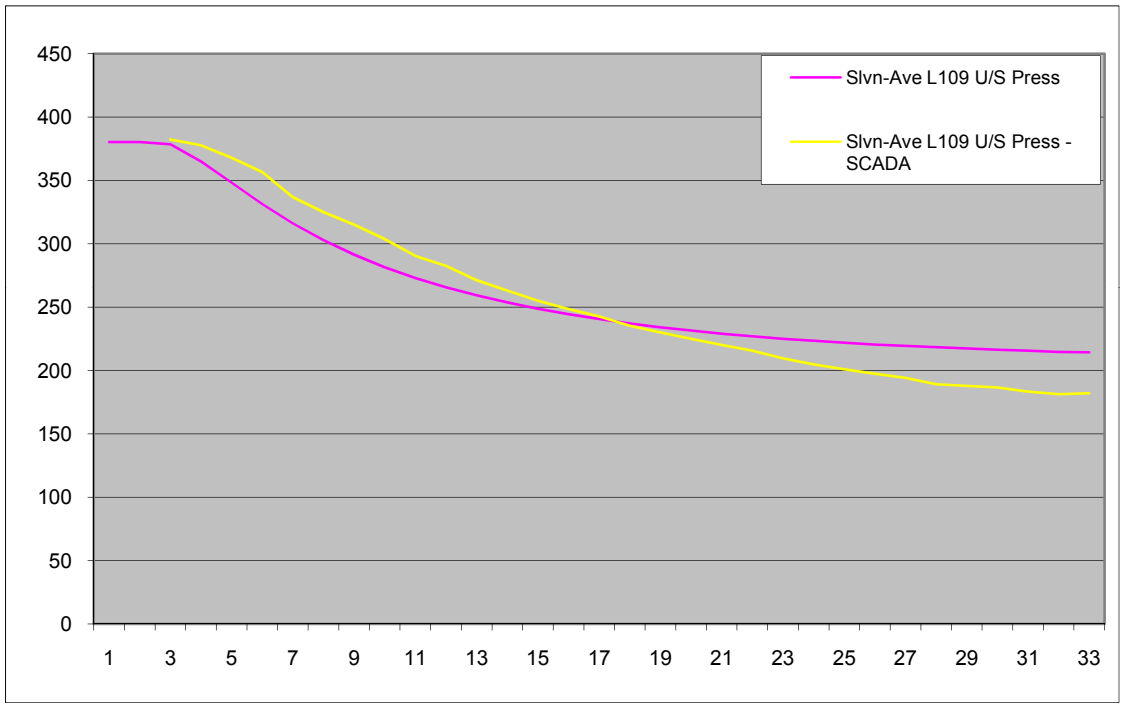
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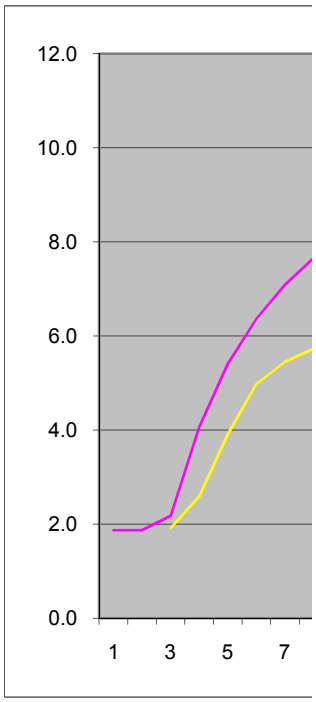
Slvn-Ave L109 U/S Press
Slvn-Ave L109 U/S Press - SCADA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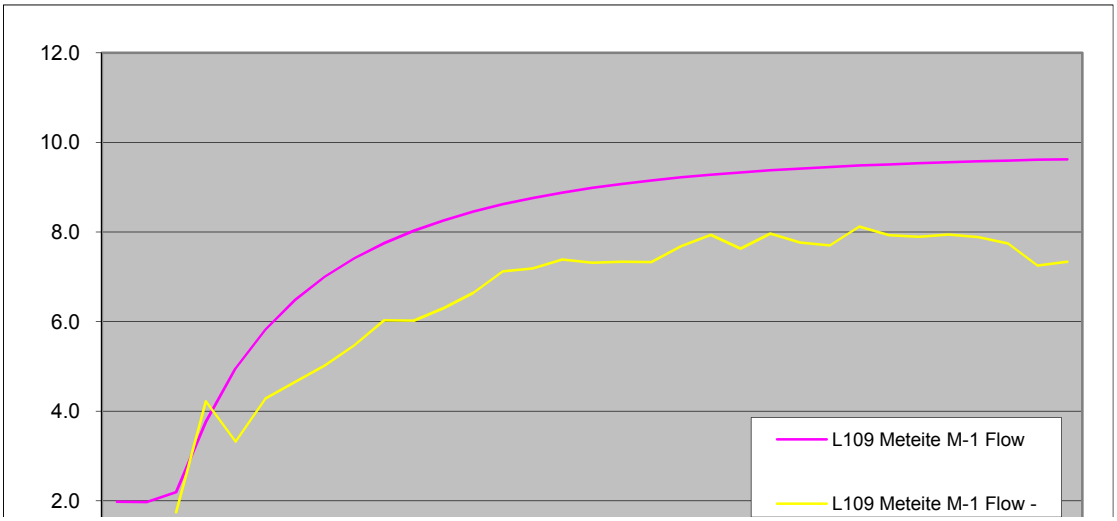
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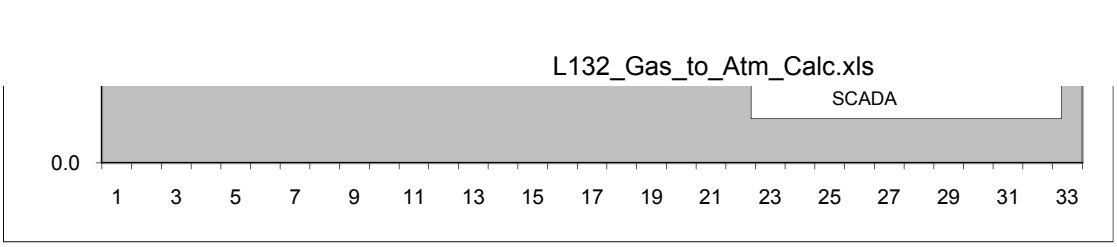
L109 Meteite M-1 Flow
L109 Meteite M-1 Flow -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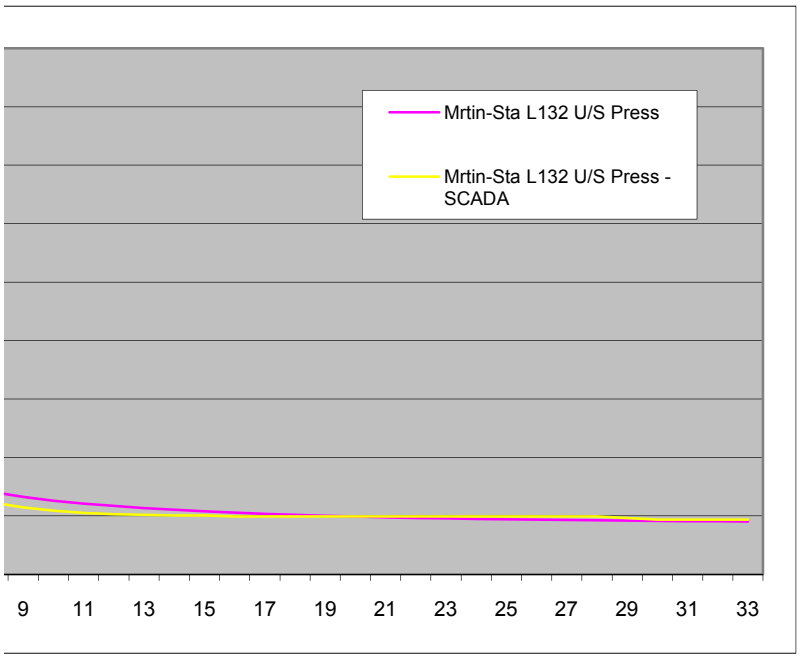
Mrtin-Sta L132 U/S Press
Mrtin-Sta L132 U/S Press - SCADA
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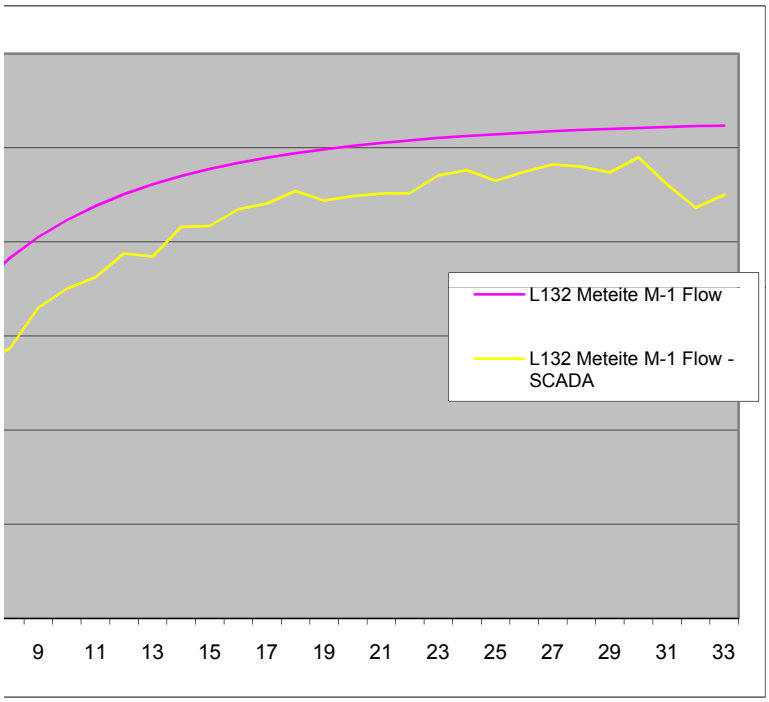
L132 Meteite M-1 Flow
L132 Meteite M-1 Flow - SCADA
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