The Light company
Houston Lighting & Power South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

October 28, 1992

ST-HL-AE-4183
File No.: G09.17
10CFR50

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Revised Turbine System Maintenance Program

References: 1. Correspondence from M. A. McBurnett (HL&P) to NRC Document Control Desk, dated August 28, 1990 (ST-HL-AE-3540)
2. Correspondence from M. A. McBurnett (HL&P) to NRC Document Control Desk, dated December 26, 1990 (ST-HL-AE-3597)
3. Correspondence from George F. Dick (NRC) to Donald P. Hall (HL&P), dated January 14, 1991
4. Correspondence from A. W. Harrison (HL&P) to NRC Document Control Desk, dated March 13, 1991 (ST-HL-AE-3711)
5. Correspondence from W. H. Kinsey, Jr. (HL&P) to NRC Document Control Desk, dated May 26, 1992 (ST-HL-AE-4050)

Houston Lighting & Power Company (HL&P) submits the following revision to the description of the turbine system maintenance program for the South Texas Project (STP). The program was originally described in references (1) and (2). The program as originally described was approved in reference (3). Reference (4) proposed changes to the Safety Evaluation (reference 3) for consistency with the existing STP program.

Side bars are included in this letter to show substantive changes from the program as previously described in references (1) and (2). Included is wording for consistency with the changes addressed in reference (4).

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HL&P has developed a schedule under which STP turbine components are inspected for functional integrity. Inspection intervals have been determined such that the turbine missile generation probability is less than 1.0 E-4 per year. In the event the probability falls between 1.0 E-4 and 1.0 E-3 per year, the turbine may be kept in service until the next scheduled outage, at which time action can be taken to reduce the probability to meet the 1.0 E-4 per year limit before returning the turbine to service. These criteria were provided in the Safety Evaluation of the Turbine System Maintenance Program submitted in references (1) and (2). Thus, the revised inspection intervals continue to meet the operating limits given in the Safety Evaluation.

Note that the missile generation probability evaluation approach and results differ from those given in UFSAR Section 3.5. This section will be revised consistent with the program as approved by the Safety Evaluation (reference 3).

The components of the turbine inspection program are as follows:

Low Pressure Turbine Rotors

The turbine rotor discs are subjected to non-destructive examination. (See Reference (4)). The maximum operating time between inspections has been calculated, the results of which are provided as attachment 1. Attachment 2 describes how these values were derived.

The tables provided by Westinghouse give the total probability of the event over the inspection intervals of 1, 2, 3, 4, 5 and 10 years. For the probability (P) of turbine failure resulting in ejection of turbine disc fragments through the turbine casing with a favorably oriented turbine such as those at STP:

P_1 < 1E-4 per year (to place the turbine on-line following a scheduled outage)

P_1 < 1E-3 per year (to keep the turbine in service until the next scheduled outage)

However, the Westinghouse data is not directly applicable to these criteria because they give the total probability of an event over the inspection interval, whereas the criteria are based on the instantaneous probability per year.

Note that these values are unique to the set of rotors used at STP. The maximum operating time between inspections may be different for replacement rotors. However, their inspection intervals will be determined in a similar manner.

Turbine Valves

Turbine stop, governor, reheat stop, and intercept valves are tested once per 31 days in Modes 1 and 2 per surveillance procedure to verify operability.

One of each type of these valves is disassembled and inspected at least once per 40 months. Valve seats, discs, and stems receive a visual and surface inspection and are verified as having no unacceptable flaws or excessive corrosion. If unacceptable flaws or excessive corrosion are found, all other valves of that type shall be inspected.

Note that a one-time Technical Specification change has been approved by the NRC extending the 40-month inspection interval for the Unit 1 turbine valves to approximately 52 months. The request for the extension was submitted as reference (5). Missile probabilities included in reference (5) were calculated in accordance with methods described herein.

Electrical Overspeed Protection

The electrical overspeed device is calibrated at least once every eighteen months.

Mechanical Overspeed Protection

The mechanical overspeed trip is tested during turbine startup under the turbine startup procedure following each major turbine outage. The mechanical overspeed device will be tested quarterly via oil simulation while the turbine is operating.

Inspection and maintenance of turbine components are addressed in the Turbine Overspeed Reliability Program. This is provided as Attachment 3. Reference (1) previously incorporated turbine maintenance activities by reference to the Technical Specifications.

If there are any questions, please contact either Mr. P. L. Walker at (512) 972-8392 or me at (512) 972-7205.

William J. Jump
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Nuclear Licensing

PLW/ag

Attachment: 1) Calculated Turbine Rotor Inspection Intervals
2) Calculation of Missile Generation Probabilities
3) Turbine Overspeed Reliability Program

cc:

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SOUTH TEXAS PROJECT
CALCULATED TURBINE ROTOR INSPECTION INTERVALS

LP Turbine Designation	Rotor Serial Number	Probabilistic Interval (Months)
Unit 1 LP1	TN 12679	60
LP2	TN 9226	22
LP3	TN 67[illegible]	45
Unit 2 LP1	TN 10851	53
LP2	TN 11046	47
LP3	TN 6726	17
Spare	TN 11411	60

SOUTH TEXAS PROJECT
CALCULATION OF MISSILE GENERATION PROBABILITIES

Westinghouse provides values of the probability of missile generation due to stress corrosion crack propagation in the low pressure turbine rotor discs. Values are provided for disc rupture at rated speed, "PROB (R)", and at design overspeed, "PROB (O)", at time intervals of 1, 2, 3, 4, 5, and 10 years of turbine operation. The probability refers to the probability of generation of a missile during the entire time intervals.

The probability of missile generation per year is found as follows:

$$P = At + Bt^2 + Ct^3 + Dt^4 + Et^5$$

where P = PROB(R) - PROB(O), missiles per turbine during a given time interval

t = total operating time of rotor since last inspection (years)
A, B, C, D, & E = constants of fifth order polynominal equation

This expression describes the distribution of probability of missile generation with time based on probabilistic data developed by Westinghouse.

$$P = \int F(t)dt$$

where F(t) = instantaneous probability of missile generation, per unit time

Therefore, $F(t) = dP/dt$
$= A + 2Bt + 3Ct^2 + 4Dt^3 + 5Et^4$

The five constants are found for each rotor from the five overall probabilities available from Westinghouse for years 1 through 5.

Each turbine has one rotor which has a considerably higher probability of missile generation than the other two rotors. In those cases, the probabilistic inspection interval was determined by maintaining the total probability for all rotors less than 1×10^{-4}, assuming the better two rotors had operated for two cycles more than the poorer rotor, since the last inspection. The total for all rotors with one cycle (18 months) more operation is then verified to be less than 1×10^{-3}.

The probabilistic intervals for the remaining five rotors (including the spare) were set to keep the probability of missile generation for the rotor at less than 3.33×10^{-5}. If this exceeded 60 months, the probabilistic interval was set at 60 months.

NOTES FOR APPENDIXES A AND B
CALCULATION OF MISSILE GENERATION PROBABILITIES

1) This row gives probability P_1, for rotor TN 9727 for operating times from 12 months through 72 months. This is typical for each rotor.

2) This row gives the current total P_1, adding the sums (P_1) for each rotor. All three rotors were inspected during 1RE03. The rotors will have about 16 months operation at startup from 1RE04 ($P_1 = 5.3 \times 10^{-6}$ missiles per year) and about 32 months operation at the projected shutdown for 1RE05 ($P_1 = 1.4 \times 10^{-4}$ missiles per year). Thus, startup from 1RE04 is acceptable without rotor inspection, and continued operation to 1RE05 is acceptable. However, some rotor inspection(s) during 1RE05 will be necessary to reduce P_1 to less than 1.0×10^{-4} missiles per year to allow startup after the outage.

3) This row gives total P_1 for a hypothetical case. Rotor TN 9226 has the operating time shown in the TIME row and the other two rotors have 32 months additional operating time. The total P_1 exceeds 1.0×10^{-4} missiles per year between 22 and 23 months operating time on TN 9226.

APPENDIX A
SOUTH TEXAS PROJECT UNIT 1
CALCULATION OF MISSILE GENERATION PROBABILITIES

TN6727

7.6500E-09
6.6200E-07
2.6800E-06
3.1800E-05
1.0200E-04

} PROB(R) + PPROB(O) for missile generation for 1, 2, 3, 4, and 5 years

	1.0000E+00	1.0833E+00	1.1667E+00	1.2500E+00	1.3333E+00	1.4167E+00	1.5000E+00	1.5833E+00	= Time(yrs)
A	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	= A
B	7.5875E-07	1.5175E-06	1.6439E-06	1.7704E-06	1.8969E-06	2.0233E-06	2.1498E-06	2.2762E-06	2.4027E-06 = $2B_t$
C	-5.3054E-07	-1.5916E-06	-1.8679E-06	-2.1664E-06	-2.4869E-06	-2.8295E-06	-3.1943E-06	-3.5811E-06	-3.9901E-06 = $3C_t^2$
D	1.0770E-07	4.3082E-07	5.4775E-07	6.8412E-07	8.4144E-07	1.0212E-06	1.2249E-06	1.4540E-06	1.7101E-06 = $4D_t^3$
E	2.6819E-08	1.3409E-07	1.8470E-07	2.4843E-07	3.2738E-07	4.2380E-07	5.4011E-07	6.7885E-07	8.4275E-07 = $5E_t^4$
	1.3571E-07	1.5338E-07	1.8152E-07	2.2371E-07	2.8371E-07	3.6542E-07	4.7290E-07	6.1034E-07	= Sum (Note 1)

TN9226

1.2000E-07
1.3300E-05
1.2600E-04
5.0200E-04
1.3100E-03

	1.0000E+00	1.0833E+00	1.1667E+00	1.2500E+00	1.3333E+00	1.4167E+00	1.5000E+00	1.5833E+00	
A	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	
B	2.9905E-05	5.7810E-05	6.2627E-05	6.7445E-05	7.2262E-05	7.7080E-05	8.1897E-05	8.6715E-05	9.1532E-05
C	-7.6037E-05	-7.8110E-05	-9.1671E-05	-1.0632E-04	-1.2205E-04	-1.3886E-04	-1.5676E-04	-1.7575E-04	-1.9582E-04
D	9.2550E-06	3.7020E-05	4.7068E-05	5.8786E-05	7.2305E-05	8.7751E-05	1.0525E-04	1.2494E-04	1.4694E-04
E	-8.0333E-07	-3.0167E-06	-4.1550E-06	-5.5887E-06	-7.3649E-06	-9.5342E-06	-1.2151E-05	-1.5272E-05	-1.8959E-05
	2.6033E-06	2.4694E-06	2.9263E-06	3.7554E-06	5.0347E-06	6.8387E-06	9.2381E-06	1.2301E-05	

TN12679

1.2000E-12
1.3300E-09
4.6200E-08
4.5300E-07
2.3200E-06

	1.0000E+00	1.0833E+00	1.1667E+00	1.2500E+00	1.3333E+00	1.4167E+00	1.5000E+00	1.5833E+00	
A	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08
B	-1.0374E-07	-2.0748E-07	-2.2477E-07	-2.4206E-07	-2.5935E-07	-2.7664E-07	-2.9393E-07	-3.1122E-07	-3.2851E-07
C	8.4906E-08	2.5472E-07	2.9894E-07	3.4670E-07	3.9800E-07	4.5283E-07	5.1121E-07	5.7312E-07	6.3856E-07
D	-3.0468E-08	-1.2187E-07	-1.5495E-07	-1.9353E-07	-2.3803E-07	-2.8888E-07	-3.4651E-07	-4.1132E-07	-4.8375E-07
E	4.1975E-09	2.0988E-08	2.8908E-08	3.8882E-08	5.1240E-08	6.6332E-08	8.4535E-08	1.0625E-07	1.3190E-07
	-8.5413E-09	-6.7672E-09	-4.9019E-09	-3.0406E-09	-1.2543E-09	4.1037E-10	1.9710E-09	3.3096E-09	

TIME, MONTHS	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	
TOTAL	2.4305E-06	2.6160E-06	3.1029E-06	3.9761E-06	5.3172E-06	7.2045E-06	9.7130E-06	1.2914E-05	(Note 2)
TN9226 PLUS OTHER ROTORS INSPECTED TWO CYCLES BEFORE	3.2084E-05	3.5232E-05	3.8882E-05	4.3125E-05	4.8048E-05	5.3735E-05	6.0268E-05	6.7723E-05	(Note 3)

APPENDIX A
SOUTH TEXAS PROJECT UNIT 1
CALCULATION OF MISSILE GENERATION PROBABILITIES

1.6667E+00	1.7500E+00	1.8333E+00	1.9167E+00	2.0000E+00	2.0833E+00	2.1667E+00	2.2500E+00	2.3333E+00	2.4167E+00
-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07
2.5292E-06	2.6556E-06	2.7821E-06	2.9085E-06	3.0350E-06	3.1614E-06	3.2879E-06	3.4144E-06	3.5408E-06	3.6673E-06
-4.4211E-06	-4.8743E-06	-5.3496E-06	-5.8469E-06	-6.3664E-06	-6.9080E-06	-7.4717E-06	-8.0575E-06	-8.6654E-06	-9.2954E-06
1.9945E-06	2.2089E-06	2.6543E-06	3.0334E-06	3.4465E-06	3.8956E-06	4.3820E-06	4.9073E-06	5.4730E-06	6.0805E-06
1.0347E-06	1.2577E-06	1.5149E-06	1.8097E-06	2.1455E-06	2.5261E-06	2.9551E-06	3.4367E-06	3.9748E-06	4.5738E-06
7.8214E-07	9.9279E-07	1.2470E-06	1.5496E-06	1.9055E-06	2.3200E-06	2.7982E-06	3.3457E-06	3.9681E-06	4.6711E-06

1.6667E+00	1.7500E+00	1.8333E+00	1.9167E+00	2.0000E+00	2.0833E+00	2.1667E+00	2.2500E+00	2.3333E+00	2.4167E+00
-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05
9.6350E-05	1.0117E-04	1.0598E-04	1.1080E-04	1.1562E-04	1.2044E-04	1.2525E-04	1.3007E-04	1.3489E-04	1.3971E-04
-2.1697E-04	-2.3921E-04	-2.6254E-04	-2.8695E-04	-3.1244E-04	-3.3902E-04	-3.6668E-04	-3.9543E-04	-4.2527E-04	-4.5618E-04
1.7139E-04	1.9840E-04	2.2812E-04	2.6066E-04	2.9616E-04	3.3474E-04	3.7654E-04	4.2168E-04	4.7029E-04	5.2250E-04
-2.3277E-05	-2.8293E-05	-3.4079E-05	-4.0711E-05	-4.8267E-05	-5.6828E-05	-6.6471E-05	-7.7314E-05	-8.9420E-05	-1.0290E-04
1.6090E-05	2.0667E-05	2.6088E-05	3.2463E-05	3.9873E-05	4.7934E-05	5.7233E-05	6.7608E-05	7.9096E-05	9.1729E-05

1.6667E+00	1.7500E+00	1.8333E+00	1.9167E+00	2.0000E+00	2.0833E+00	2.1667E+00	2.2500E+00	2.3333E+00	2.4167E+00
4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08
-3.4580E-07	-3.6309E-07	-3.8038E-07	-3.9767E-07	-4.1496E-07	-4.3225E-07	-4.4954E-07	-4.6683E-07	-4.8412E-07	-5.0141E-07
7.0755E-07	7.8007E-07	8.5614E-07	9.3574E-07	1.0189E-06	1.1055E-06	1.1958E-06	1.2895E-06	1.3868E-06	1.4876E-06
-5.6423E-07	-6.5316E-07	-7.5098E-07	-8.5812E-07	-9.7498E-07	-1.1020E-06	-1.2396E-06	-1.3882E-06	-1.5482E-06	-1.7201E-06
1.6194E-07	1.9684E-07	2.3710E-07	2.8324E-07	3.3580E-07	3.9537E-07	4.6252E-07	5.3789E-07	6.2212E-07	7.1587E-07
4.5723E-09	5.7697E-09	6.9766E-09	8.2920E-09	9.8394E-09	1.1766E-08	1.4245E-08	1.7471E-08	2.1666E-08	2.7074E-08
20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00	29.00
1.6877E-05	2.1665E-05	2.7342E-05	3.3964E-05	4.1589E-05	5.0266E-05	6.0045E-05	7.0971E-05	8.3085E-05	9.6427E-05
7.6174E-05	8.5693E-05	9.6346E-05	1.0820E-04	1.2131E-04	1.3574E-04	1.5154E-04	1.6878E-04	1.8745E-04	2.0766E-04

APPENDIX A
SOUTH TEXAS PROJECT UNIT 1
CALCULATION OF MISSILE GENERATION PROBABILITIES

2.5000E+00	2.5833E+00	2.6667E+00	2.7500E+00	2.8333E+00	2.9167E+00	3.0000E+00	3.0833E+00	3.1667E+00	3.2500E+00
-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07
3.7937E-06	3.9202E-06	4.0466E-06	4.1731E-06	4.2996E-06	4.4260E-06	4.5525E-06	4.6789E-06	4.8054E-06	4.9318E-06
-9.9475E-06	-1.0622E-05	-1.1318E-05	-1.2037E-05	-1.2777E-05	-1.3540E-05	-1.4324E-05	-1.5131E-05	-1.5960E-05	-1.6811E-05
6.7315E-06	7.4273E-06	8.1696E-06	8.9596E-06	9.7991E-06	1.0689E-05	1.1632E-05	1.2629E-05	1.3680E-05	1.4789E-05
5.2380E-06	5.9721E-06	6.7808E-06	7.6690E-06	8.6417E-06	9.7041E-06	1.0862E-05	1.2120E-05	1.3484E-05	1.4960E-05
5.4607E-06	6.3428E-06	7.3239E-06	8.4101E-06	9.6082E-06	1.0925E-05	1.2367E-05	1.3941E-05	1.5654E-05	1.7515E-05

2.5000E+00	2.5833E+00	2.6667E+00	2.7500E+00	2.8333E+00	2.9167E+00	3.0000E+00	3.0833E+00	3.1667E+00	3.2500E+00
-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05
1.4452E-04	1.4934E-04	1.5416E-04	1.5898E-04	1.6379E-04	1.6861E-04	1.7343E-04	1.7825E-04	1.8306E-04	1.8788E-04
-4.8819E-04	-5.2128E-04	-5.5545E-04	-5.9071E-04	-6.2705E-04	-6.6448E-04	-7.0299E-04	-7.4259E-04	-7.8327E-04	-8.2504E-04
5.7844E-04	6.3823E-04	7.0201E-04	7.6990E-04	8.4203E-04	9.1854E-04	9.9954E-04	1.0852E-03	1.1756E-03	1.2708E-03
-1.1784E-04	-1.3435E-04	-1.5255E-04	-1.7253E-04	-1.9441E-04	-2.1831E-04	-2.4435E-04	-2.7265E-04	-3.0334E-04	-3.3656E-04
1.0554E-04	1.2054E-04	1.3677E-04	1.5424E-04	7297E-04	1.9296E-04	2.1423E-04	2.3678E-04	2.6061E-04	2.8571E-04

2.5000E+00	2.5833E+00	2.6667E+00	2.7500E+00	2.8333E+00	2.9167E+00	3.0000E+00	3.0833E+00	3.1667E+00	3.2500E+00
4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08
-5.1870E-07	-5.3599E-07	-5.5328E-07	-5.7057E-07	-5.8786E-07	-6.0515E-07	-6.2244E-07	-6.3973E-07	-6.5702E-07	-6.7431E-07
1.5920E-06	1.6999E-06	1.8113E-06	1.9263E-06	2.0448E-06	2.1669E-06	2.2925E-06	2.4216E-06	2.5543E-06	2.6905E-06
-1.9043E-06	-2.1011E-06	-2.3111E-06	-2.5346E-06	-2.7720E-06	-3.0239E-06	-3.2906E-06	-3.5725E-06	-3.8700E-06	-4.1837E-06
8.1983E-07	9.3473E-07	1.0613E-06	1.2003E-06	1.3526E-06	1.5188E-06	1.7004E-06	1.8969E-06	2.1105E-06	2.3415E-06
3.3965E-08	4.2631E-08	5.3391E-08	6.6586E-08	8.2584E-08	1.0177E-07	1.2457E-07	1.5141E-07	1.8277E-07	2.1912E-07
30.00	31.00	32.00	33.00	34.00	35.00	36.00	37.00	38.00	39.00
1.1103E-04	1.2693E-04	1.4415E-04	1.6272E-04	1.8266E-04	2.0399E-04	2.2672E-04	2.5087E-04	2.7644E-04	3.0345E-04
2.2943E-04	2.5278E-04	2.7777E-04	3.0441E-04	3.3273E-04	3.6277E-04	3.9454E-04	4.2806E-04	4.6334E-04	5.0039E-04

APPENDIX A
SOUTH TEXAS PROJECT UNIT 1
CALCULATION OF MISSILE GENERATION PROBABILITIES

3.3333E+00	3.4167E+00	3.5000E+00	3.5833E+00	3.6667E+00	3.7500E+00	3.8333E+00	3.9167E+00	4.0000E+00	4.0833E+00
-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07
5.0583E-06	5.1848E-06	5.3112E-06	5.4377E-06	5.5641E-06	5.6906E-06	5.8171E-06	5.9435E-06	6.0700E-06	6.1964E-06
-1.7685E-05	-1.8580E-05	-1.9497E-05	-2.0437E-05	-2.1398E-05	-2.2382E-05	-2.3388E-05	-2.4416E-05	-2.5466E-05	-2.6538E-05
1.5956E-05	1.7183E-05	1.8471E-05	1.9822E-05	2.1238E-05	2.2719E-05	2.4267E-05	2.5885E-05	2.7572E-05	2.9332E-05
1.6555E-05	1.8273E-05	2.0122E-05	2.2108E-05	2.4238E-05	2.6518E-05	2.8954E-05	3.1555E-05	3.4328E-05	3.7279E-05
1.9530E-05	2.1706E-05	2.4053E-05	2.6577E-05	2.9286E-05	3.2190E-05	3.5296E-05	3.8613E-05	4.2149E-05	4.5915E-05

3.3333E+00	3.4167E+00	3.5000E+00	3.5833E+00	3.6667E+00	3.7500E+00	3.8333E+00	3.9167E+00	4.0000E+00	4.0833E+00
-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05
1.9270E-04	1.9752E-04	2.0233E-04	2.0715E-04	2.1197E-04	2.1679E-04	2.2160E-04	2.2642E-04	2.3124E-04	2.3606E-04
-8.6789E-04	-8.8983E-04	-9.5685E-04	-1.0030E-03	-1.0501E-03	-1.0984E-03	-1.1478E-03	-1.1982E-03	-1.2498E-03	-1.3024E-03
1.3711E-03	1.4065E-03	1.5872E-03	1.7033E-03	1.8249E-03	1.9522E-03	2.0853E-03	2.2243E-03	2.3693E-03	2.5205E-03
3.7243E-04	-4.1109E-04	-4.5269E-04	-4.9737E-04	-5.4527E-04	-5.9656E-04	-6.5138E-04	-7.0989E-04	-7.7227E-04	-8.3866E-04
3.1209E-04	3.3974E-04	3.6863E-04	3.9876E-04	4.3010E-04	4.6263E-04	4.9633E-04	5.3116E-04	5.6709E-04	6.0409E-04

3.3333E+00	3.4167E+00	3.5000E+00	3.5833E+00	3.6667E+00	3.7500E+00	3.8333E+00	3.9167E+00	4.0000E+00	4.0833E+00
4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08
-6.9160E-07	-7.0889E-07	-7.2618E-07	-7.4347E-07	-7.6076E-07	-7.7805E-07	-7.9534E-07	-8.1263E-07	-8.2992E-07	-8.4721E-07
2.8302E-06	2.9735E-06	3.1203E-06	3.2707E-06	3.4245E-06	3.5820E-06	3.7429E-06	3.9074E-06	4.0755E-06	4.2471E-06
-4.5138E-06	-4.8609E-06	-5.2253E-06	-5.6075E-06	-6.0079E-06	-6.4269E-06	-6.8649E-06	-7.3225E-06	-7.7999E-06	-8.2976E-06
2.5911E-06	2.8601E-06	3.1495E-06	3.4603E-06	3.7936E-06	4.1504E-06	4.5318E-06	4.9389E-06	5.3729E-06	5.8348E-06
2.6098E-07	3.0889E-07	3.6340E-07	4.2511E-07	4.9461E-07	5.7255E-07	6.5958E-07	7.5639E-07	8.6368E-07	9.8218E-07
40.00	41.00	42.00	43.00	44.00	45.00	46.00	47.00	48.00	49.00
3.3188E-04	3.6175E-04	3.9305E-04	4.2576E-04	4.5988E-04	4.9540E-04	5.3229E-04	5.7053E-04	6.1011E-04	6.5098E-04
5.3923E-04	5.7986E-04	6.2227E-04	6.6648E-04	4.3010E-04	4.6263E-04	4.9633E-04	5.3116E-04	5.6709E-04	6.0409E-04

APPENDIX A
SOUTH TEXAS PROJECT UNIT 1
CALCULATION OF MISSILE GENERATION PROBABILITIES

4.1667E+00	4.2500E+00	4.3333E+00	4.4167E+00	4.5000E+00	4.5833E+00	4.6667E+00	4.7500E+00	4.8333E+00	4.9167E+00
-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07
6.3229E-06	6.4493E-06	6.5758E-06	6.7023E-06	6.8287E-06	6.9552E-06	7.0816E-06	7.2081E-06	7.3345E-06	7.4610E-06
-2.7632E-05	-2.8748E-05	-2.9887E-05	-3.1047E-05	-3.2230E-05	-3.3435E-05	-3.4662E-05	-3.5911E-05	-3.7182E-05	-3.8475E-05
3.1164E-05	3.3072E-05	3.5056E-05	3.7117E-05	3.9258E-05	4.1480E-05	4.3784E-05	4.6171E-05	4.8644E-05	5.1204E-05
4.0417E-05	4.3749E-05	4.7282E-05	5.1025E-05	5.4987E-05	5.9174E-05	6.3597E-05	6.8263E-05	7.3181E-05	7.8359E-05
4.9917E-05	5.4166E-05	5.8672E-05	6.3443E-05	6.8489E-05	7.3820E-05	7.9445E-05	8.5376E-05	9.1623E-05	9.8195E-05

4.1667E+00	4.2500E+00	4.3333E+00	4.4167E+00	4.5000E+00	4.5833E+00	4.6667E+00	4.7500E+00	4.8333E+00	4.9167E+00
-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05
2.4087E-04	2.4569E-04	2.5051E-04	2.5533E-04	2.6014E-04	2.6496E-04	2.6978E-04	2.7460E-04	2.7941E-04	2.8423E-04
-1.3561E-03	-1.4109E-03	-1.4667E-03	-1.5237E-03	-1.5817E-03	-1.6409E-03	-1.7011E-03	-1.7624E-03	-1.8247E-03	-1.8882E-03
2.6780E-03	2.8419E-03	3.0123E-03	3.1895E-03	3.3734E-03	3.5644E-03	3.7623E-03	3.9675E-03	4.1800E-03	4.4000E-03
-9.0925E-04	-9.8420E-04	-1.0637E-03	-1.1479E-03	-1.2370E-03	-1.3312E-03	-1.4307E-03	-1.5357E-03	-1.6463E-03	-1.7628E-03
6.4210E-04	6.8109E-04	7.2102E-04	7.6182E-04	8.0344E-04	8.4583E-04	8.8893E-04	9.3266E-04	9.7696E-04	1.0218E-03

4.1667E+00	4.2500E+00	4.3333E+00	4.4167E+00	4.5000E+00	4.5833E+00	4.6667E+00	4.7500E+00	4.8333E+00	4.9167E+00
4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08
-8.6450E-07	-8.8179E-07	-8.9908E-07	-9.1637E-07	-9.3366E-07	-9.5095E-07	-9.6824E-07	-9.8553E-07	-1.0028E-06	-1.0201E-06
4.4222E-06	4.6008E-06	4.7830E-06	4.9688E-06	5.1580E-06	5.3509E-06	5.5472E-06	5.7471E-06	5.9505E-06	6.1575E-06
-8.8160E-06	-9.3556E-06	-9.9168E-06	-1.0500E-05	-1.1106E-05	-1.1734E-05	-1.2386E-05	-1.3061E-05	-1.3761E-05	-1.4485E-05
6.3259E-06	6.8473E-06	7.4004E-06	7.9863E-06	8.6063E-06	9.2617E-06	9.9539E-06	1.0684E-05	1.1454E-05	1.2264E-05
1.1126E-06	1.2559E-06	1.4126E-06	1.5838E-06	1.7701E-06	1.9726E-06	2.1921E-06	2.4295E-06	2.6858E-06	2.9619E-06
50.00	51.00	52.00	53.00	54.00	55.00	56.00	57.00	58.00	59.00
6.9313E-04	7.3652E-04	7.8110E-04	8.2684E-04	8.7370E-04	9.2163E-04	9.7056E-04	1.0205E-03	1.0713E-03	1.1229E-03
6.4210E-04	6.8109E-04	7.2102E-04	7.6182E-04	8.0344E-04	8.4583E-04	8.8893E-04	9.3266E-04	9.7696E-04	1.0218E-03

APPENDIX A
SOUTH TEXAS PROJECT UNIT 1
CALCULATION OF MISSILE GENERATION PROBABILITIES

5.0000E+00	5.0833E+00	5.1667E+00	5.2500E+00	5.3333E+00	5.4167E+00	5.5000E+00	5.5833E+00	5.6667E+00	5.7500E+00
-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.55[illegible]-07	-3.5508E-07	-3.5508E-07	-3.5508E-07
7.5875E-06	7.7139E-06	7.8404E-06	7.9668E-06	8.0933E-06	8.2197E-06	8.34[illegible]-06	8.4727E-06	8.5991E-06	8.7256E-06
-3.9790E-05	-4.1128E-05	-4.2487E-05	-4.3869E-05	-4.5272E-05	-4.6698E-05	-4.814[illegible]E-05	-4.9616E-05	-5.1108E-05	-5.2622E-05
5.3852E-05	5.6590E-05	5.9419E-05	6.2341E-05	6.5356E-05	6.8468E-05	7.1677E-05	7.4985E-05	7.8393E-05	8.1902E-05
8.3809E-05	8.9537E-05	9.5554E-05	1.0187E-04	1.0849E-04	1.1543E-04	1.2270E-04	1.3031E-04	1.3827E-04	1.4658E-04
1.0510E-04	1.1236E-04	1.1997E-04	1.2795E-04	1.3632E-04	1.4507E-04	1.5423E-04	1.6380E-04	1.7380E-04	1.8423E-04

5.0000E+00	5.0833E+00	5.1667E+00	5.2500E+00	5.3333E+00	5.4167E+00	5.5000E+00	5.5833E+00	5.6667E+00	5.7500E+00
-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05
2.8905E-04	2.9387E-04	2.9868E-04	3.0350E-04	3.0832E-04	3.1314E-04	3.1795E-04	3.2277E-04	3.2759E-04	3.3241E-04
-1.9528E-03	-2.0184E-03	-2.0851E-03	-2.1529E-03	-2.2218E-03	-2.2918E-03	-2.3628E-03	-2.4350E-03	-2.5082E-03	-2.5825E-03
4.6275E-03	4.8628E-03	5.1058E-03	5.3569E-03	5.6161E-03	5.8835E-03	6.1592E-03	6.4434E-03	6.7363E-03	7.0378E-03
-1.8854E-03	-2.0143E-03	-2.1497E-03	-2.2917E-03	-2.4407E-03	-2.5969E-03	-2.7604E-03	-2.9316E-03	-3.1106E-03	-3.2976E-03
1.0670E-03	1.1125E-03	1.1584E-03	1.2044E-03	1.2505E-03	1.2965E-03	1.3425E-03	1.3883E-03	1.4337E-03	1.4787E-03

5.0000E+00	5.0833E+00	5.1667E+00	5.2500E+00	5.3333E+00	5.4167E+00	5.5000E+00	5.5833E+00	5.6667E+00	5.7500E+00
4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08
-1.0374E-06	-1.0547E-06	-1.0720E-06	-1.0893E-06	-1.1066E-06	-1.1239E-06	-1.1411E-06	-1.1584E-06	-1.1757E-06	-1.1930E-06
6.3480E-06	6.5820E-06	6.7996E-06	7.0207E-06	7.2453E-06	7.4735E-06	7.7052E-06	7.9405E-06	8.1793E-06	8.4216E-06
-1.5234E-05	-1.6009E-05	-1.6809E-05	-1.7635E-05	-1.8489E-05	-1.9369E-05	-2.0277E-05	-2.1212E-05	-2.2176E-05	-2.3169E-05
1.3117E-05	1.4014E-05	1.4956E-05	1.5944E-05	1.6981E-05	1.8067E-05	1.9205E-05	2.0396E-05	2.1641E-05	2.2942E-05
3.2589E-06	3.5778E-06	3.9196E-06	4.2853E-06	4.6762E-06	5.0933E-06	5.5377E-06	6.0106E-06	6.5133E-06	7.0469E-06
60.00	61.00	62.00	63.00	64.00	65.00	66.00	67.00	68.00	69.00
1.1753E-03	1.2285E-03	1.2823E-03	1.3366E-03	1.3914E-03	1.4467E-03	1.5023E-03	1.5581E-03	1.6140E-03	1.6700E-03
1.0670E-03	1.1125E-03	1.1584E-03	1.2044E-03	1.2505E-03	1.2965E-03	1.3425E-03	1.3883E-03	1.4337E-03	1.4787E-03

APPENDIX A
SOUTH TEXAS PROJECT UNIT 1
CALCULATION OF MISSILE GENERATION PROBABILITIES

5.8333E+00	5.9167E+00	6.0000E+00	6.0833E+00	6.1667E+00	6.2500E+00
-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07	-3.5508E-07
8.8520E-06	8.9785E-06	9.1049E-06	9.2314E-06	9.3579E-06	9.4843E-06
-5.4159E-05	-5.5717E-05	-5.7298E-05	-5.8900E-05	-6.0525E-05	-6.2172E-05
8.5515E-05	8.9233E-05	9.3056E-05	9.6988E-05	1.0103E-04	1.0518E-04
1.5527E-04	1.6433E-04	1.7379E-04	1.8364E-04	1.9391E-04	2.0461E-04
1.9512E-04	2.0647E-04	2.1829E-04	2.3061E-04	2.4342E-04	2.5675E-04

5.8333E+00	5.9167E+00	6.0000E+00	6.0833E+00	6.1667E+00	6.2500E+00
-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05	-1.1400E-05
3.3722E-04	3.4204E-04	3.4686E-04	3.5168E-04	3.5649E-04	3.6131E-04
-2.6579E-03	-2.7344E-03	-2.8120E-03	-2.8906E-03	-2.9703E-03	-3.0512E-03
7.3483E-03	7.6677E-03	7.9963E-03	8.3341E-03	8.6812E-03	9.0381E-03
-3.4930E-03	-3.6969E-03	-3.9096E-03	-4.1314E-03	-4.3624E-03	-4.6031E-03
1.5232E-03	1.5671E-03	1.6102E-03	1.6524E-03	1.6937E-03	1.7338E-03

5.8333E+00	5.9167E+00	6.0000E+00	6.0833E+00	6.1667E+00	6.2500E+00
4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08	4.5106E-08
-1.2103E-06	-1.2276E-06	-1.2449E-06	-1.2622E-06	-1.2795E-06	-1.2968E-06
8.6675E-06	8.9169E-06	9.1699E-06	9.4263E-06	9.6864E-06	9.9499E-06
-2.4191E-05	-2.5243E-05	-2.6325E-05	-2.7437E-05	-2.8580E-05	-2.9754E-05
2.4301E-05	2.5720E-05	2.7200E-05	2.8743E-05	3.0351E-05	3.2025E-05
7.6126E-06	8.2118E-06	8.8457E-06	9.5156E-06	1.0223E-05	1.0969E-05
70.00	71.00	72.00	73.00	74.00	75.00
1.7260E-03	1.7818E-03	1.8374E-03	1.8926E-03	1.9473E-03	2.0015E-03
1.5232E-03	1.5671E-03	1.6102E-03	1.6524E-03	1.6937E-03	1.7338E-03

APPENDIX B
SOUTH TEXAS PROJECT UNIT 2
CALCULATION OF MISSILE GENERATION PROBABILITIES

TN11046	1.6100E-08									
	1.0800E-...									
	8.1800E-06									
	3.0300E-05									
	8.0400E-05									
		1	1.083333333	1.166666666	1.25	1.333333333	1.416666666	1.5	1.583333333	
A	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	
B	-1.3081E-07	-2.6162E-07	-2.8342E-07	-3.0522E-07	-3.2702E-07	-3.4882E-07	-3.7062E-07	-3.9242E-07	-4.1423E-07	
C	-1.7320E-07	-5.1961E-07	-6.0982E-07	-7.0725E-07	-8.1189E-07	-9.2376E-07	-1.0428E-06	-1.1691E-06	-1.3026E-06	
D	1.6811E-07	6.7243E-07	8.5494E-07	1.0678E-06	1.3133E-06	1.5939E-06	1.9118E-06	2.2695E-06	2.6691E-06	
E	-1.6250E-10	-8.1250E-10	-1.1191E-09	-1.5053E-09	-1.9836E-09	-2.5679E-09	-3.2726E-09	-4.1133E-09	-5.1064E-09	
		4.2558E-08	1.1275E-07	2.0599E-07	3.2461E-07	4.7094E-07	6.4728E-07	8.5596E-07	1.0993E-06	
TN6726	1.1000E-06									
	6.4300E-05									
	4.5500E-04									
	1.5300E-03									
	3.5400E-03									
A	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	
B	2.2533E-05	4.5067E-05	4.8822E-05	5.2578E-05	5.6333E-05	6.0089E-05	6.3844E-05	6.7600E-05	7.1356E-05	
C	-3.6221E-05	-1.0866E-04	-1.2753E-04	-1.4790E-04	-1.69[illegible]9E-04	-1.9318E-04	-2.1808E-04	-2.4449E-04	-2.7241E-04	
D	2.0267E-05	8.1067E-05	1.0307E-04	1.2873E-04	1.5833E-04	1.9216E-04	2.3049E-04	2.7360E-04	3.2178E-04	
E	-1.6458E-06	-8.2292E-06	-1.1335E-05	-1.5246E-05	-2.0091E-05	-2.6008E-05	-3.3146E-05	-4.1660E-05	-5.1718E-05	
		5.4083E-06	9.1960E-06	1.4328E-05	2.0957E-05	2.9228E-05	3.9272E-05	5.1216E-05	6.5173E-05	
TN10951	4.8124E-09									
	4.2960E-07									
	3.9900E-06									
	1.7380E-05									
	5.2200E-05									
A	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	
B	2.8889E-07	5.77E-07	6.2592E-07	6.7407E-07	7.2222E-07	7.7037E-07	8.1851E-07	8.6666E-07	9.1481E-07	
C	-2.7130E-07	-8.[illegible]89E-07	-9.5519E-07	-1.1078E-06	-1.2717E-06	-1.4469E-06	-1.6334E-06	-1.8313E-06	-2.0404E-06	
D	8.8426E-08	3.[illegible]370E-07	4.4970E-07	5.6167E-07	6.9083E-07	8.3841E-07	1.0056E-06	1.1938E-06	1.4040E-06	
E	7.7338E-09	3.8569E-08	5.3262E-08	7.1640E-08	9.4407E-08	1.2221E-07	1.5575E-07	1.9576E-07	2.4303E-07	
		4.7320E-08	6.4759E-08	9.0646E-08	1.2681E-07	1.7514E-07	2.3754E-07	3.1599E-07	4.1249E-07	
TN11411	1.0957E-09									
	1.5510E-07									
	1.6170E-06									
	9.1400E-06									
	3.0100E-05									
A	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	
B	2.0378E-07	4.0756E-07	4.4152E-07	4.7548E-07	5.0944E-07	5.4341E-07	5.7737E-07	6.1133E-07	6.4530E-07	
C	-1.4075E-07	-4.2225E-07	-4.9556E-07	-5.7473E-07	-6.5977E-07	-7.5067E-07	-8.4743E-07	-9.5006E-07	-1.0586E-06	
D	2.2053E-08	8.8211E-08	1.1215E-07	1.4007E-07	1.7229E-07	2.0909E-07	2.5080E-07	2.9771E-07	3.5013E-07	
E	9.3707E-09	4.68[illegible]E-08	6.4534E-08	8.6801E-08	1.1439E-07	1.4808E-07	1.8872E-07	2.3719E-07	2.9446E-07	
		2.7013E-08	2.9299E-08	3.4272E-08	4.2996E-08	5.6554E-08	7.6094E-08	1.0282E-07	1.3798E-07	
W/ TN6726, TOTAL		5.4982E-06	9.3735E-06	1.4625E-05	2.1409E-05	2.9874E-05	4.0157E-05	5.2388E-05	6.6685E-05	
W/O TN6726, TOTAL		1.1689E-07	2.0680E-07	3.3091E-07	4.9442E-07	7.0263E-07	9.6091E-07	1.2748E-06	1.6498E-06	
TIME, MONTHS		12	13	14	15	16	17	18	19	
TN6726, W/ OTHERS INSPECTED PREVIOUS CYCLE		1.3087E-05	1.7989E-05	2.4339E-05	3.2295E-05	4.2004E-05	5.3606E-05	6.7229E-05	8.2995E-05	
TN7626, W/ OTHERS INSPECTED TWO CYCLES BEFORE		4.6110E-05	5.3271E-05	6.1963E-05	7.2344E-05	8.4564E-05	9.8760E-05	1.1506E-04	1.3360E-04	

APPENDIX B
SOUTH TEXAS PROJECT UNIT 2
CALCULATION OF MISSILE GENERATION PROBABILITIES

1.666666666	1.75	1.833333333	1.916666666	2	2.083333333	2.166666666	2.25	2.333333333	2.416666666
1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07
-4.3603E-07	-4.5783E-07	-4.7963E-07	-5.0143E-07	-5.2323E-07	-5.4503E-07	-5.6684E-07	-5.8864E-07	-6.1044E-07	-6.3224E-07
-1.4434E-06	-1.5913E-06	-1.7465E-06	-1.9089E-06	-2.0785E-06	-2.2553E-06	-2.4393E-06	-2.6305E-06	-2.8290E-06	-3.0347E-06
3.1131E-06	3.6038E-06	4.1436E-06	4.7347E-06	5.3795E-06	6.0803E-06	6.8395E-06	7.6594E-06	8.5424E-06	9.4907E-06
-6.2193E-09	-7.6904E-09	-9.1789E-09	-1.0965E-08	-1.3000E-08	-1.5306E-08	-1.7906E-08	-2.0823E-08	-2.4084E-08	-2.7713E-08
1.3796E-06	1.6992E-06	2.0604E-06	2.4656E-06	2.9169E-06	3.4169E-06	3.9677E-06	4.5716E-06	5.2310E-06	5.9483E-06

-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06
7.5111E-05	7.8867E-05	8.2622E-05	8.6378E-05	9.0133E-05	9.3889E-05	9.7644E-05	1.0140E-04	1.0516E-04	1.0891E-04
-3.0184E-04	-3.3278E-04	-3.6523E-04	-3.9918E-04	-4.3465E-04	-4.7163E-04	-5.1011E-04	-5.5010E-04	-5.9161E-04	-6.3462E-04
3.7531E-04	4.3447E-04	4.9954E-04	5.7080E-04	6.4853E-04	7.3302E-04	8.2455E-04	9.2340E-04	1.0298E-03	1.1442E-03
-6.3497E-05	-7.7181E-05	-9.2965E-05	-1.1106E-04	-1.3167E-04	-1.5502E-04	-1.8135E-04	-2.1090E-04	-2.4393E-04	-2.8069E-04
8.1249E-05	9.9541E-05	1.2013E-04	1.4310E-04	1.6852E-04	1.9643E-04	2.2690E-04	2.5996E-04	2.9563E-04	3.3395E-04

-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07
9.6296E-07	1.0111E-06	1.0593E-06	1.1074E-06	1.1555E-06	1.2037E-06	1.2518E-06	1.3000E-06	1.3481E-06	1.3963E-06
-2.2608E-06	-2.4925E-06	-2.7356E-06	-2.9899E-06	-3.2556E-06	-3.5325E-06	-3.8208E-06	-4.1203E-06	-4.4312E-06	-4.7533E-06
1.6375E-06	1.8956E-06	2.1795E-06	2.4905E-06	2.8296E-06	3.1983E-06	3.5976E-06	4.0289E-06	4.4934E-06	4.9922E-06
2.9837E-07	3.6269E-07	4.3685E-07	5.2186E-07	6.1871E-07	7.2845E-07	8.5219E-07	9.9105E-07	1.1462E-06	1.3190E-06
5.2911E-07	6.6794E-07	8.3113E-07	1.0209E-06	1.2394E-06	1.4890E-06	1.7720E-06	2.0907E-06	2.4476E-06	2.8452E-06

-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08
6.7926E-07	7.1322E-07	7.4718E-07	7.8115E-07	8.1511E-07	8.4907E-07	8.8304E-07	9.1700E-07	9.5096E-07	9.8493E-07
-1.1729E-06	-1.2931E-06	-1.4192E-06	-1.5512E-06	-1.6890E-06	-1.8327E-06	-1.9822E-06	-2.1376E-06	-2.2989E-06	-2.4661E-06
4.0838E-07	4.7235E-07	5.4355E-07	6.2109E-07	7.0568E-07	7.9762E-07	8.9721E-07	1.0048E-06	1.1206E-06	1.2450E-06
3.6152E-07	4.3943E-07	5.2930E-07	6.3230E-07	7.4965E-07	8.8262E-07	1.0325E-06	1.2008E-06	1.3888E-06	1.5981E-06
1.8289E-07	2.3891E-07	3.0746E-07	3.9001E-07	4.8809E-07	6.0327E-07	7.3720E-07	8.9157E-07	1.0681E-06	1.2686E-06
8.3158E-05	1.0191E-04	1.2302E-04	1.4659E-04	1.7267E-04	2.0134E-04	2.3264E-04	2.6662E-04	3.0331E-04	3.4274E-04
2.0916E-06	2.6061E-06	3.1990E-06	3.8765E-06	4.6444E-06	5.5091E-06	6.4768E-06	7.5539E-06	8.7468E-06	1.0062E-05

20	21	22	23	24	25	26	27	28	29
1.0101E-04	1.2138E-04	1.4420E-04	1.6954E-04	1.9748E-04	2.2808E-04	2.6139E-04	2.9747E-04	3.3634E-04	3.7802E-04
1.5447E-04	1.7778E-04	2.0363E-04	2.3209E-04	2.6323E-04	2.9714E-04	3.3384E-04	3.7340E-04	4.1585E-04	4.6120E-04

APPENDIX B
SOUTH TEXAS PROJECT UNIT 2
CALCULATION OF MISSILE GENERATION PROBABILITIES

2.5	2.583333333	2.666666666	2.75	2.833333333	2.916666666	3	3.083333333	3.166666666	3.25
1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07
-6.5404E-07	-6.7584E-07	-6.9764E-07	-7.1945E-07	-7.4125E-07	-7.6305E-07	-7.8485E-07	-8.0665E-07	-8.2845E-07	-8.5025E-07
-3.2476E-06	-3.4677E-06	-3.6950E-06	-3.9296E-06	-4.1713E-06	-4.4203E-06	-4.6765E-06	-4.9399E-06	-5.2106E-06	-5.4884E-06
1.0507E-05	1.1593E-05	1.2751E-05	1.3985E-05	1.5295E-05	1.6684E-05	1.8156E-05	1.9711E-05	2.1353E-05	2.3083E-05
-3.1738E-08	-3.6186E-08	-4.1086E-08	-4.6468E-08	-5.2362E-08	-5.8799E-08	-6.5813E-08	-7.[illegible]E-08	-8.1702E-08	-9.0648E-08
6.7256E-06	7.5653E-06	8.4697E-06	9.4412E-06	1.0482E-05	1.1594E-05	1.2781E-05	1.[illegible]E-05	1.5384E-05	1.6806E-05

-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06
1.1267E-04	1.1642E-04	1.2018E-04	1.2393E-04	1.2769E-04	1.3144E-04	1.3520E-04	1.3896E-04	1.4271E-04	1.4647E-04
-6.7914E-04	-7.2517E-04	-7.7271E-04	-8.2176E-04	-8.7232E-04	-9.2439E-04	-9.7796E-04	-1.0330E-03	-1.0896E-03	-1.1477E-03
1.2667E-03	1.3976E-03	1.5373E-03	1.6859E-03	1.8439E-03	2.0114E-03	2.1888E-03	2.3763E-03	2.5742E-03	2.7829E-03
-3.2145E-04	-3.6650E-04	-4.1613E-04	-4.7064E-04	-5.3033E-04	-5.9553E-04	-6.6656E-04	-7.4377E-04	-8.2749E-04	-9.1810E-04
3.7491E-04	4.1852E-04	4.6477E-04	5.1364E-04	5.6510E-04	6.1912E-04	6.7564E-04	7.3462E-04	7.9598E-04	8.5965E-04

-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07
1.4444E-06	1.4926E-06	1.5407E-06	1.5889E-06	1.6370E-06	1.6852E-06	1.7333E-06	1.7815E-06	1.8296E-06	1.8778E-06
-5.0868E-06	-5.4316E-06	-5.7877E-06	-6.1550E-06	-6.5337E-06	-6.9239E-06	-7.3250E-06	-7.7376E-06	-8.1615E-06	-8.5967E-06
5.5266E-06	6.0979E-06	6.7073E-06	7.3559E-06	8.0451E-06	8.7761E-06	9.5500E-06	1.0368E-05	1.1232E-05	1.2142E-05
1.5105E-06	1.7222E-06	1.9554E-06	2.2115E-06	2.4920E-06	2.7984E-06	3.[illegible]22E-06	3.4950E-06	3.8884E-06	4.3142E-06
3.2858E-06	3.7722E-06	4.3068E-06	4.8924E-06	5.5315E-06	6.2270E-06	6.9[illegible]6E-06	7.7981E-06	8.6794E-06	9.6283E-06

-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08
1.0189E-06	1.0529E-06	1.0868E-06	1.1208E-06	1.1547E-06	1.1887E-06	1.2227E-06	1.2566E-06	1.2906E-06	1.3246E-06
-2.6391E-06	-2.8179E-06	-3.0027E-06	-3.1933E-06	-3.3897E-06	-3.5921E-06	-3.8003E-06	-4.0143E-06	-4.2342E-06	-4.4600E-06
1.3783E-06	1.5208E-06	1.6727E-06	1.8345E-06	2.0064E-06	2.1887E-06	2.3817E-06	2.5857E-06	2.8011E-06	3.0281E-06
1.8302E-06	2.0867E-06	2.3693E-06	2.6796E-06	3.0195E-06	3.3907E-06	3.7951E-06	4.2347E-06	4.7114E-06	5.2273E-06
1.4950E-06	1.7490E-06	2.0328E-06	2.3482E-06	2.6975E-06	3.0826E-06	3.5058E-06	3.9694E-06	4.4755E-06	5.0265E-06
3.8492E-04	4.2985E-04	4.7754E-04	5.2797E-04	5.8111E-04	6.3694E-04	6.9540E-04	7.5646E-04	8.2005E-04	8.8609E-04
1.1506E-05	1.3087E-05	1.4809E-05	1.6682E-05	1.8711E-05	2.0904E-05	2.3268E-05	2.5811E-05	2.8539E-05	3.1461E-05

30	31	32	33	34	35	36	37	38	39
4.2254E-04	4.6990E-04	5.2010E-04	5.7312E-04	6.2895E-04	6.8754E-04	7.4886E-04	8.1286E-04	8.7947E-04	9.4864E-04
5.4949E-04	5.8071E-04	6.1486E-04	6.7194E-04	7.3191E-04	7.9475E-04	8.6041E-04	9.2885E-04	1.0000E-03	1.0738E-03

APPENDIX F
SOUTH TEXAS PROJECT UNIT 2
CALCULATION OF MISSILE GENERATION PROBABILITIES

3.333333333	3.416666666	3.5	3.583333333	3.666666666	3.75	3.833333333	3.916666666	4	4.083333333	
1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	
-8.7206E-07	-8.9386E-07	-9.1566E-07	-9.3746E-07	-9.5926E-07	-9.8106E-07	-1.0029E-06	-1.0247E-06	-1.0465E-06	-1.0683E-06	
-5.7735E-06	-6.0658E-06	-6.3653E-06	-6.6720E-06	-6.9859E-06	-7.3071E-06	-7.6354E-06	-7.9710E-06	-8.3138E-06	-8.6638E-06	
2.4905E-05	2.6820E-05	2.8831E-05	3.0939E-05	3.3148E-05	3.5460E-05	3.7877E-05	4.0402E-05	4.3036E-05	4.5782E-05	
-1.0031E-07	-1.1072E-07	-1.2193E-07	-1.3396E-07	-1.4686E-07	-1.6068E-07	-1.7544E-07	-1.9120E-07	-2.0800E-07	-2.2588E-07	
1.8311E-05	1.9902E-05	2.1589E-05	2.3348E-05	2.5209E-05	2.7164E-05	2.9216E-05	3.1367E-05	3.3620E-05	1.5976E-05	

-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	
1.5022E-04	1.5398E-04	1.5773E-04	1.6149E-04	1.6524E-04	1.6900E-04	1.7276E-04	1.7651E-04	1.8027E-04	1.8402E-04	
-1.2074E-03	-1.2685E-03	-1.3311E-03	-1.3953E-03	-1.4609E-03	-1.5281E-03	-1.5967E-03	-1.6669E-03	-1.7386E-03	-1.8118E-03	
3.0025E-03	3.2333E-03	3.4757E-03	3.7300E-03	3.9963E-03	4.2750E-03	4.5664E-03	4.8707E-03	5.1883E-03	5.5193E-03	
-1.0159E-03	-1.1214E-03	-1.2349E-03	-1.3568E-03	-1.4874E-03	-1.6273E-03	-1.7769E-03	-1.9365E-03	-2.1067E-03	-2.2876E-03	
9.2555E-04	9.9359E-04	1.0636E-03	1.1356E-03	1.2093E-03	1.2848E-03	1.3617E-03	1.4400E-03	1.5194E-03	1.5999E-03	

-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	
1.9259E-06	1.9741E-06	2.0223E-06	2.0704E-06	2.1185E-06	2.1667E-06	2.2148E-06	2.2629E-06	2.3111E-06	2.3592E-06	
-9.0432E-06	-9.5010E-06	-9.9588E-06	-1.0451E-05	-1.0942E-05	-1.1445E-05	-1.1965E-05	-1.2485E-05	-1.3022E-05	-1.3570E-05	
1.3100E-05	1.4107E-05	1.5165E-05	1.6274E-05	1.7435E-05	1.8652E-05	1.9924E-05	2.1252E-05	2.2637E-05	2.4082E-05	
4.7740E-06	5.2696E-06	5.8028E-06	6.3755E-06	6.9896E-06	7.6473E-06	8.3497E-06	9.0998E-06	9.8993E-06	1.0750E-05	
1.0648E-05	1.1741E-05	1.2911E-05	1.4161E-05	1.5493E-05	1.6912E-05	1.8420E-05	2.0020E-05	2.1716E-05	2.3512E-05	

-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	
1.3585E-06	1.3925E-06	1.4264E-06	1.4604E-06	1.4944E-06	1.5283E-06	1.5623E-06	1.5963E-06	1.6302E-06	1.6642E-06	
-4.6917E-06	-4.9292E-06	-5.1726E-06	-5.4218E-06	-5.6769E-06	-5.9379E-06	-6.2047E-06	-6.4774E-06	-6.7560E-06	-7.0404E-06	
3.2670E-06	3.5182E-06	3.7820E-06	4.0586E-06	4.3484E-06	4.6517E-06	4.9688E-06	5.2999E-06	5.6454E-06	6.0057E-06	
5.7844E-06	6.3848E-06	7.0309E-06	7.7248E-06	8.4689E-06	9.2654E-06	1.0117E-05	1.1026E-05	1.1994E-05	1.3026E-05	
5.6249E-06	6.2730E-06	6.9734E-06	7.7287E-06	8.5414E-06	9.4142E-06	1.0350E-05	1.1351E-05	1.2421E-05	1.3562E-05	
9.5451E-04	1.0252E-03	1.0981E-03	1.1731E-03	1.2500E-03	1.3288E-03	1.4093E-03	1.4913E-03	1.5748E-03	1.6594E-03	
3.4584E-05	3.7916E-05	4.1464E-05	4.5237E-05	4.9243E-05	5.3490E-05	5.7985E-05	6.2738E-05	6.7757E-05	7.3050E-05	

40	41	42	43	44	45	46	47	48	49
1.0203E-03	1.0943E-03	1.1706E-03	1.2490E-03	1.3296E-03	1.4120E-03	1.4963E-03	1.5821E-03	1.6695E-03	1.7582E-03
1.1502E-03	1.2290E-03	1.3103E-03	1.3938E-03	1.2093E-03	1.2848E-03	1.3617E-03	1.4400E-03	1.5194E-03	1.5999E-03

APPENDIX B
SOUTH TEXAS PROJECT UNIT 2
CALCULATION OF MISSILE GENERATION PROBABILITIES

4.166666666	4.25	4.333333333	4.416666666	4.5	4.583333333	4.666666666	4.75	4.833333333	4.916666666
1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07
-1.0901E-06	-1.1119E-06	-1.1339E-06	-1.1555E-06	-1.1773E-06	-1.1991E-06	-1.2209E-06	-1.2427E-06	-1.2645E-06	-1.2863E-06
-9.0211E-06	-9.3855E-06	-9.7572E-06	-1.0136E-05	-1.0522E-05	-1.0915E-05	-1.1316E-05	-1.1724E-05	-1.2139E-05	-1.2561E-05
4.8642E-05	5.1620E-05	5.4716E-05	5.7934E-05	6.1275E-05	6.4743E-05	6.8339E-05	7.2060E-05	7.5926E-05	7.9921E-05
-2.4489E-07	-2.6508E-07	-2.8649E-07	-3.0917E-07	-3.3318E-07	-3.5855E-07	-3.8535E-07	-4.1362E-07	-4.4341E-07	-4.7480E-07
3.8439E-05	4.1009E-05	4.3691E-05	4.6485E-05	4.9395E-05	5.2422E-05	5.5569E-05	5.8838E-05	6.2231E-05	6.5751E-05

-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06
1.8773E-04	1.9153E-04	1.9529E-04	1.9904E-04	2.0280E-04	2.0656E-04	2.1031E-04	2.1407E-04	2.1782E-04	2.2158E-04
-1.8865E-03	-1.9627E-03	-2.0404E-03	-2.1197E-03	-2.2004E-03	-2.2827E-03	-2.3664E-03	-2.4517E-03	-2.5385E-03	-2.6268E-03
5.8642E-03	6.2231E-03	6.5964E-03	6.9844E-03	7.3872E-03	7.8052E-03	8.2388E-03	8.6881E-03	9.1534E-03	9.6351E-03
-2.4803E-03	-2.6848E-03	-2.9016E-03	-3.1314E-03	-3.3745E-03	-3.6315E-03	-3.9029E-03	-4.1892E-03	-4.4910E-03	-4.8089E-03
1.6813E-03	1.7633E-03	1.8458E-03	1.9285E-03	2.0113E-03	2.0938E-03	2.1760E-03	2.2574E-03	2.3379E-03	2.417...

-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07
2.4074E-06	2.4555E-06	2.5035E-06	2.5518E-06	2.6000E-06	2.6481E-06	2.6963E-06	2.7444E-06	2.7926E-06	2.8407E-06
-1.4730E-05	-1.4701E-05	-1.5...3E-05	-1.5877E-05	-1.6481E-05	-1.7097E-05	-1.7725E-05	-1.8363E-05	-1.9013E-05	-1.9675E-05
2.5586E-05	2.7152E-05	2.8781E-05	3.0474E-05	3.2231E-05	3.4055E-05	3.5947E-05	3.7907E-05	3.9937E-05	4.2039E-05
1.1455E-05	1.2616E-05	1.3835E-05	1.4714E-05	1.5857E-05	1.7064E-05	1.8340E-05	1.9685E-05	2.1103E-05	2.2597E-05
2.5410E-05	2.7414E-05	2.9528E-05	3.1754E-05	3.4098E-05	3.6562E-05	3.9149E-05	4.1864E-05	4.4711E-05	4.7693E-05

-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08
1.6981E-06	1.7321E-06	1.7661E-06	1.8000E-06	1.8340E-06	1.8680E-06	1.9019E-06	1.9359E-06	1.9699E-06	2.0038E-06
-7.3307E-06	-7.6269E-06	-7.9289E-06	-8.2368E-06	-8.5506E-06	-8.8702E-06	-9.1957E-06	-9.5270E-06	-9.8642E-06	-1.0207E-05
8.3809E-06	8.7715E-06	9.1777E-06	9.5998E-06	1.0038E-05	1.0493E-05	1.0964E-05	1.1453E-05	1.1960E-05	1.2484E-05
1.4122E-05	1.5286E-05	1.6521E-05	1.7829E-05	1.9213E-05	2.0676E-05	2.2221E-05	2.3851E-05	2.5570E-05	2.7379E-05
1.4777E-05	1.6069E-05	1.7442E-05	1.8898E-05	2.0441E-05	2.2073E-05	2.3799E-05	2.5621E-05	2.7542E-05	2.9567E-05
1.7452E-03	1.8317E-03	1.9190E-03	2.0068E-03	2.0948E-03	2.1828E-03	2.2707E-03	2.3581E-03	2.4449E-03	2.5...7E-03
7.8625E-05	8.4493E-05	9.0461E-05	9.7138E-05	1.0393E-04	1.1106E-04	1.1852E-04	1.2632E-04	1.3448E-04	1.4301E-04

50	51	52	53	54	55	56	57	58	59
1.8481E-03	1.9389E-03	2.0306E-03	2.1228E-03	2.2153E-03	2.3080E-03	2.4006E-03	2.4929E-03	2.5846E-03	2.6754E-03
1.6813E-03	1.7633E-03	1.8458E-03	1.9285E-03	2.0113E-03	2.0938E-03	2.1760E-03	2.2574E-03	2.3379E-03	2.4172E-03

APPENDIX B
SOUTH TEXAS PROJECT UNIT 2
CALCULATION OF MISSILE GENERATION PROBABILITIES

5	5.083333333	5.166666666	5.25	5.333333333	5.416666666	5.5	5.583333333	5.666666666	5.75
1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07
-1.3081E-06	-1.3299E-06	-1.3517E-06	-1.3735E-06	-1.3953E-06	-1.4171E-06	-1.4389E-06	-1.4607E-06	-1.4825E-06	-1.5043E-06
-1.2990E-05	-1.3427E-05	-1.3871E-05	-1.4322E-05	-1.4780E-05	-1.5246E-05	-1.5718E-05	-1.6198E-05	-1.6685E-05	-1.7180E-05
8.4054E-05	8.8327E-05	9.2743E-05	9.7 .3E-05	1.0201E-04	1.0687E-04	1.1188E-04	1.1704E-04	1.2236E-04	1.2784E-04
-5.0781E-07	-5.4252E-07	-5.7898E-07	-6.1725E-07	-6.5738E-07	-6.9944E-07	-7.4349E-07	-7.8958E-07	-8.3779E-07	-8.8817E-07
6.9400E-05	7.3180E-05	7.7094E-05	8.1143E-05	8.5330E-05	8.9658E-05	9.4128E-05	9.8743E-05	1.0350E-04	1.0842E-04

-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.833 -06	-3.8333E-06	-3.8333E-06	-3.8333E-06
2.2533E-04	2.2909E-04	2.3284E-04	2.3660E-04	2.4036E-04	2.4411E-04	2.4787E 04	2.5162E-04	2.5538E-04	2.5913E-04
-2.7166E-03	-2.8079E-03	-2.9007E-03	-2.9950E-03	-3.0905E-03	-3.1832E-03	-3.2870E-03	-3.3874E-03	-3.4893E-03	-3.5927E-03
1.0133E-02	1.0648E-02	1.1181E-02	1.1731E-02	1.2298E-02	1.2884E-02	1.3487E-02	1.4110E-02	1.4751E-02	1.5412E-02
-5.1432E-03	-5.4948E-03	-5.8640E-03	-6.2516E-03	-6.6581E-03	-7.0841E-03	-7.5302E-03	-7.9971E-03	-8.4853E-03	-8.9955E-03
2.4950E-03	2.5711E-03	2.6451E-03	2.7167E-03	2.7857E-03	2.8516E-03	2.9143E-03	2.9732E-03	3.0281E-03	3.0786E-03

-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07
2.8889E-06	2.9370E-06	2.9852E-06	3.0333E-06	3.0815E-06	3.1296E-06	3.1778E-06	3.2259E-06	3.2741E-06	3.3222E-06
-2.0347E-05	-2.1037E-05	-2.1726E-05	-2.2433E-05	-2.3151E-05	-2.3880E-05	-2.4620E-05	-2.5372E-05	-2.6135E-05	-2.6909E-05
4.4213E-05	4.4646E-05	4.8783E-05	5.1182E-05	5.3658E-05	5.6213E-05	5.8848E-05	6.1563E-05	6.4361E-05	6.7243E-05
2.4168E-05	2.5820E-05	2.7555E-05	2.9377E-05	3.1287E-05	3.3288E-05	3.5385E-05	3.7579E-05	3.9873E-05	4.2270E-05
5.0814E-05	5.4078E-05	5.7489E-05	6.1050E-05	6.4767E-05	6.8642E-05	7.2681E-05	7.6887E-05	8.1264E-05	8.5817E-05

-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08
2.0378E-06	2.0717E-06	2.1057E-06	2.1397E-06	2.1736E-06	2.2076E-06	2.2416E-06	2.2755E-06	2.3095E-06	2.3434E-06
-1.0556E-05	-1.0917E-05	-1.1272E-05	-1.167 E-05	-1.2011E-05	-1.2389E-05	-1.2773E-05	-1.3163E-05	-1.3559E-05	-1.3961E-05
1.1026E-05	1.1587E-05	1.2166E-05	1.2764E-05	1.3382E-05	1.4019E-05	1.4676F-05	1.5353E-05	1.6051E-05	1.6770E-05
2.9283E-05	3.1285E-05	3.3387E-05	3.5594E-05	3.7908E-05	4.0334E-05	4.2874F-05	4.5532E-05	4.8312E-05	5.121 E-05
3.1698E-05	3.3939E-05	3.6204E-05	3.8766E-05	4.1360E-05	4.4078E-05	4.6925E-05	4.9904E-05	5.3020E-05	5.6276E-05
2.7153E-03	2.6984E-03	2.7797E-03	2.8589E-03	2.9358E-03	3.0099E-03	3.0811E-03	3.1489E-03	3.2129E-03	3.2724E-03
1.5191E-04	1.6120E-04	1.7088E-04	1.8096E-04	1.9146E-04	2.0238E-04	2.1373E-04	2.2553E-04	2.3779E-04	2.5051E-04

60	61	62	63	64	65	66	67	68	69
2.4950E-03	2.5711E-03	2.6451E-03	2.7167E-03	2.7857E-03	2.8516E-03	2.9143E-03	2.9732E-03	3.0281E-03	3.0786E-03
2.4950E-03	2.5711E-03	2.6451E-03	2.7167E-03	2.7857E-03	2.8516E-03	2.9143E-03	2.9732E-03	3.0281E-03	3.0786E-03

APPENDIX B
SOUTH TEXAS PROJECT UNIT 2
CALCULATION OF MISSILE GENERATION PROBABILITIES

5.833333333	5.916666666	6	6.083333333	6.166666666	6.25
1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07	1.5217E-07
-1.5261E-06	-1.5479E-06	-1.5697E-06	-1.5915E-06	-1.6133E-06	-1.6351E-06
-1.7681E-05	-1.8190E-05	-1.8706E-05	-1.9229E-05	-1.9760E-05	-2.0297E-05
1.3347E-04	1.3928E-04	1.4525E-04	1.5138E-04	1.5769E-04	1.6417E-04
-9.4079E-07	-9.9571E-07	-1.0530E-06	-1.1127E-06	-1.1750E-06	-1.2398E-06
1.1348E-04	1.1870E-04	1.2407E-04	1.2960E-04	1.3529E-04	1.4115E-04

-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06	-3.8333E-06
2.6289E-04	2.6464E-04	2.7040E-04	2.7416E-04	2.7791E-04	2.8167E-04
-3.6975E-0?	-3.8039E-03	-3.9119E-03	-4.0213E-03	-4.1322E-03	-4.2446E-03
1.6091E-02	1.6791E-02	1.7510E-02	1.8250E-02	1.9011E-02	1.9792E-02
-9.5285E-03	-1.0085E-02	-1.0665E-02	-1.1270E-02	-1.1900E-02	-1.2557E-02
3.1244E-03	3.1650E-03	3.2001E-03	3.2293E-03	3.2521E-03	3.2682E-03

-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07	-1.0894E-07
3.3703E-06	3.4185E-06	3.4666E-06	3.5148E-06	3.5629E-06	3.6111E-06
-2.7695E-05	-2.8492E-05	-2.9300E-05	-3.0120E-05	-3.0950E-05	-3.1793E-05
7.0209E-05	7.3261E-05	7.6400E-05	7.9628E-05	8.2945E-05	8.6354E-05
4.4779E-05	4.7389E-05	5.0115E-05	5.2958E-05	5.5920E-05	5.9005E-05
9.0550E-05	9.5467E-05	1.0057E-04	1.0587E-04	1.1137E-04	1.1707E-04

-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08	-9.3355E-08
2.3774E-06	2.4114E-06	2.4453E-06	2.4793E-06	2.5133E-06	2.5472E-06
-1.4368E-05	-1.4782E-05	-1.5201E-05	-1.5626E-05	-1.6057E-05	-1.6494E-05
1.7509E-05	1.8270E-05	1.9053E-05	1.9858E-05	2.0686E-05	2.1536E-05
5.4251E-05	5.7418E-05	6.0722E-05	6.4166E-05	6.7755E-05	7.1492E-05
5.9676E-05	6.3225E-05	6.6926E-05	7.0784E-05	7.4803E-05	7.8988E-05
3.3284E-03	3.3792E-03	3.4248E-03	3.4647E-03	3.4988E-03	3.5264E-03
2.6370E-04	2.7739E-04	2.9157E-04	3.0626E-04	3.2147E-04	3.3720E-04

70	71	72	73	74	75
3.1244E-03	3.1650E-03	3.2001E-03	3.2293E-03	3.2521E-03	3.2682E-03
3.1244E-03	3.1650E-03	3.2001E-03	3.2293E-03	3.2521E-03	3.2682E-03

SOUTH TEXAS PROJECT
TURBINE OVERSPEED RELIABILITY PROGRAM (TORP)

NOTE: The following is based on a submittal to the NRC dated February 24, 1987 (ST-HL-AE-1802).

1.0 Introduction and Summary

Houston Lighting & Power has prepared a turbine maintenance and inspection program for the South Texas Project. The program developed by HL&P is subject to on-going review and evaluation, and the scope of the performed maintenance, calibration, and testing will be subject to revision based upon actual operating experience or changes to the manufacturer's recommendations. The program work is performed in accordance with approved procedures. The program and subsequent changes are reviewed and approved as specified in existing plant administrative procedures. Deviations from the program and deficiencies identified through the specified activities will be evaluated by Houston Lighting & Power to determine appropriate action to be taken such as correcting the deviation or deficiency, performing compensatory action, or removing the turbine from service.

The maintenance program includes inspection and maintenance of the throttle, governor, reheat stop and intercept valves.

The calibration program includes calibration of the turbine overspeed protection system. Calibration is performed during each refueling outage or following major maintenance on the turbine generator or the overspeed protection system.

The testing program includes testing of the turbine valves and the turbine overspeed protection system. Testing is performed during each turbine startup, unless tested within the previous seven days, including startup after each refueling outage.

2.0 Maintenance Program

The maintenance program includes inspection and maintenance of the governor, throttle, intercept and reheat stop valves. Additionally, one of each type of turbine valve will be dismantled at approximately 40-month intervals plus a 25% (ten-month) grace period. A visual and surface inspection of valve seats, discs, and stems will be performed verifying no unacceptable flaws or excessive corrosion. If unacceptable flaws or excessive corrosion are found, all other valves of that type shall be inspected.

Note that a one-time Technical Specification change has been approved by the NRC extending the 40-month inspection interval for the Unit 1 turbine valves to approximately 52 months. The request for the extension was submitted as reference (4).

3.0 Calibration Program

The turbine electrical and mechanical overspeed protection system channel calibration tests will be performed at least once per 18-month intervals.

4.0 Testing Program

The testing program includes testing the turbine valves and the turbine overspeed protection system. Testing is performed at least once per 31 days in Modes 1 and 2 when the main turbine is operating.

Turbine startup testing is performed during each startup unless performed within the previous 31 days. This testing includes:

1. Manual Trip Test

2. Mechanical Overspeed Oil Pressure Trip Test

3. Overspeed Protection Control (OPC) Test

4. Remote Trip

The turbine electrical and mechanical overspeed trips will be tested each refueling outage or when major maintenance is performed on the turbine.

The shutdown turbine trip verification will be performed during each planned shutdown of the unit. This test will require an operator to verify by observation that the turbine valves actually close during each planned shutdown. This test will also require the operator to verify that the turbine valve positions are properly indicated on appropriate panels.

The turbine valve test will be performed on the turbine valves at least once per 31 days in Modes 1 and 2 when the Main Turbine is operating. This test will require each turbine valve to be cycled to demonstrate free operation as the valves close and reopen. Testing will include direct observation of the movement of each of the turbine control valves through one complete cycle from the running position.