

SPC Raw Tornado Data

AL	1	1	3	3	1	0	0	0.945	0.868	0.218	0.021	0.000	0.000
AL	3	23	20	12	1	0	0	1.024	0.735	0.155	0.000	0.000	0.000
AL	5	0	1	4	2	0	0	0.755	1.063	0.467	0.102	0.000	0.000
AL	7	1	6	2	1	1	0	0.511	0.341	0.038	0.003	0.000	0.000
AL	9	4	7	4	1	1	0	0.925	0.989	0.340	0.044	0.010	0.000
AL	11	0	2	0	0	1	0	0.012	0.008	0.001	0.001	0.000	0.000
AL	13	4	4	4	0	1	0	0.819	0.886	0.412	0.165	0.049	0.000
AL	15	1	2	6	3	1	0	1.609	1.790	0.914	0.406	0.110	0.000
AL	17	1	4	3	1	0	0	0.739	0.489	0.081	0.006	0.000	0.000
AL	19	1	3	0	2	1	0	1.997	1.820	0.887	0.412	0.110	0.000
AL	21	1	8	5	1	0	0	1.131	1.197	0.426	0.101	0.000	0.000
AL	23	0	1	2	0	1	0	0.171	0.209	0.067	0.002	0.000	0.000
AL	25	3	5	5	2	0	0	1.724	2.039	0.652	0.026	0.000	0.000
AL	27	1	8	3	0	2	0	0.904	0.830	0.258	0.072	0.021	0.000
AL	29	0	7	3	1	0	0	0.744	0.844	0.266	0.021	0.000	0.000
AL	31	5	6	7	4	0	0	1.868	1.624	0.571	0.126	0.000	0.000
AL	33	1	5	5	4	0	0	0.971	1.211	0.495	0.111	0.000	0.000
AL	35	3	5	5	0	0	0	0.891	1.032	0.314	0.000	0.000	0.000
AL	37	0	0	3	1	0	0	0.011	0.014	0.005	0.000	0.000	0.000
AL	39	6	9	5	1	0	0	1.256	0.430	0.096	0.008	0.000	0.000
AL	41	3	2	3	0	1	0	0.132	0.078	0.009	0.001	0.000	0.000
AL	43	3	13	14	8	2	0	3.041	3.606	1.556	0.457	0.048	0.000
AL	45	3	4	5	3	0	0	1.688	1.301	0.414	0.105	0.000	0.000
AL	47	4	6	7	1	0	0	1.108	0.794	0.254	0.044	0.000	0.000
AL	49	1	3	11	5	1	0	1.634	2.119	0.853	0.156	0.009	0.000
AL	51	2	4	3	3	0	0	0.360	0.360	0.114	0.019	0.000	0.000
AL	53	5	6	4	2	0	0	0.159	0.099	0.019	0.001	0.000	0.000
AL	55	2	3	7	2	0	0	0.511	0.608	0.214	0.024	0.000	0.000
AL	57	4	7	2	3	1	0	0.249	0.132	0.031	0.008	0.000	0.000
AL	59	2	0	7	3	0	0	0.908	1.246	0.532	0.106	0.000	0.000
AL	61	3	3	1	0	0	0	0.182	0.093	0.007	0.000	0.000	0.000
AL	63	0	1	1	2	0	0	0.283	0.368	0.167	0.048	0.000	0.000
AL	65	0	6	5	1	1	0	2.452	2.836	1.416	0.602	0.166	0.000
AL	67	1	3	3	2	0	0	0.318	0.416	0.190	0.052	0.000	0.000
AL	69	5	15	4	0	0	0	0.486	0.258	0.007	0.000	0.000	0.000
AL	71	2	2	4	4	1	0	1.959	2.376	1.107	0.384	0.110	0.000
AL	73	9	22	15	5	2	1	3.213	3.892	1.861	0.676	0.152	0.025
AL	75	2	4	3	2	0	1	1.029	1.202	0.584	0.246	0.086	0.025
AL	77	2	6	3	4	0	0	1.684	2.065	0.904	0.254	0.000	0.000
AL	79	0	4	4	2	0	2	1.112	1.440	0.721	0.286	0.086	0.025
AL	81	1	2	4	1	0	0	0.984	1.203	0.505	0.101	0.000	0.000
AL	83	0	3	3	3	1	2	1.983	2.274	1.181	0.562	0.196	0.025
AL	85	1	2	5	0	0	0	0.395	0.402	0.107	0.000	0.000	0.000
AL	87	0	3	2	0	0	0	0.281	0.204	0.027	0.000	0.000	0.000
AL	89	3	9	10	3	2	2	2.416	2.690	1.380	0.590	0.159	0.000
AL	91	0	6	2	0	0	0	0.389	0.406	0.109	0.000	0.000	0.000
AL	93	1	6	6	4	0	1	2.374	3.052	1.268	0.283	0.000	0.000
AL	95	0	10	11	5	1	0	2.656	3.281	1.168	0.138	0.000	0.000
AL	97	19	22	8	3	0	0	0.877	0.674	0.259	0.067	0.000	0.000

SPC Raw Tornado Data

AL	99	1	3	4	2	1	0	0.768	0.967	0.425	0.118	0.021	0.000
AL	101	3	8	2	2	0	0	1.050	0.777	0.217	0.061	0.000	0.000
AL	103	2	5	4	4	2	2	2.380	3.204	1.541	0.442	0.019	0.000
AL	105	0	0	4	1	1	0	0.218	0.281	0.100	0.009	0.000	0.000
AL	107	3	4	4	3	1	1	1.397	1.756	0.851	0.283	0.049	0.000
AL	109	1	7	6	4	0	0	0.862	0.890	0.267	0.031	0.000	0.000
AL	111	2	3	3	1	0	0	0.475	0.438	0.124	0.021	0.000	0.000
AL	113	2	1	6	3	0	0	0.509	0.671	0.276	0.050	0.000	0.000
AL	115	2	4	5	3	1	0	1.497	1.758	0.916	0.400	0.110	0.000
AL	117	0	9	5	0	2	0	1.397	1.247	0.282	0.014	0.004	0.000
AL	119	2	4	2	1	0	0	0.291	0.243	0.054	0.003	0.000	0.000
AL	121	1	4	11	1	1	0	0.450	0.391	0.112	0.001	0.000	0.000
AL	123	2	8	1	0	0	0	0.238	0.127	0.001	0.000	0.000	0.000
AL	125	6	9	6	3	1	1	1.073	1.113	0.362	0.041	0.009	0.000
AL	127	2	8	7	2	3	0	0.655	0.657	0.268	0.103	0.030	0.000
AL	129	1	2	6	0	0	0	0.567	0.597	0.163	0.000	0.000	0.000
AL	131	1	1	2	0	0	0	0.081	0.087	0.027	0.000	0.000	0.000
AL	133	0	1	6	1	0	1	0.314	0.339	0.112	0.019	0.000	0.000
AL	888	0	0	1	1	1	0	0.462	0.556	0.324	0.160	0.048	0.000
AL	0	165	364	323	129	36	14	68.557	73.993	30.046	8.595	1.607	0.102
AL	46	165	364	323	129	36	14	2.9E-05	3.2E-05	1.3E-05	3.7E-06	6.9E-07	4.3E-08
AR	1	6	7	8	3	0	0	1.622	1.585	0.464	0.046	0.000	0.000
AR	3	4	3	9	1	0	0	1.887	2.267	0.807	0.098	0.000	0.000
AR	5	1	1	2	3	0	0	0.435	0.416	0.119	0.019	0.000	0.000
AR	7	8	13	5	3	0	0	1.243	1.017	0.267	0.062	0.000	0.000
AR	9	1	1	2	2	0	0	0.470	0.551	0.187	0.019	0.000	0.000
AR	11	4	2	1	3	1	0	0.402	0.299	0.121	0.033	0.009	0.000
AR	13	0	2	2	1	0	0	0.101	0.065	0.005	0.000	0.000	0.000
AR	15	2	1	4	0	0	0	0.178	0.198	0.061	0.000	0.000	0.000
AR	17	2	7	4	1	0	0	0.536	0.379	0.056	0.000	0.000	0.000
AR	19	6	11	5	0	0	0	1.977	1.639	0.361	0.000	0.000	0.000
AR	21	2	4	2	0	0	0	0.425	0.271	0.049	0.000	0.000	0.000
AR	23	0	2	4	6	1	0	0.593	0.863	0.406	0.104	0.000	0.000
AR	25	2	1	3	0	0	0	0.239	0.269	0.082	0.000	0.000	0.000
AR	27	2	9	5	1	1	0	1.637	1.554	0.422	0.051	0.003	0.000
AR	29	5	9	3	4	0	0	1.235	1.207	0.413	0.106	0.000	0.000
AR	31	5	3	3	3	2	0	1.346	1.576	0.616	0.108	0.000	0.000
AR	33	0	5	3	4	0	0	1.130	1.587	0.753	0.211	0.000	0.000
AR	35	4	3	3	1	0	0	0.693	0.811	0.302	0.044	0.000	0.000
AR	37	5	1	0	1	1	0	0.081	0.031	0.017	0.008	0.002	0.000
AR	39	1	0	4	0	0	0	0.096	0.109	0.035	0.000	0.000	0.000
AR	41	3	5	5	1	0	0	0.770	0.836	0.264	0.003	0.000	0.000
AR	43	0	2	4	1	0	0	0.386	0.462	0.146	0.004	0.000	0.000
AR	45	0	4	14	9	1	0	3.688	4.748	1.812	0.275	0.009	0.000
AR	47	0	3	1	0	0	0	0.108	0.088	0.016	0.000	0.000	0.000
AR	49	2	3	2	1	1	0	0.389	0.445	0.152	0.014	0.000	0.000
AR	51	5	5	6	2	0	0	1.268	1.596	0.629	0.107	0.000	0.000
AR	53	3	3	2	1	0	0	0.592	0.433	0.084	0.018	0.000	0.000
AR	55	2	3	5	3	0	0	0.559	0.674	0.291	0.069	0.000	0.000

SPC Raw Tornado Data

AR	57	3	4	2	3	1	0	0.601	0.784	0.350	0.088	0.000	0.000
AR	59	2	6	6	3	0	0	1.597	2.046	0.846	0.183	0.000	0.000
AR	61	6	5	4	1	2	0	1.067	0.653	0.076	0.024	0.007	0.000
AR	63	1	8	5	2	2	0	1.046	0.868	0.195	0.011	0.001	0.000
AR	65	2	4	3	2	0	0	1.245	1.209	0.327	0.022	0.000	0.000
AR	67	5	4	7	3	3	0	1.049	1.134	0.508	0.188	0.043	0.000
AR	69	4	3	6	2	0	0	0.640	0.542	0.176	0.017	0.000	0.000
AR	71	3	4	9	4	0	0	1.456	1.801	0.654	0.082	0.000	0.000
AR	73	0	1	1	1	0	0	0.315	0.437	0.192	0.044	0.000	0.000
AR	75	1	1	6	1	0	0	0.789	1.017	0.372	0.040	0.000	0.000
AR	77	2	3	2	1	0	0	0.255	0.156	0.069	0.018	0.000	0.000
AR	79	5	3	2	0	1	0	0.613	0.654	0.348	0.165	0.049	0.000
AR	81	1	3	3	2	0	0	0.145	0.103	0.015	0.001	0.000	0.000
AR	83	1	4	8	2	0	0	1.944	2.400	0.985	0.234	0.000	0.000
AR	85	7	9	10	2	1	0	2.258	2.676	0.904	0.073	0.009	0.000
AR	87	1	3	2	0	0	0	0.259	0.297	0.090	0.000	0.000	0.000
AR	89	2	1	1	4	0	0	2.581	3.492	1.641	0.473	0.000	0.000
AR	91	1	4	6	0	0	0	0.328	0.218	0.025	0.000	0.000	0.000
AR	93	6	7	8	6	1	0	1.869	2.433	1.103	0.301	0.000	0.000
AR	95	4	3	4	1	0	0	0.921	0.861	0.227	0.006	0.000	0.000
AR	97	1	3	1	0	0	0	1.139	1.031	0.229	0.000	0.000	0.000
AR	99	0	6	2	2	0	0	0.551	0.498	0.148	0.041	0.000	0.000
AR	101	1	3	1	0	0	0	0.117	0.065	0.005	0.000	0.000	0.000
AR	103	3	1	1	3	1	0	0.959	1.326	0.604	0.146	0.000	0.000
AR	105	0	2	5	0	0	0	0.742	0.642	0.131	0.000	0.000	0.000
AR	107	2	6	4	1	0	0	0.308	0.338	0.105	0.004	0.000	0.000
AR	109	3	1	2	0	0	0	0.192	0.024	0.002	0.000	0.000	0.000
AR	111	6	7	3	4	2	0	1.369	1.469	0.553	0.141	0.000	0.000
AR	113	3	2	6	1	0	0	1.371	1.612	0.494	0.000	0.000	0.000
AR	115	1	3	5	2	0	0	0.666	0.929	0.420	0.102	0.000	0.000
AR	117	2	6	7	1	0	0	2.538	2.938	1.054	0.172	0.000	0.000
AR	119	8	14	15	3	0	0	4.180	4.639	1.435	0.030	0.000	0.000
AR	121	0	3	2	0	0	0	0.152	0.122	0.021	0.000	0.000	0.000
AR	123	4	1	3	3	0	0	0.164	0.170	0.068	0.012	0.000	0.000
AR	125	1	3	7	4	0	0	2.200	2.467	0.841	0.132	0.000	0.000
AR	127	0	2	2	0	0	0	0.141	0.153	0.042	0.000	0.000	0.000
AR	129	2	3	5	0	0	0	1.710	1.488	0.345	0.000	0.000	0.000
AR	131	3	7	4	0	1	0	0.522	0.536	0.157	0.010	0.003	0.000
AR	133	3	2	4	0	1	0	0.593	0.681	0.364	0.165	0.049	0.000
AR	135	2	1	1	1	1	0	0.646	0.735	0.388	0.178	0.048	0.000
AR	137	1	4	3	1	0	0	1.250	1.286	0.381	0.000	0.000	0.000
AR	139	5	4	7	2	0	0	0.688	0.745	0.275	0.041	0.000	0.000
AR	141	1	2	5	3	1	0	1.326	1.604	0.753	0.253	0.049	0.000
AR	143	3	5	5	2	0	0	1.717	1.467	0.303	0.001	0.000	0.000
AR	145	7	6	8	4	1	0	2.137	1.765	0.712	0.280	0.083	0.000
AR	147	2	6	5	6	2	0	2.840	3.403	1.546	0.520	0.097	0.000
AR	149	2	1	5	2	0	0	1.193	1.582	0.638	0.107	0.000	0.000
AR	888	0	1	7	9	2	0	0.754	0.937	0.300	0.004	0.000	0.000
AR	0	198	298	331	149	31	0	77.228	84.402	30.356	5.709	0.462	0.000

SPC Raw Tornado Data

AR	46	198	298	331	149	31	0	3.2E-05	3.5E-05	1.3E-05	2.4E-06	1.9E-07	0.0E+00
AZ	1	4	0	0	0	0	0	0.083	0.000	0.000	0.000	0.000	0.000
AZ	3	8	3	0	0	0	0	0.117	0.030	0.000	0.000	0.000	0.000
AZ	5	12	1	1	0	0	0	0.383	0.134	0.042	0.000	0.000	0.000
AZ	7	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
AZ	13	29	20	6	1	0	0	0.975	0.559	0.120	0.007	0.000	0.000
AZ	15	4	5	0	0	0	0	0.168	0.019	0.000	0.000	0.000	0.000
AZ	17	3	0	0	0	0	0	0.107	0.000	0.000	0.000	0.000	0.000
AZ	19	5	9	2	0	0	0	0.136	0.057	0.004	0.000	0.000	0.000
AZ	21	10	13	0	0	0	0	1.113	0.526	0.000	0.000	0.000	0.000
AZ	25	9	2	1	1	0	0	0.219	0.090	0.009	0.002	0.000	0.000
AZ	27	6	3	1	0	0	0	0.057	0.023	0.005	0.000	0.000	0.000
AZ	0	90	57	11	2	0	0	3.360	1.442	0.180	0.009	0.000	0.000
AZ	44	90	57	11	2	0	0	6.7E-07	2.9E-07	3.6E-08	1.8E-09	0.0E+00	0.0E+00
CA	1	3	0	0	0	0	0	0.021	0.000	0.000	0.000	0.000	0.000
CA	7	6	3	1	0	0	0	0.104	0.027	0.001	0.000	0.000	0.000
CA	9	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
CA	13	2	0	0	0	0	0	0.010	0.000	0.000	0.000	0.000	0.000
CA	15	2	2	0	0	0	0	0.049	0.006	0.000	0.000	0.000	0.000
CA	17	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
CA	19	9	5	1	0	0	0	0.196	0.068	0.001	0.000	0.000	0.000
CA	21	0	1	1	0	0	0	0.023	0.014	0.001	0.000	0.000	0.000
CA	23	0	0	1	0	0	0	0.037	0.046	0.014	0.000	0.000	0.000
CA	25	3	2	0	0	0	0	0.028	0.007	0.000	0.000	0.000	0.000
CA	29	5	1	0	0	0	0	0.044	0.003	0.000	0.000	0.000	0.000
CA	31	3	0	1	0	0	0	0.077	0.049	0.016	0.000	0.000	0.000
CA	37	19	7	5	0	0	0	0.985	0.937	0.282	0.000	0.000	0.000
CA	39	3	2	0	0	0	0	0.042	0.007	0.000	0.000	0.000	0.000
CA	43	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
CA	45	2	0	0	0	0	0	0.029	0.000	0.000	0.000	0.000	0.000
CA	47	4	2	0	0	0	0	0.166	0.080	0.000	0.000	0.000	0.000
CA	53	2	2	0	0	0	0	0.113	0.056	0.000	0.000	0.000	0.000
CA	59	15	8	1	1	0	0	0.565	0.235	0.049	0.014	0.000	0.000
CA	61	3	1	0	0	0	0	0.022	0.002	0.000	0.000	0.000	0.000
CA	65	5	1	0	1	0	0	0.081	0.041	0.016	0.005	0.000	0.000
CA	67	1	2	1	0	0	0	0.045	0.028	0.004	0.000	0.000	0.000
CA	69	0	0	1	0	0	0	0.003	0.004	0.001	0.000	0.000	0.000
CA	71	13	2	2	0	0	0	0.131	0.018	0.002	0.000	0.000	0.000
CA	73	9	5	0	0	0	0	0.132	0.043	0.000	0.000	0.000	0.000
CA	77	8	2	0	0	0	0	0.076	0.007	0.000	0.000	0.000	0.000
CA	81	2	0	0	0	0	0	0.024	0.000	0.000	0.000	0.000	0.000
CA	83	3	0	0	0	0	0	0.015	0.000	0.000	0.000	0.000	0.000
CA	85	0	0	1	0	0	0	0.009	0.011	0.004	0.000	0.000	0.000
CA	87	1	1	0	0	0	0	0.018	0.006	0.000	0.000	0.000	0.000
CA	93	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
CA	95	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
CA	97	2	4	1	0	0	0	0.221	0.149	0.025	0.000	0.000	0.000
CA	99	2	2	1	0	0	0	0.119	0.017	0.001	0.000	0.000	0.000
CA	103	4	0	2	0	0	0	0.042	0.014	0.004	0.000	0.000	0.000

SPC Raw Tornado Data

CA	107	5	1	1	0	0	0	0.064	0.004	0.001	0.000	0.000	0.000
CA	111	2	0	0	0	0	0	0.013	0.000	0.000	0.000	0.000	0.000
CA	115	0	1	0	0	0	0	0.044	0.025	0.000	0.000	0.000	0.000
CA	0	142	58	21	2	0	0	3.584	1.913	0.421	0.019	0.000	0.000
CA	45	142	58	21	2	0	0	5.1E-07	2.7E-07	6.0E-08	2.7E-09	0.0E+00	0.0E+00
CO	1	46	43	8	2	0	0	2.398	0.788	0.143	0.024	0.000	0.000
CO	3	2	4	1	0	0	0	0.068	0.032	0.001	0.000	0.000	0.000
CO	5	26	25	1	0	0	0	0.482	0.187	0.004	0.000	0.000	0.000
CO	9	22	16	1	0	1	0	1.033	0.532	0.049	0.001	0.000	0.000
CO	11	12	5	2	0	0	0	0.320	0.108	0.015	0.000	0.000	0.000
CO	13	1	4	2	0	0	0	0.082	0.056	0.008	0.000	0.000	0.000
CO	15	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
CO	17	15	13	3	0	0	0	0.693	0.468	0.117	0.000	0.000	0.000
CO	21	1	0	1	0	0	0	0.098	0.103	0.032	0.000	0.000	0.000
CO	23	3	1	0	1	0	0	0.035	0.015	0.003	0.001	0.000	0.000
CO	25	5	4	2	0	0	0	0.206	0.081	0.020	0.000	0.000	0.000
CO	27	3	1	1	0	0	0	0.021	0.004	0.001	0.000	0.000	0.000
CO	29	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
CO	31	4	4	3	1	0	0	0.135	0.086	0.031	0.006	0.000	0.000
CO	35	23	21	2	0	0	0	0.484	0.126	0.008	0.000	0.000	0.000
CO	37	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
CO	39	23	21	2	1	0	0	0.729	0.445	0.118	0.018	0.000	0.000
CO	41	42	15	5	2	0	0	0.768	0.262	0.068	0.013	0.000	0.000
CO	43	0	4	0	0	0	0	0.021	0.012	0.000	0.000	0.000	0.000
CO	49	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
CO	55	4	1	1	0	0	0	0.062	0.020	0.001	0.000	0.000	0.000
CO	57	0	1	0	0	0	0	0.010	0.006	0.000	0.000	0.000	0.000
CO	59	6	5	1	0	0	0	0.065	0.021	0.001	0.000	0.000	0.000
CO	61	14	12	2	1	0	0	0.447	0.365	0.118	0.018	0.000	0.000
CO	63	36	22	5	1	0	0	1.787	0.550	0.107	0.018	0.000	0.000
CO	67	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
CO	69	14	11	3	0	0	0	0.600	0.451	0.113	0.000	0.000	0.000
CO	71	10	4	1	0	0	0	0.164	0.042	0.010	0.000	0.000	0.000
CO	73	28	18	5	1	0	0	0.778	0.531	0.144	0.018	0.000	0.000
CO	75	22	13	2	1	0	0	0.431	0.166	0.020	0.003	0.000	0.000
CO	81	2	0	0	0	0	0	0.023	0.000	0.000	0.000	0.000	0.000
CO	83	0	1	1	0	0	0	0.032	0.020	0.001	0.000	0.000	0.000
CO	87	13	18	6	0	0	0	0.789	0.636	0.135	0.000	0.000	0.000
CO	89	8	6	1	0	0	0	1.689	0.087	0.014	0.000	0.000	0.000
CO	95	16	4	3	0	0	0	0.167	0.056	0.013	0.000	0.000	0.000
CO	97	0	0	1	0	0	0	0.006	0.007	0.002	0.000	0.000	0.000
CO	99	22	16	2	0	0	0	0.421	0.161	0.017	0.000	0.000	0.000
CO	101	2	6	1	0	0	0	0.106	0.045	0.001	0.000	0.000	0.000
CO	103	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
CO	105	2	0	0	0	0	0	0.010	0.000	0.000	0.000	0.000	0.000
CO	107	1	1	0	0	0	0	0.010	0.003	0.000	0.000	0.000	0.000
CO	109	1	2	0	0	0	0	0.297	0.164	0.000	0.000	0.000	0.000
CO	115	11	6	2	1	0	0	0.320	0.213	0.069	0.018	0.000	0.000
CO	119	1	2	0	0	0	0	0.045	0.022	0.000	0.000	0.000	0.000

SPC Raw Tornado Data

CO	121	59	15	4	2	0	0	1.076	0.478	0.148	0.039	0.000	0.000
CO	123	87	71	14	1	0	0	2.672	1.303	0.231	0.008	0.000	0.000
CO	125	25	23	8	0	0	0	1.329	1.043	0.249	0.000	0.000	0.000
CO	888	0	0	2	0	0	0	0.004	0.005	0.002	0.000	0.000	0.000
CO	0	616	441	99	15	1	0	20.944	9.708	2.015	0.184	0.000	0.000
CO	46	616	441	99	15	1	0	4.4E-06	2.0E-06	4.2E-07	3.9E-08	3.3E-11	0.0E+00
CT	1	2	4	2	0	0	0	0.091	0.082	0.022	0.000	0.000	0.000
CT	3	2	5	4	1	1	0	1.022	1.167	0.503	0.160	0.048	0.000
CT	5	0	9	7	0	0	0	0.767	0.657	0.131	0.000	0.000	0.000
CT	7	1	3	1	1	0	0	0.066	0.045	0.008	0.000	0.000	0.000
CT	9	2	2	3	2	1	0	0.238	0.281	0.115	0.028	0.001	0.000
CT	13	1	3	3	1	0	0	0.105	0.105	0.030	0.001	0.000	0.000
CT	15	1	3	0	0	0	0	0.228	0.125	0.000	0.000	0.000	0.000
CT	0	9	29	20	5	2	0	2.518	2.462	0.808	0.189	0.049	0.000
CT	46	9	29	20	5	2	0	1.1E-05	1.1E-05	3.6E-06	8.5E-07	2.2E-07	0.0E+00
DC	1	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
DC	0	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
DC	1	1	0	0	0	0	0	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
DE	1	5	8	4	0	0	0	0.886	0.455	0.019	0.000	0.000	0.000
DE	3	8	7	5	1	0	0	0.658	0.463	0.089	0.001	0.000	0.000
DE	5	7	8	2	0	0	0	0.594	0.301	0.014	0.000	0.000	0.000
DE	0	20	23	11	1	0	0	2.138	1.218	0.122	0.001	0.000	0.000
DE	42	20	23	11	1	0	0	2.6E-05	1.5E-05	1.5E-06	6.4E-09	0.0E+00	0.0E+00
FL	1	13	12	8	0	0	0	0.724	0.602	0.160	0.000	0.000	0.000
FL	3	4	1	1	0	0	0	0.112	0.082	0.025	0.000	0.000	0.000
FL	5	18	19	11	1	0	0	0.728	0.586	0.182	0.018	0.000	0.000
FL	7	5	6	1	0	0	0	0.244	0.102	0.004	0.000	0.000	0.000
FL	9	38	24	14	3	0	0	1.063	0.667	0.168	0.023	0.000	0.000
FL	11	48	17	7	3	0	0	0.996	0.540	0.178	0.044	0.000	0.000
FL	13	3	3	4	0	0	0	0.066	0.048	0.013	0.000	0.000	0.000
FL	15	18	5	3	0	0	0	0.475	0.113	0.012	0.000	0.000	0.000
FL	17	24	11	1	1	0	0	0.717	0.383	0.075	0.021	0.000	0.000
FL	19	4	8	5	0	0	0	0.250	0.145	0.010	0.000	0.000	0.000
FL	21	23	5	3	0	0	0	0.885	0.791	0.239	0.000	0.000	0.000
FL	23	8	5	2	1	0	0	0.254	0.115	0.019	0.001	0.000	0.000
FL	25	59	16	4	1	0	0	2.233	0.530	0.107	0.018	0.000	0.000
FL	27	15	5	3	0	0	0	0.218	0.049	0.006	0.000	0.000	0.000
FL	29	1	1	0	0	0	0	0.015	0.005	0.000	0.000	0.000	0.000
FL	31	26	17	6	0	0	0	0.468	0.136	0.016	0.000	0.000	0.000
FL	33	38	23	9	3	0	0	1.337	1.021	0.267	0.005	0.000	0.000
FL	35	8	2	2	0	0	0	0.120	0.021	0.005	0.000	0.000	0.000
FL	37	15	8	4	0	0	0	0.425	0.157	0.023	0.000	0.000	0.000
FL	39	1	10	10	0	0	0	0.214	0.156	0.023	0.000	0.000	0.000
FL	41	2	1	1	0	0	0	0.262	0.120	0.001	0.000	0.000	0.000
FL	43	5	1	1	0	0	0	0.031	0.004	0.001	0.000	0.000	0.000
FL	45	8	5	3	0	0	0	0.139	0.058	0.010	0.000	0.000	0.000
FL	47	0	2	1	0	0	0	0.022	0.019	0.004	0.000	0.000	0.000
FL	49	3	3	0	0	0	0	0.037	0.009	0.000	0.000	0.000	0.000
FL	51	10	6	2	0	0	0	0.114	0.040	0.007	0.000	0.000	0.000

SPC Raw Tornado Data

FL	53	13	6	0	0	0	0	0.166	0.037	0.000	0.000	0.000	0.000
FL	55	15	12	3	0	0	0	0.305	0.135	0.022	0.000	0.000	0.000
FL	57	49	38	13	0	0	0	1.451	0.611	0.063	0.000	0.000	0.000
FL	59	3	3	2	0	0	0	0.244	0.201	0.043	0.000	0.000	0.000
FL	61	10	2	2	0	0	0	0.113	0.018	0.002	0.000	0.000	0.000
FL	63	7	12	2	0	0	0	0.643	0.515	0.103	0.000	0.000	0.000
FL	65	1	4	0	0	0	0	0.119	0.062	0.000	0.000	0.000	0.000
FL	67	2	2	2	1	0	0	0.116	0.130	0.050	0.008	0.000	0.000
FL	69	11	18	7	0	0	0	0.611	0.498	0.127	0.000	0.000	0.000
FL	71	51	15	11	0	0	0	0.994	0.325	0.057	0.000	0.000	0.000
FL	73	6	2	5	0	0	0	0.121	0.044	0.010	0.000	0.000	0.000
FL	75	7	5	2	0	0	0	0.328	0.249	0.055	0.000	0.000	0.000
FL	77	3	3	0	0	0	0	0.039	0.013	0.000	0.000	0.000	0.000
FL	79	3	4	2	1	0	0	0.301	0.356	0.162	0.044	0.000	0.000
FL	81	34	12	6	1	0	0	0.772	0.383	0.113	0.018	0.000	0.000
FL	83	12	20	8	1	0	0	1.304	1.101	0.268	0.006	0.000	0.000
FL	85	15	4	3	1	0	0	0.293	0.047	0.009	0.000	0.000	0.000
FL	87	22	10	4	0	0	0	0.286	0.080	0.014	0.000	0.000	0.000
FL	89	14	6	0	0	0	0	0.168	0.037	0.000	0.000	0.000	0.000
FL	91	41	17	13	1	0	0	1.457	0.967	0.220	0.008	0.000	0.000
FL	93	9	3	3	0	0	0	0.255	0.177	0.046	0.000	0.000	0.000
FL	95	20	18	9	1	0	0	0.830	0.659	0.176	0.008	0.000	0.000
FL	97	6	8	3	0	1	0	0.899	0.618	0.079	0.001	0.000	0.000
FL	99	58	29	8	1	0	0	1.118	0.609	0.181	0.044	0.000	0.000
FL	101	41	16	5	0	0	0	0.724	0.238	0.053	0.000	0.000	0.000
FL	103	54	33	12	2	1	0	2.412	1.857	0.638	0.177	0.049	0.000
FL	105	60	33	10	0	2	0	1.200	0.464	0.062	0.004	0.001	0.000
FL	107	18	7	4	0	0	0	0.415	0.271	0.063	0.000	0.000	0.000
FL	109	17	4	5	2	0	0	0.737	0.679	0.278	0.052	0.000	0.000
FL	111	18	5	2	2	0	0	1.100	1.193	0.594	0.172	0.000	0.000
FL	113	23	13	4	1	0	0	0.448	0.283	0.091	0.018	0.000	0.000
FL	115	27	20	8	1	0	0	0.811	0.395	0.087	0.006	0.000	0.000
FL	117	9	8	5	0	0	0	0.265	0.115	0.007	0.000	0.000	0.000
FL	119	4	1	3	0	0	0	0.353	0.389	0.122	0.000	0.000	0.000
FL	121	10	13	5	0	0	0	0.265	0.129	0.009	0.000	0.000	0.000
FL	123	3	4	3	0	0	0	0.294	0.242	0.053	0.000	0.000	0.000
FL	125	2	1	0	0	0	0	0.118	0.060	0.000	0.000	0.000	0.000
FL	127	34	19	8	0	0	0	1.020	0.391	0.021	0.000	0.000	0.000
FL	129	6	4	1	0	0	0	0.086	0.031	0.001	0.000	0.000	0.000
FL	131	15	7	4	1	0	0	0.391	0.090	0.020	0.000	0.000	0.000
FL	133	6	6	0	0	0	0	0.441	0.182	0.000	0.000	0.000	0.000
FL	888	0	2	0	0	0	0	0.007	0.004	0.000	0.000	0.000	0.000
FL	0	1156	665	293	30	4	0	36.168	21.380	5.452	0.698	0.050	0.000
FL	46	1156	665	293	30	4	0	1.5E-05	8.6E-06	2.2E-06	2.8E-07	2.0E-08	0.0E+00
GA	1	1	6	1	0	0	0	0.200	0.109	0.001	0.000	0.000	0.000
GA	3	0	1	1	0	0	0	0.021	0.023	0.007	0.000	0.000	0.000
GA	5	0	2	5	0	0	0	0.290	0.217	0.032	0.000	0.000	0.000
GA	7	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
GA	9	0	1	1	1	0	0	0.035	0.040	0.012	0.000	0.000	0.000

SPC Raw Tornado Data

GA	11	1	0	3	0	0	0	0.302	0.167	0.053	0.000	0.000	0.000
GA	13	1	2	0	0	0	0	0.057	0.028	0.000	0.000	0.000	0.000
GA	15	1	9	6	2	1	0	6.097	8.184	4.138	1.441	0.193	0.000
GA	17	2	7	2	0	0	0	0.203	0.066	0.002	0.000	0.000	0.000
GA	19	2	8	0	1	0	0	0.211	0.136	0.021	0.006	0.000	0.000
GA	21	1	5	3	2	0	0	0.562	0.405	0.069	0.007	0.000	0.000
GA	23	0	7	4	0	0	0	0.143	0.097	0.010	0.000	0.000	0.000
GA	25	0	2	1	0	0	0	0.104	0.067	0.005	0.000	0.000	0.000
GA	27	0	5	3	0	0	0	0.251	0.249	0.063	0.000	0.000	0.000
GA	29	2	2	0	0	0	0	0.114	0.050	0.000	0.000	0.000	0.000
GA	31	0	4	1	0	0	0	0.361	0.379	0.102	0.000	0.000	0.000
GA	33	1	1	1	1	0	0	0.056	0.029	0.002	0.000	0.000	0.000
GA	35	0	0	1	0	0	0	0.064	0.079	0.025	0.000	0.000	0.000
GA	37	0	5	1	0	0	0	0.112	0.064	0.001	0.000	0.000	0.000
GA	39	1	5	2	0	0	0	0.169	0.111	0.012	0.000	0.000	0.000
GA	43	0	2	0	0	0	0	0.010	0.006	0.000	0.000	0.000	0.000
GA	45	3	9	2	0	0	0	1.010	0.622	0.068	0.000	0.000	0.000
GA	47	0	1	1	0	0	0	0.269	0.313	0.094	0.000	0.000	0.000
GA	49	0	1	0	0	0	0	0.062	0.035	0.000	0.000	0.000	0.000
GA	51	6	8	4	0	0	0	0.422	0.246	0.019	0.000	0.000	0.000
GA	53	1	2	0	1	0	0	0.041	0.020	0.001	0.000	0.000	0.000
GA	55	0	0	2	0	0	0	0.157	0.194	0.061	0.000	0.000	0.000
GA	57	1	3	5	2	2	0	4.231	5.603	3.023	1.205	0.240	0.000
GA	59	2	1	2	1	0	0	0.041	0.024	0.005	0.000	0.000	0.000
GA	61	0	2	0	0	0	0	1.078	0.604	0.000	0.000	0.000	0.000
GA	63	1	3	3	0	0	0	0.758	0.904	0.279	0.000	0.000	0.000
GA	67	4	7	7	2	1	0	1.491	1.549	0.669	0.241	0.048	0.000
GA	69	0	4	5	0	0	0	0.399	0.343	0.069	0.000	0.000	0.000
GA	71	4	11	3	0	0	0	1.308	0.663	0.059	0.000	0.000	0.000
GA	73	0	1	1	0	0	0	0.482	0.271	0.001	0.000	0.000	0.000
GA	75	1	6	1	0	0	0	0.239	0.131	0.001	0.000	0.000	0.000
GA	77	2	4	3	2	0	0	0.731	0.823	0.270	0.022	0.000	0.000
GA	79	0	3	0	2	0	0	0.453	0.677	0.340	0.099	0.000	0.000
GA	81	1	1	2	0	0	0	0.706	0.022	0.006	0.000	0.000	0.000
GA	83	0	2	0	0	0	0	0.209	0.117	0.000	0.000	0.000	0.000
GA	85	1	2	0	1	1	0	2.222	2.794	1.368	0.398	0.000	0.000
GA	87	0	8	7	1	0	0	0.215	0.182	0.037	0.001	0.000	0.000
GA	89	1	5	1	1	0	0	0.068	0.036	0.002	0.000	0.000	0.000
GA	91	1	3	1	0	0	0	0.042	0.023	0.001	0.000	0.000	0.000
GA	93	1	4	4	2	0	0	0.280	0.304	0.091	0.003	0.000	0.000
GA	95	4	6	3	0	0	0	0.339	0.305	0.079	0.000	0.000	0.000
GA	97	1	5	1	0	0	0	0.107	0.081	0.014	0.000	0.000	0.000
GA	99	4	5	4	0	0	0	0.360	0.307	0.069	0.000	0.000	0.000
GA	101	0	1	0	0	0	0	0.029	0.016	0.000	0.000	0.000	0.000
GA	103	0	5	2	0	0	0	0.336	0.231	0.025	0.000	0.000	0.000
GA	105	0	4	1	0	0	0	0.195	0.111	0.001	0.000	0.000	0.000
GA	107	0	2	2	0	0	0	0.170	0.204	0.063	0.000	0.000	0.000
GA	109	0	2	0	0	0	0	0.010	0.006	0.000	0.000	0.000	0.000
GA	111	0	2	1	0	1	0	0.241	0.267	0.144	0.071	0.021	0.000

SPC Raw Tornado Data

GA	113	1	1	0	0	0	0	0.011	0.002	0.000	0.000	0.000	0.000
GA	115	3	5	4	2	1	0	3.059	3.442	1.765	0.762	0.193	0.000
GA	117	1	2	0	1	0	0	0.023	0.015	0.005	0.002	0.000	0.000
GA	119	0	3	2	0	0	0	0.156	0.146	0.034	0.000	0.000	0.000
GA	121	4	6	4	3	0	0	0.698	0.794	0.303	0.063	0.000	0.000
GA	123	2	3	2	0	0	0	0.684	0.524	0.109	0.000	0.000	0.000
GA	127	4	8	1	0	0	0	0.326	0.160	0.004	0.000	0.000	0.000
GA	129	1	1	3	1	1	0	2.295	3.322	1.592	0.431	0.010	0.000
GA	131	0	8	3	0	0	0	0.300	0.267	0.057	0.000	0.000	0.000
GA	133	0	0	1	0	1	0	1.079	1.297	0.752	0.371	0.110	0.000
GA	135	0	4	4	0	0	0	0.179	0.193	0.053	0.000	0.000	0.000
GA	137	2	6	2	3	0	0	3.624	4.769	2.212	0.639	0.000	0.000
GA	139	4	9	3	1	0	0	1.017	0.664	0.102	0.018	0.000	0.000
GA	141	0	1	0	0	0	0	0.404	0.226	0.000	0.000	0.000	0.000
GA	143	0	12	2	1	0	0	0.537	0.332	0.018	0.000	0.000	0.000
GA	145	1	9	2	1	0	0	0.614	0.354	0.009	0.000	0.000	0.000
GA	147	1	3	1	0	0	0	0.100	0.063	0.007	0.000	0.000	0.000
GA	149	0	1	2	0	0	0	0.470	0.461	0.114	0.000	0.000	0.000
GA	151	1	2	3	1	0	0	0.211	0.230	0.067	0.000	0.000	0.000
GA	153	2	11	2	0	1	0	0.510	0.315	0.032	0.010	0.003	0.000
GA	155	1	3	0	0	0	0	0.036	0.012	0.000	0.000	0.000	0.000
GA	157	1	1	3	0	0	0	0.277	0.192	0.024	0.000	0.000	0.000
GA	159	0	1	1	0	0	0	0.213	0.124	0.002	0.000	0.000	0.000
GA	161	0	3	0	0	0	0	0.040	0.022	0.000	0.000	0.000	0.000
GA	163	2	4	0	1	0	0	0.506	0.703	0.349	0.101	0.000	0.000
GA	165	0	2	2	0	0	0	0.053	0.042	0.007	0.000	0.000	0.000
GA	167	0	2	0	0	0	0	0.045	0.025	0.000	0.000	0.000	0.000
GA	169	0	3	1	1	0	0	0.075	0.078	0.021	0.000	0.000	0.000
GA	171	1	2	1	0	0	0	0.181	0.115	0.010	0.000	0.000	0.000
GA	173	0	2	1	0	0	0	0.057	0.057	0.014	0.000	0.000	0.000
GA	175	2	4	1	0	0	0	0.356	0.367	0.102	0.000	0.000	0.000
GA	177	2	3	3	0	0	0	0.345	0.377	0.111	0.000	0.000	0.000
GA	179	0	2	2	0	0	0	0.073	0.046	0.003	0.000	0.000	0.000
GA	181	0	0	1	0	0	0	0.026	0.032	0.010	0.000	0.000	0.000
GA	183	0	0	1	0	0	0	0.003	0.004	0.001	0.000	0.000	0.000
GA	185	2	7	4	0	0	0	0.592	0.311	0.022	0.000	0.000	0.000
GA	187	0	2	0	3	1	0	2.839	4.141	2.045	0.595	0.000	0.000
GA	189	1	1	0	0	0	0	0.039	0.009	0.000	0.000	0.000	0.000
GA	191	2	1	0	0	0	0	0.178	0.003	0.000	0.000	0.000	0.000
GA	193	0	2	4	0	0	0	0.309	0.235	0.036	0.000	0.000	0.000
GA	195	1	2	1	0	0	0	0.287	0.333	0.102	0.000	0.000	0.000
GA	197	2	1	3	0	0	0	0.126	0.116	0.032	0.000	0.000	0.000
GA	199	3	7	0	1	0	0	1.261	0.660	0.001	0.000	0.000	0.000
GA	201	1	0	1	0	0	0	0.018	0.002	0.001	0.000	0.000	0.000
GA	205	2	7	5	0	0	0	1.243	0.725	0.027	0.000	0.000	0.000
GA	207	3	2	1	0	0	0	0.271	0.168	0.020	0.000	0.000	0.000
GA	209	0	1	3	0	0	0	0.120	0.146	0.045	0.000	0.000	0.000
GA	211	0	2	1	0	0	0	0.059	0.067	0.020	0.000	0.000	0.000
GA	213	0	6	0	0	2	0	0.107	0.062	0.002	0.001	0.000	0.000

SPC Raw Tornado Data

GA	215	2	5	1	2	0	0	0.159	0.084	0.003	0.001	0.000	0.000
GA	217	0	3	1	1	0	0	0.147	0.101	0.011	0.000	0.000	0.000
GA	219	2	7	1	0	0	0	0.544	0.299	0.001	0.000	0.000	0.000
GA	221	1	2	3	0	0	0	0.327	0.243	0.057	0.000	0.000	0.000
GA	223	0	4	1	1	0	0	0.368	0.401	0.113	0.000	0.000	0.000
GA	225	0	4	1	1	0	0	0.127	0.149	0.062	0.018	0.000	0.000
GA	227	0	1	2	1	2	0	3.919	5.270	2.838	1.115	0.214	0.000
GA	229	0	5	1	0	0	0	0.246	0.142	0.002	0.000	0.000	0.000
GA	231	0	2	1	0	0	0	0.124	0.103	0.020	0.000	0.000	0.000
GA	233	1	1	1	2	0	0	0.733	1.074	0.519	0.139	0.000	0.000
GA	235	3	7	0	0	0	0	0.189	0.094	0.000	0.000	0.000	0.000
GA	237	0	0	0	0	1	0	1.062	1.276	0.745	0.371	0.110	0.000
GA	239	0	0	1	0	0	0	0.002	0.002	0.001	0.000	0.000	0.000
GA	241	0	3	1	1	0	0	0.785	1.177	0.591	0.172	0.000	0.000
GA	243	1	2	1	1	0	0	0.202	0.258	0.103	0.018	0.000	0.000
GA	245	2	3	1	0	0	0	0.140	0.023	0.002	0.000	0.000	0.000
GA	247	0	3	2	0	0	0	0.312	0.225	0.029	0.000	0.000	0.000
GA	249	0	0	4	0	0	0	1.629	2.019	0.639	0.000	0.000	0.000
GA	251	2	5	2	0	0	0	0.092	0.046	0.002	0.000	0.000	0.000
GA	253	0	1	3	0	0	0	0.875	1.077	0.339	0.000	0.000	0.000
GA	255	3	2	1	0	0	0	0.443	0.157	0.048	0.000	0.000	0.000
GA	257	1	4	3	0	0	0	0.547	0.340	0.022	0.000	0.000	0.000
GA	259	0	1	2	0	0	0	0.030	0.027	0.006	0.000	0.000	0.000
GA	261	0	7	4	1	0	0	0.347	0.375	0.125	0.021	0.000	0.000
GA	263	1	3	0	0	0	0	0.152	0.081	0.000	0.000	0.000	0.000
GA	267	1	3	5	0	0	0	0.196	0.190	0.049	0.000	0.000	0.000
GA	269	1	3	3	1	0	0	1.679	1.385	0.357	0.101	0.000	0.000
GA	271	1	4	1	1	0	0	0.130	0.092	0.025	0.006	0.000	0.000
GA	273	1	4	1	0	0	0	0.212	0.118	0.014	0.000	0.000	0.000
GA	275	1	5	1	0	0	0	0.204	0.113	0.001	0.000	0.000	0.000
GA	277	2	9	4	0	0	0	1.189	0.829	0.099	0.000	0.000	0.000
GA	279	0	3	2	0	0	0	0.058	0.047	0.008	0.000	0.000	0.000
GA	283	1	1	0	0	0	0	0.074	0.003	0.000	0.000	0.000	0.000
GA	285	2	7	1	1	0	0	0.762	0.859	0.350	0.101	0.000	0.000
GA	287	0	4	1	0	0	0	0.107	0.062	0.001	0.000	0.000	0.000
GA	289	0	4	4	1	0	0	0.161	0.134	0.026	0.001	0.000	0.000
GA	291	0	2	0	0	0	0	0.223	0.125	0.000	0.000	0.000	0.000
GA	293	0	4	1	0	0	0	0.198	0.128	0.010	0.000	0.000	0.000
GA	295	3	5	1	0	0	0	0.249	0.192	0.048	0.000	0.000	0.000
GA	297	2	5	1	1	0	0	0.590	0.477	0.151	0.044	0.000	0.000
GA	299	3	5	1	1	0	0	0.517	0.223	0.022	0.001	0.000	0.000
GA	301	0	1	1	0	0	0	0.600	0.733	0.229	0.000	0.000	0.000
GA	303	0	4	2	0	0	0	0.148	0.151	0.039	0.000	0.000	0.000
GA	305	2	1	0	0	0	0	0.071	0.016	0.000	0.000	0.000	0.000
GA	307	0	1	1	0	0	0	0.046	0.027	0.001	0.000	0.000	0.000
GA	309	0	4	0	0	0	0	0.102	0.057	0.000	0.000	0.000	0.000
GA	311	0	1	0	2	0	0	2.199	3.359	1.705	0.496	0.000	0.000
GA	313	1	3	0	0	1	0	0.053	0.012	0.001	0.001	0.000	0.000
GA	315	1	1	2	0	0	0	0.083	0.054	0.009	0.000	0.000	0.000

SPC Raw Tornado Data

GA	317	0	2	0	0	0	0	0.030	0.017	0.000	0.000	0.000	0.000
GA	319	0	1	0	0	0	0	0.010	0.006	0.000	0.000	0.000	0.000
GA	321	1	9	7	1	0	0	1.025	0.834	0.154	0.003	0.000	0.000
GA	597	0	0	1	0	0	0	0.002	0.002	0.001	0.000	0.000	0.000
GA	888	0	0	2	3	0	0	0.008	0.011	0.005	0.001	0.000	0.000
GA	0	147	537	266	65	17	0	78.529	80.587	31.238	9.099	1.143	0.000
GA	46	147	537	266	65	17	0	2.9E-05	3.0E-05	1.2E-05	3.4E-06	4.3E-07	0.0E+00
IA	1	5	4	3	1	2	1	0.899	1.045	0.567	0.259	0.071	0.000
IA	3	2	1	1	2	1	0	1.984	2.354	1.343	0.655	0.193	0.000
IA	5	2	2	2	0	0	0	0.231	0.237	0.067	0.000	0.000	0.000
IA	7	4	2	6	0	0	0	0.408	0.447	0.138	0.000	0.000	0.000
IA	9	3	1	2	0	0	0	0.128	0.059	0.008	0.000	0.000	0.000
IA	11	3	4	0	3	1	0	0.380	0.256	0.045	0.013	0.000	0.000
IA	13	5	7	5	1	1	0	0.338	0.277	0.078	0.010	0.003	0.000
IA	15	7	7	8	2	0	1	1.324	1.227	0.486	0.181	0.083	0.025
IA	17	5	5	5	0	1	0	0.299	0.212	0.053	0.001	0.000	0.000
IA	19	3	5	3	3	0	0	0.457	0.539	0.191	0.023	0.000	0.000
IA	21	1	5	3	0	0	0	0.740	0.531	0.075	0.000	0.000	0.000
IA	23	4	1	3	0	1	0	0.129	0.114	0.051	0.017	0.005	0.000
IA	25	5	2	4	1	4	0	1.184	1.256	0.591	0.244	0.067	0.000
IA	27	2	5	5	0	2	0	1.015	1.168	0.574	0.236	0.070	0.000
IA	29	5	8	6	1	0	0	0.570	0.586	0.179	0.018	0.000	0.000
IA	31	9	6	7	0	1	0	1.037	1.088	0.467	0.165	0.049	0.000
IA	33	2	11	2	1	1	0	0.712	0.431	0.030	0.007	0.000	0.000
IA	35	6	4	4	0	1	0	0.414	0.447	0.144	0.010	0.003	0.000
IA	37	5	9	3	1	1	1	1.482	0.889	0.048	0.001	0.000	0.000
IA	39	1	3	6	1	0	0	0.604	0.768	0.298	0.044	0.000	0.000
IA	41	3	7	4	1	0	0	0.399	0.282	0.046	0.006	0.000	0.000
IA	43	4	2	2	2	0	0	0.481	0.576	0.252	0.062	0.000	0.000
IA	45	5	6	8	2	1	0	1.690	1.970	0.670	0.066	0.000	0.000
IA	47	5	6	5	2	0	0	0.717	0.832	0.327	0.065	0.000	0.000
IA	49	14	6	4	1	1	0	1.144	1.154	0.503	0.186	0.049	0.000
IA	51	2	3	5	0	1	0	0.975	0.945	0.268	0.001	0.000	0.000
IA	53	5	2	3	2	2	0	4.203	5.696	2.631	0.723	0.084	0.000
IA	55	9	2	6	4	1	0	1.454	1.752	0.657	0.097	0.003	0.000
IA	57	2	8	4	1	0	0	0.524	0.246	0.023	0.003	0.000	0.000
IA	59	4	7	6	1	0	0	0.517	0.503	0.160	0.018	0.000	0.000
IA	61	2	6	7	2	1	0	1.034	1.156	0.453	0.121	0.021	0.000
IA	63	6	4	4	1	0	0	0.482	0.469	0.183	0.044	0.000	0.000
IA	65	8	3	3	1	1	1	0.323	0.303	0.117	0.035	0.015	0.004
IA	67	3	4	3	0	1	1	0.596	0.553	0.200	0.072	0.021	0.000
IA	69	4	4	1	1	0	1	0.769	0.759	0.371	0.187	0.083	0.025
IA	71	5	6	7	2	1	0	0.680	0.674	0.214	0.036	0.009	0.000
IA	73	4	2	3	0	1	0	0.611	0.615	0.238	0.071	0.021	0.000
IA	75	1	7	3	1	1	0	0.772	0.790	0.328	0.111	0.021	0.000
IA	77	5	2	3	0	2	0	0.807	0.897	0.499	0.236	0.070	0.000
IA	79	7	7	5	0	1	0	0.765	0.717	0.260	0.078	0.023	0.000
IA	81	2	6	8	1	1	0	0.951	1.113	0.416	0.080	0.021	0.000
IA	83	5	6	3	3	2	0	1.069	1.224	0.566	0.206	0.044	0.000

SPC Raw Tornado Data

IA	85	6	2	2	1	0	0	0.630	0.506	0.195	0.044	0.000	0.000
IA	87	2	5	1	0	0	0	0.165	0.081	0.001	0.000	0.000	0.000
IA	89	1	7	5	1	3	1	1.276	1.466	0.755	0.336	0.094	0.000
IA	91	2	6	3	0	0	0	0.234	0.211	0.051	0.000	0.000	0.000
IA	93	2	2	4	1	0	0	1.096	1.208	0.363	0.018	0.000	0.000
IA	95	4	12	4	0	2	0	1.206	1.108	0.276	0.005	0.002	0.000
IA	97	4	3	4	0	0	0	0.108	0.081	0.021	0.000	0.000	0.000
IA	99	5	3	3	2	1	0	0.628	0.592	0.209	0.062	0.005	0.000
IA	101	1	1	3	2	0	0	0.320	0.383	0.122	0.002	0.000	0.000
IA	103	5	7	7	0	0	0	1.268	1.325	0.387	0.000	0.000	0.000
IA	105	6	3	3	3	0	0	0.586	0.570	0.221	0.053	0.000	0.000
IA	107	6	7	2	2	1	0	0.901	0.929	0.280	0.019	0.000	0.000
IA	109	7	12	5	2	1	0	1.475	1.235	0.337	0.081	0.009	0.000
IA	111	10	2	5	1	0	0	0.811	0.715	0.201	0.006	0.000	0.000
IA	113	8	6	6	1	2	0	3.248	3.919	1.407	0.186	0.042	0.000
IA	115	3	2	3	0	0	0	0.475	0.467	0.121	0.000	0.000	0.000
IA	117	2	1	1	0	1	0	0.054	0.050	0.016	0.001	0.000	0.000
IA	119	7	9	6	0	0	0	0.619	0.569	0.147	0.000	0.000	0.000
IA	121	2	6	1	1	0	0	1.826	1.635	0.357	0.000	0.000	0.000
IA	123	4	5	3	0	1	0	0.463	0.438	0.128	0.001	0.000	0.000
IA	125	4	7	3	0	0	0	0.560	0.399	0.098	0.000	0.000	0.000
IA	127	5	4	4	3	1	0	1.796	2.407	1.198	0.364	0.023	0.000
IA	129	3	4	1	1	0	0	0.570	0.753	0.356	0.101	0.000	0.000
IA	131	2	3	4	0	0	0	0.252	0.201	0.039	0.000	0.000	0.000
IA	133	5	4	2	0	1	0	1.559	1.035	0.136	0.034	0.010	0.000
IA	135	2	2	1	0	1	0	0.296	0.189	0.021	0.001	0.000	0.000
IA	137	5	6	4	1	0	0	0.461	0.188	0.046	0.004	0.000	0.000
IA	139	11	7	2	1	0	0	0.684	0.468	0.127	0.021	0.000	0.000
IA	141	3	6	3	2	0	0	0.617	0.676	0.259	0.065	0.000	0.000
IA	143	4	0	7	2	0	0	1.612	1.995	0.666	0.026	0.000	0.000
IA	145	4	9	3	5	3	0	1.193	1.316	0.568	0.182	0.022	0.000
IA	147	6	5	7	0	0	0	1.070	0.902	0.232	0.000	0.000	0.000
IA	149	9	9	12	4	0	0	1.476	1.529	0.467	0.033	0.000	0.000
IA	151	6	6	6	0	2	0	1.285	1.416	0.640	0.236	0.070	0.000
IA	153	17	7	7	0	2	0	0.617	0.488	0.167	0.047	0.014	0.000
IA	155	6	7	6	1	1	0	1.223	0.974	0.251	0.032	0.009	0.000
IA	157	3	8	4	3	0	0	2.147	1.238	0.333	0.062	0.000	0.000
IA	159	2	4	5	1	0	0	2.924	3.539	1.118	0.018	0.000	0.000
IA	161	2	3	2	1	1	0	1.179	1.172	0.506	0.186	0.049	0.000
IA	163	16	11	3	5	0	0	1.144	0.988	0.337	0.091	0.000	0.000
IA	165	5	7	3	0	0	0	0.650	0.452	0.063	0.000	0.000	0.000
IA	167	6	4	5	1	0	0	0.961	0.642	0.162	0.002	0.000	0.000
IA	169	10	10	9	4	1	1	2.171	2.445	1.087	0.306	0.024	0.000
IA	171	5	10	6	4	1	0	0.925	0.891	0.371	0.126	0.023	0.000
IA	173	3	6	6	4	0	0	0.722	0.836	0.316	0.051	0.000	0.000
IA	175	7	3	4	1	1	0	3.817	4.711	1.756	0.266	0.049	0.000
IA	177	3	2	5	3	0	0	1.384	1.420	0.456	0.080	0.000	0.000
IA	179	7	3	6	0	0	0	0.761	0.816	0.248	0.000	0.000	0.000
IA	181	4	6	3	1	0	0	0.323	0.209	0.029	0.000	0.000	0.000

SPC Raw Tornado Data

IA	183	2	4	5	0	0	0	1.989	0.873	0.227	0.000	0.000	0.000
IA	185	4	6	8	0	4	0	0.853	0.976	0.394	0.101	0.030	0.000
IA	187	4	6	6	1	2	0	0.902	1.041	0.332	0.016	0.004	0.000
IA	189	4	6	5	0	0	0	0.645	0.441	0.070	0.000	0.000	0.000
IA	191	4	6	4	1	1	0	0.530	0.412	0.131	0.021	0.000	0.000
IA	193	11	8	6	3	1	0	1.119	0.884	0.294	0.081	0.010	0.000
IA	195	4	2	3	3	2	0	1.003	1.344	0.660	0.200	0.017	0.000
IA	197	7	6	3	0	0	1	0.539	0.500	0.191	0.073	0.034	0.010
IA	315	0	0	1	0	0	0	0.037	0.046	0.014	0.000	0.000	0.000
IA	888	2	0	1	1	2	0	0.017	0.008	0.004	0.001	0.000	0.000
IA	0	478	506	421	119	74	9	94.698	95.467	34.778	8.027	1.575	0.064
IA	46	478	506	421	119	74	9	3.7E-05	3.7E-05	1.4E-05	3.1E-06	6.1E-07	2.5E-08
ID	1	2	3	0	0	0	0	0.075	0.009	0.000	0.000	0.000	0.000
ID	3	1	1	0	0	0	0	0.118	0.048	0.000	0.000	0.000	0.000
ID	5	2	2	0	0	0	0	0.138	0.066	0.000	0.000	0.000	0.000
ID	11	6	3	0	0	0	0	0.063	0.013	0.000	0.000	0.000	0.000
ID	13	4	0	0	0	0	0	0.023	0.000	0.000	0.000	0.000	0.000
ID	17	0	2	1	0	0	0	0.044	0.036	0.007	0.000	0.000	0.000
ID	19	2	1	1	0	0	0	0.072	0.023	0.007	0.000	0.000	0.000
ID	23	1	2	0	0	0	0	0.026	0.011	0.000	0.000	0.000	0.000
ID	25	3	1	0	0	0	0	0.061	0.015	0.000	0.000	0.000	0.000
ID	27	3	0	0	0	0	0	0.021	0.000	0.000	0.000	0.000	0.000
ID	29	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
ID	31	3	0	0	0	0	0	0.024	0.000	0.000	0.000	0.000	0.000
ID	33	4	1	0	0	0	0	0.050	0.016	0.000	0.000	0.000	0.000
ID	39	0	2	0	0	0	0	0.018	0.010	0.000	0.000	0.000	0.000
ID	41	1	2	0	0	0	0	0.058	0.008	0.000	0.000	0.000	0.000
ID	43	1	1	0	0	0	0	0.008	0.002	0.000	0.000	0.000	0.000
ID	45	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
ID	47	2	4	0	0	0	0	0.054	0.023	0.000	0.000	0.000	0.000
ID	49	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
ID	51	3	7	0	0	0	0	0.176	0.090	0.000	0.000	0.000	0.000
ID	53	2	1	1	0	0	0	0.030	0.011	0.001	0.000	0.000	0.000
ID	55	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
ID	57	2	2	0	0	0	0	0.035	0.010	0.000	0.000	0.000	0.000
ID	59	0	3	0	0	0	0	0.012	0.007	0.000	0.000	0.000	0.000
ID	63	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
ID	65	3	2	1	0	0	0	0.055	0.024	0.002	0.000	0.000	0.000
ID	67	2	1	2	0	0	0	0.029	0.021	0.006	0.000	0.000	0.000
ID	69	0	1	1	0	0	0	0.026	0.026	0.006	0.000	0.000	0.000
ID	71	1	1	0	0	0	0	0.185	0.101	0.000	0.000	0.000	0.000
ID	75	0	1	0	0	0	0	0.010	0.005	0.000	0.000	0.000	0.000
ID	77	5	3	1	0	0	0	0.118	0.073	0.020	0.000	0.000	0.000
ID	79	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
ID	81	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
ID	83	5	3	0	0	0	0	0.045	0.009	0.000	0.000	0.000	0.000
ID	87	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
ID	0	63	53	8	0	0	0	1.617	0.667	0.049	0.000	0.000	0.000
ID	42	63	53	8	0	0	0	4.7E-07	1.9E-07	1.4E-08	0.0E+00	0.0E+00	0.0E+00

SPC Raw Tornado Data

IL	1	6	5	4	0	0	0	1.091	0.832	0.142	0.000	0.000	0.000
IL	3	2	4	2	0	0	0	0.134	0.098	0.017	0.000	0.000	0.000
IL	5	0	1	1	1	0	0	0.209	0.202	0.049	0.000	0.000	0.000
IL	7	2	2	0	0	1	0	0.546	0.571	0.322	0.160	0.048	0.000
IL	9	0	2	3	0	0	0	0.608	0.540	0.115	0.000	0.000	0.000
IL	11	4	7	1	3	0	0	1.980	1.446	0.424	0.123	0.000	0.000
IL	13	1	0	1	0	0	0	0.138	0.007	0.002	0.000	0.000	0.000
IL	15	3	3	2	1	0	0	0.160	0.168	0.059	0.008	0.000	0.000
IL	17	1	1	3	0	0	0	0.215	0.207	0.065	0.000	0.000	0.000
IL	19	13	8	8	4	1	0	1.881	2.480	1.142	0.281	0.000	0.000
IL	21	1	6	3	1	0	0	0.173	0.105	0.009	0.000	0.000	0.000
IL	23	5	2	0	0	0	0	0.075	0.005	0.000	0.000	0.000	0.000
IL	25	1	2	0	1	1	0	0.347	0.324	0.144	0.072	0.021	0.000
IL	27	1	3	2	2	1	0	0.250	0.276	0.102	0.022	0.000	0.000
IL	29	6	8	3	2	0	0	1.337	0.839	0.066	0.005	0.000	0.000
IL	31	9	16	13	1	2	0	1.692	1.488	0.515	0.187	0.043	0.000
IL	33	6	6	1	0	0	0	0.270	0.081	0.001	0.000	0.000	0.000
IL	35	0	4	0	1	0	0	0.057	0.033	0.001	0.000	0.000	0.000
IL	37	3	2	1	0	0	0	0.127	0.057	0.010	0.000	0.000	0.000
IL	39	2	6	1	0	1	0	1.385	0.787	0.011	0.001	0.000	0.000
IL	41	6	3	4	1	0	0	1.296	1.737	0.841	0.228	0.000	0.000
IL	43	3	7	7	1	1	0	1.099	0.483	0.131	0.001	0.000	0.000
IL	45	4	4	4	1	0	0	0.521	0.445	0.098	0.000	0.000	0.000
IL	47	0	2	2	0	1	0	0.687	0.773	0.380	0.165	0.049	0.000
IL	49	5	5	4	1	0	0	0.463	0.390	0.097	0.011	0.000	0.000
IL	51	1	3	2	0	0	0	0.310	0.347	0.103	0.000	0.000	0.000
IL	53	3	10	4	0	0	0	0.607	0.197	0.006	0.000	0.000	0.000
IL	55	1	1	1	1	1	0	0.227	0.284	0.111	0.018	0.000	0.000
IL	57	7	7	3	3	1	0	3.091	3.521	1.511	0.449	0.020	0.000
IL	59	1	2	0	1	0	0	0.019	0.008	0.002	0.001	0.000	0.000
IL	61	2	4	2	1	0	0	0.383	0.224	0.031	0.008	0.000	0.000
IL	63	2	3	4	0	0	0	0.529	0.486	0.145	0.000	0.000	0.000
IL	65	0	2	3	2	1	0	0.800	0.995	0.498	0.192	0.049	0.000
IL	67	2	9	2	2	0	0	1.010	1.263	0.506	0.101	0.000	0.000
IL	69	2	1	0	0	0	0	0.028	0.009	0.000	0.000	0.000	0.000
IL	71	5	1	1	0	0	0	0.081	0.065	0.020	0.000	0.000	0.000
IL	73	12	2	9	0	0	0	0.654	0.589	0.185	0.000	0.000	0.000
IL	75	8	9	9	2	0	0	0.734	0.742	0.249	0.036	0.000	0.000
IL	77	3	4	5	1	1	0	0.481	0.579	0.273	0.092	0.021	0.000
IL	79	1	4	0	2	1	0	0.287	0.321	0.173	0.080	0.021	0.000
IL	81	2	3	5	0	1	0	0.696	0.670	0.275	0.071	0.021	0.000
IL	83	0	6	2	0	0	0	0.796	0.451	0.003	0.000	0.000	0.000
IL	85	4	2	2	1	0	0	0.594	0.663	0.241	0.044	0.000	0.000
IL	87	1	1	3	0	0	0	0.041	0.025	0.003	0.000	0.000	0.000
IL	89	5	6	4	0	0	0	0.351	0.211	0.024	0.000	0.000	0.000
IL	91	2	7	3	3	1	0	1.482	1.617	0.673	0.225	0.023	0.000
IL	93	3	2	1	2	0	1	0.932	0.871	0.440	0.207	0.083	0.025
IL	95	5	4	3	2	0	0	0.689	0.791	0.243	0.001	0.000	0.000
IL	97	2	5	3	0	3	0	0.363	0.273	0.104	0.030	0.009	0.000

SPC Raw Tornado Data

IL	99	8	7	8	0	0	0	1.699	0.729	0.185	0.000	0.000	0.000
IL	101	0	2	4	1	0	0	0.370	0.291	0.054	0.006	0.000	0.000
IL	103	8	6	5	0	0	0	0.544	0.399	0.071	0.000	0.000	0.000
IL	105	3	8	3	1	0	0	2.039	2.223	0.734	0.044	0.000	0.000
IL	107	6	6	3	4	1	0	2.229	2.778	1.234	0.356	0.020	0.000
IL	109	6	6	3	2	0	0	0.421	0.242	0.089	0.023	0.000	0.000
IL	111	7	0	4	0	3	0	0.315	0.199	0.103	0.043	0.013	0.000
IL	113	33	21	14	1	0	0	4.308	1.438	0.298	0.018	0.000	0.000
IL	115	19	4	2	3	1	0	2.172	2.615	1.349	0.516	0.110	0.000
IL	117	3	0	6	0	0	0	1.465	1.789	0.566	0.000	0.000	0.000
IL	119	8	7	7	5	2	0	0.788	0.821	0.331	0.077	0.004	0.000
IL	121	0	5	1	0	0	0	0.036	0.022	0.001	0.000	0.000	0.000
IL	123	1	1	0	2	0	0	0.107	0.153	0.077	0.022	0.000	0.000
IL	125	6	6	3	3	0	0	0.908	1.225	0.571	0.151	0.000	0.000
IL	127	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
IL	129	1	0	0	1	0	0	1.014	1.543	0.784	0.228	0.000	0.000
IL	131	3	4	3	2	0	0	0.422	0.312	0.057	0.009	0.000	0.000
IL	133	3	9	4	1	0	0	0.764	0.649	0.140	0.002	0.000	0.000
IL	135	4	5	4	3	0	0	0.414	0.528	0.244	0.066	0.000	0.000
IL	137	6	2	3	1	0	0	0.260	0.152	0.014	0.000	0.000	0.000
IL	139	1	1	1	0	0	0	0.092	0.050	0.001	0.000	0.000	0.000
IL	141	5	8	1	1	0	0	0.243	0.107	0.033	0.008	0.000	0.000
IL	143	10	2	1	2	1	0	0.409	0.263	0.081	0.025	0.002	0.000
IL	145	1	1	1	3	0	1	0.105	0.114	0.061	0.034	0.015	0.004
IL	147	4	4	1	0	1	0	0.354	0.153	0.002	0.001	0.000	0.000
IL	149	2	1	3	2	0	0	0.726	0.955	0.377	0.059	0.000	0.000
IL	151	1	1	1	1	0	0	0.032	0.031	0.010	0.001	0.000	0.000
IL	153	0	0	3	0	0	0	0.007	0.009	0.003	0.000	0.000	0.000
IL	155	1	0	3	1	0	0	0.064	0.074	0.024	0.000	0.000	0.000
IL	157	5	7	5	4	0	0	1.779	1.034	0.223	0.050	0.000	0.000
IL	159	1	2	3	0	1	0	1.024	0.915	0.266	0.071	0.021	0.000
IL	161	2	6	3	3	0	0	0.854	1.150	0.531	0.146	0.000	0.000
IL	163	8	7	7	3	1	0	1.401	1.421	0.476	0.045	0.000	0.000
IL	165	3	1	3	0	0	0	0.170	0.181	0.055	0.000	0.000	0.000
IL	167	12	16	6	4	1	0	4.115	4.291	1.770	0.519	0.009	0.000
IL	169	3	3	3	1	0	0	0.447	0.561	0.223	0.040	0.000	0.000
IL	171	1	1	1	1	0	0	0.214	0.202	0.049	0.000	0.000	0.000
IL	173	6	4	2	1	0	0	0.496	0.452	0.167	0.021	0.000	0.000
IL	175	2	1	2	0	0	0	0.156	0.104	0.014	0.000	0.000	0.000
IL	177	0	2	1	0	0	0	0.321	0.373	0.112	0.000	0.000	0.000
IL	179	12	9	7	2	0	0	1.198	1.122	0.416	0.103	0.000	0.000
IL	181	2	1	3	1	0	0	0.180	0.230	0.095	0.018	0.000	0.000
IL	183	16	7	5	1	1	0	0.556	0.349	0.060	0.001	0.000	0.000
IL	185	1	3	3	0	2	0	0.962	1.154	0.541	0.194	0.058	0.000
IL	187	4	2	2	0	0	0	0.324	0.242	0.042	0.000	0.000	0.000
IL	189	3	8	3	0	0	0	1.462	0.776	0.104	0.000	0.000	0.000
IL	191	2	4	3	1	2	0	1.198	1.477	0.738	0.280	0.070	0.000
IL	193	2	3	3	0	0	0	0.271	0.243	0.056	0.000	0.000	0.000
IL	195	6	3	4	1	1	0	0.951	1.112	0.412	0.051	0.002	0.000

SPC Raw Tornado Data

IL	197	17	15	5	2	0	1	2.254	1.488	0.434	0.204	0.083	0.025
IL	199	0	1	1	1	2	0	0.241	0.288	0.159	0.075	0.021	0.000
IL	201	3	1	2	0	0	0	0.065	0.024	0.002	0.000	0.000	0.000
IL	203	11	5	4	0	0	0	0.852	0.356	0.014	0.000	0.000	0.000
IL	888	1	3	2	3	0	0	0.663	0.375	0.005	0.001	0.000	0.000
IL	0	431	440	316	113	39	3	76.392	69.359	25.022	6.327	0.839	0.054
IL	46	431	440	316	113	39	3	3.0E-05	2.7E-05	9.8E-06	2.5E-06	3.3E-07	2.1E-08
IN	1	3	8	2	0	1	0	0.178	0.109	0.011	0.001	0.000	0.000
IN	3	3	10	3	1	0	0	0.132	0.085	0.012	0.000	0.000	0.000
IN	5	3	5	5	2	1	0	1.399	1.520	0.788	0.375	0.110	0.000
IN	7	7	1	3	0	1	0	0.922	0.944	0.524	0.248	0.074	0.000
IN	9	0	0	0	1	1	0	1.063	1.278	0.746	0.371	0.110	0.000
IN	11	3	6	9	2	1	0	1.133	0.993	0.277	0.045	0.000	0.000
IN	13	2	1	0	0	0	0	0.068	0.016	0.000	0.000	0.000	0.000
IN	15	3	2	2	1	2	0	0.349	0.347	0.156	0.059	0.010	0.000
IN	17	5	4	4	0	1	0	0.344	0.068	0.007	0.001	0.000	0.000
IN	19	1	5	2	2	1	1	1.696	2.008	1.049	0.459	0.111	0.000
IN	21	0	3	0	0	0	0	0.050	0.028	0.000	0.000	0.000	0.000
IN	23	1	2	5	2	2	0	1.155	1.341	0.758	0.372	0.111	0.000
IN	25	0	1	1	0	0	1	0.140	0.163	0.049	0.001	0.000	0.000
IN	27	2	6	4	1	1	0	0.625	0.726	0.396	0.183	0.049	0.000
IN	29	5	0	1	0	2	0	0.559	0.550	0.235	0.066	0.020	0.000
IN	31	2	5	2	1	1	0	0.240	0.169	0.025	0.001	0.000	0.000
IN	33	3	1	1	0	0	0	0.084	0.071	0.020	0.000	0.000	0.000
IN	35	1	6	4	2	1	0	0.372	0.320	0.091	0.026	0.000	0.000
IN	37	0	4	2	1	0	0	0.077	0.057	0.009	0.000	0.000	0.000
IN	39	9	3	4	2	4	0	0.594	0.650	0.335	0.144	0.043	0.000
IN	41	1	1	3	1	1	0	0.041	0.038	0.013	0.002	0.000	0.000
IN	43	1	0	0	1	0	0	0.202	0.296	0.151	0.044	0.000	0.000
IN	45	3	1	1	0	0	0	0.327	0.103	0.001	0.000	0.000	0.000
IN	47	1	2	2	0	1	0	0.104	0.057	0.003	0.001	0.000	0.000
IN	49	4	1	3	2	1	0	0.362	0.410	0.130	0.001	0.000	0.000
IN	51	1	7	0	1	2	0	0.745	0.859	0.485	0.239	0.070	0.000
IN	53	3	4	3	1	2	0	0.151	0.129	0.034	0.003	0.001	0.000
IN	55	0	5	1	0	0	0	0.128	0.115	0.025	0.000	0.000	0.000
IN	57	7	7	3	1	1	0	1.151	0.661	0.029	0.001	0.000	0.000
IN	59	2	1	7	2	2	0	0.982	1.141	0.516	0.167	0.048	0.000
IN	61	2	5	2	0	0	2	0.189	0.176	0.051	0.001	0.001	0.000
IN	63	9	1	7	0	0	0	0.199	0.085	0.026	0.000	0.000	0.000
IN	65	3	1	5	1	3	0	0.761	0.903	0.434	0.162	0.048	0.000
IN	67	3	1	3	2	1	0	0.675	0.388	0.124	0.007	0.000	0.000
IN	69	2	4	4	1	0	0	0.431	0.468	0.134	0.000	0.000	0.000
IN	71	1	6	1	3	1	0	1.097	1.266	0.474	0.101	0.021	0.000
IN	73	3	7	4	1	1	0	0.066	0.037	0.006	0.001	0.000	0.000
IN	75	1	3	3	0	1	0	0.269	0.312	0.096	0.001	0.000	0.000
IN	77	1	1	3	3	2	0	0.726	1.015	0.525	0.180	0.021	0.000
IN	79	2	2	2	1	0	0	0.276	0.250	0.060	0.000	0.000	0.000
IN	81	3	3	2	3	0	0	0.448	0.585	0.267	0.070	0.000	0.000
IN	83	4	4	6	1	2	0	1.869	2.167	0.997	0.338	0.098	0.000

SPC Raw Tornado Data

IN	85	6	4	3	3	1	0	0.156	0.123	0.035	0.004	0.000	0.000
IN	87	0	3	3	2	2	0	0.820	1.004	0.411	0.100	0.000	0.000
IN	89	1	8	7	3	0	0	0.662	0.603	0.161	0.013	0.000	0.000
IN	91	3	5	4	2	0	0	0.131	0.076	0.007	0.001	0.000	0.000
IN	93	0	3	3	2	2	0	2.193	3.103	1.623	0.566	0.070	0.000
IN	95	1	8	5	1	1	0	0.639	0.405	0.031	0.001	0.000	0.000
IN	97	6	16	5	4	1	0	1.147	0.876	0.200	0.053	0.009	0.000
IN	99	5	8	4	2	1	0	1.207	1.327	0.492	0.099	0.000	0.000
IN	101	1	2	1	1	1	0	0.584	0.709	0.397	0.183	0.049	0.000
IN	103	3	3	2	1	0	0	0.058	0.028	0.003	0.000	0.000	0.000
IN	105	0	6	5	1	0	0	0.313	0.423	0.182	0.040	0.000	0.000
IN	107	4	4	4	2	1	0	2.072	2.509	1.258	0.476	0.110	0.000
IN	109	3	2	5	2	0	0	0.785	1.129	0.540	0.142	0.000	0.000
IN	111	1	4	2	1	1	0	0.243	0.140	0.005	0.001	0.000	0.000
IN	113	2	4	2	1	1	0	0.667	0.895	0.411	0.102	0.000	0.000
IN	115	0	0	0	0	1	1	0.197	0.230	0.135	0.080	0.037	0.011
IN	117	2	4	1	0	1	0	1.137	0.936	0.332	0.165	0.049	0.000
IN	119	2	6	2	0	0	0	0.108	0.099	0.027	0.000	0.000	0.000
IN	121	6	1	0	1	0	0	0.099	0.060	0.029	0.008	0.000	0.000
IN	123	0	0	0	2	0	1	1.791	2.091	1.223	0.724	0.335	0.099
IN	125	1	6	0	0	3	0	1.212	1.413	0.806	0.401	0.120	0.000
IN	127	6	6	1	4	0	0	0.388	0.461	0.225	0.065	0.000	0.000
IN	129	3	2	0	0	0	0	0.036	0.011	0.000	0.000	0.000	0.000
IN	131	5	4	1	1	2	0	0.671	0.838	0.346	0.071	0.000	0.000
IN	133	3	5	4	1	0	0	1.309	1.348	0.496	0.098	0.000	0.000
IN	135	3	3	4	4	1	0	0.697	0.925	0.394	0.081	0.000	0.000
IN	137	1	7	2	0	1	0	0.383	0.393	0.105	0.001	0.000	0.000
IN	139	2	4	1	0	3	0	0.294	0.310	0.155	0.072	0.022	0.000
IN	141	5	4	3	3	1	0	0.662	0.675	0.369	0.173	0.049	0.000
IN	143	0	0	5	1	1	1	0.225	0.306	0.124	0.022	0.000	0.000
IN	145	4	5	10	4	1	0	2.958	3.536	1.303	0.220	0.049	0.000
IN	147	3	1	0	0	0	0	0.097	0.009	0.000	0.000	0.000	0.000
IN	149	4	2	3	2	0	0	0.543	0.778	0.388	0.112	0.000	0.000
IN	151	1	3	3	2	1	0	1.456	1.620	0.851	0.371	0.110	0.000
IN	153	4	1	3	1	0	0	0.152	0.139	0.050	0.011	0.000	0.000
IN	155	3	1	1	0	1	0	0.094	0.070	0.021	0.001	0.000	0.000
IN	157	4	10	9	1	3	0	1.543	1.677	0.745	0.275	0.052	0.000
IN	159	4	3	4	1	0	0	0.096	0.040	0.004	0.000	0.000	0.000
IN	161	0	0	2	0	0	0	0.262	0.325	0.103	0.000	0.000	0.000
IN	163	4	5	2	1	0	0	0.269	0.183	0.031	0.002	0.000	0.000
IN	165	4	1	3	1	0	0	0.329	0.176	0.055	0.000	0.000	0.000
IN	167	3	6	4	1	0	0	0.321	0.104	0.018	0.000	0.000	0.000
IN	169	1	4	1	1	0	0	0.379	0.405	0.117	0.004	0.000	0.000
IN	171	3	2	1	2	0	0	0.652	0.758	0.359	0.099	0.000	0.000
IN	173	2	1	3	0	0	0	0.038	0.028	0.008	0.000	0.000	0.000
IN	175	2	3	6	1	0	1	0.412	0.416	0.154	0.021	0.000	0.000
IN	177	3	6	3	0	1	0	0.834	0.593	0.105	0.001	0.000	0.000
IN	179	2	5	3	0	1	0	0.764	0.605	0.106	0.001	0.000	0.000
IN	181	6	1	3	0	1	0	0.101	0.042	0.013	0.001	0.000	0.000

SPC Raw Tornado Data

IN	183	4	4	1	0	0	0	0.136	0.042	0.002	0.000	0.000	0.000
IN	888	0	0	0	2	1	0	0.004	0.006	0.003	0.001	0.000	0.000
IN	0	246	336	263	108	77	8	54.707	57.901	25.024	8.532	2.015	0.111
IN	46	246	336	263	108	77	8	3.3E-05	3.5E-05	1.5E-05	5.2E-06	1.2E-06	6.7E-08
KS	1	4	7	4	0	0	0	0.350	0.217	0.045	0.000	0.000	0.000
KS	3	2	2	4	1	1	0	1.775	2.392	1.182	0.388	0.048	0.000
KS	5	4	8	2	2	0	0	0.561	0.474	0.105	0.001	0.000	0.000
KS	7	11	3	1	1	1	0	1.358	1.009	0.424	0.112	0.004	0.000
KS	9	16	9	5	5	1	0	1.711	1.733	0.782	0.222	0.023	0.000
KS	11	5	2	4	0	0	0	0.277	0.149	0.031	0.000	0.000	0.000
KS	13	10	10	7	2	0	0	0.979	0.787	0.192	0.001	0.000	0.000
KS	15	29	11	8	0	1	1	3.088	1.791	0.822	0.443	0.201	0.057
KS	17	16	4	4	2	0	0	1.243	0.827	0.328	0.069	0.000	0.000
KS	19	7	2	1	0	1	0	0.878	0.831	0.237	0.001	0.000	0.000
KS	21	8	9	5	1	1	0	0.655	0.567	0.136	0.001	0.000	0.000
KS	23	12	5	3	0	0	0	1.562	1.089	0.325	0.000	0.000	0.000
KS	25	6	1	3	0	0	0	0.133	0.025	0.007	0.000	0.000	0.000
KS	27	12	7	6	2	0	0	1.171	0.729	0.124	0.018	0.000	0.000
KS	29	15	10	5	3	1	0	1.694	0.977	0.372	0.173	0.049	0.000
KS	31	8	5	4	0	1	0	0.270	0.122	0.006	0.001	0.000	0.000
KS	33	8	5	2	1	0	0	0.342	0.238	0.094	0.021	0.000	0.000
KS	35	18	7	3	2	3	1	1.127	0.888	0.298	0.102	0.022	0.000
KS	37	4	9	8	3	0	0	1.468	2.019	0.954	0.254	0.000	0.000
KS	39	14	5	2	1	0	0	0.484	0.401	0.105	0.000	0.000	0.000
KS	41	11	8	4	3	0	0	0.280	0.137	0.031	0.007	0.000	0.000
KS	43	8	1	2	2	0	0	0.979	0.275	0.108	0.018	0.000	0.000
KS	45	7	9	5	4	1	0	2.402	2.943	1.362	0.420	0.021	0.000
KS	47	1	3	2	3	0	0	0.184	0.253	0.123	0.035	0.000	0.000
KS	49	8	4	3	1	1	0	1.757	0.740	0.203	0.044	0.000	0.000
KS	51	8	10	8	4	0	0	0.941	1.000	0.439	0.111	0.000	0.000
KS	53	8	9	3	3	0	0	1.270	1.540	0.708	0.204	0.000	0.000
KS	55	38	9	11	3	0	0	2.449	1.461	0.555	0.124	0.000	0.000
KS	57	17	10	5	1	1	0	0.700	0.418	0.076	0.022	0.004	0.000
KS	59	8	4	6	2	0	1	0.719	0.737	0.376	0.197	0.086	0.025
KS	61	2	3	3	0	0	0	1.169	1.065	0.247	0.000	0.000	0.000
KS	63	13	1	2	0	0	0	0.452	0.358	0.112	0.000	0.000	0.000
KS	65	7	8	5	0	0	0	0.805	0.630	0.170	0.000	0.000	0.000
KS	67	4	2	3	1	1	0	1.576	1.458	0.590	0.208	0.048	0.000
KS	69	6	4	4	1	0	0	0.426	0.391	0.155	0.040	0.000	0.000
KS	71	10	5	0	0	0	0	0.121	0.024	0.000	0.000	0.000	0.000
KS	73	13	3	8	2	1	0	1.431	1.179	0.365	0.055	0.000	0.000
KS	75	8	2	5	0	0	0	0.840	0.629	0.162	0.000	0.000	0.000
KS	77	18	7	1	0	0	0	0.844	0.220	0.014	0.000	0.000	0.000
KS	79	24	3	6	3	0	2	3.107	2.520	1.327	0.657	0.276	0.082
KS	81	4	6	4	0	0	0	0.664	0.431	0.042	0.000	0.000	0.000
KS	83	12	11	6	2	1	0	1.465	1.635	0.777	0.231	0.010	0.000
KS	85	9	4	5	2	1	0	3.829	2.569	0.892	0.110	0.020	0.000
KS	87	6	9	4	3	1	0	1.717	2.110	0.940	0.255	0.000	0.000
KS	89	9	12	5	0	0	0	2.759	1.773	0.319	0.000	0.000	0.000

SPC Raw Tornado Data

KS	91	10	9	5	2	1	0	0.478	0.281	0.058	0.009	0.000	0.000
KS	93	12	6	2	2	0	0	1.101	1.034	0.511	0.146	0.000	0.000
KS	95	16	7	2	0	0	0	1.325	0.235	0.030	0.000	0.000	0.000
KS	97	8	5	1	0	1	0	1.121	0.492	0.103	0.001	0.000	0.000
KS	99	5	2	4	2	1	0	1.425	1.521	0.459	0.022	0.000	0.000
KS	101	5	5	0	2	0	0	0.255	0.180	0.067	0.019	0.000	0.000
KS	103	4	4	5	1	3	0	1.403	1.266	0.433	0.149	0.031	0.000
KS	105	6	2	1	2	0	0	0.931	0.358	0.159	0.041	0.000	0.000
KS	107	1	4	3	0	0	0	0.445	0.431	0.107	0.000	0.000	0.000
KS	109	6	2	1	0	0	0	0.279	0.052	0.005	0.000	0.000	0.000
KS	111	15	8	8	1	1	0	1.350	1.281	0.530	0.167	0.049	0.000
KS	113	14	5	7	2	2	2	2.869	3.166	1.573	0.752	0.280	0.082
KS	115	10	6	5	2	0	1	3.046	3.363	1.484	0.433	0.083	0.025
KS	117	9	8	3	1	0	0	0.653	0.414	0.099	0.000	0.000	0.000
KS	119	13	6	3	1	0	0	1.288	1.035	0.250	0.003	0.000	0.000
KS	121	5	2	4	2	0	1	0.331	0.249	0.087	0.020	0.000	0.000
KS	123	8	11	10	2	1	0	3.288	3.172	0.891	0.008	0.001	0.000
KS	125	10	6	2	1	0	0	0.665	0.400	0.092	0.018	0.000	0.000
KS	127	10	3	4	1	0	0	2.061	1.870	0.500	0.006	0.000	0.000
KS	129	4	4	2	1	0	0	0.313	0.327	0.109	0.006	0.000	0.000
KS	131	4	2	1	0	0	0	0.393	0.359	0.102	0.000	0.000	0.000
KS	133	4	7	5	0	0	0	1.847	2.041	0.590	0.000	0.000	0.000
KS	135	10	3	4	4	1	0	1.693	1.015	0.472	0.126	0.000	0.000
KS	137	7	2	3	0	0	0	0.305	0.159	0.011	0.000	0.000	0.000
KS	139	13	5	5	0	1	0	0.984	0.686	0.160	0.001	0.000	0.000
KS	141	12	14	2	1	2	0	2.791	1.923	0.757	0.325	0.097	0.000
KS	143	4	4	1	3	0	0	0.467	0.518	0.234	0.062	0.000	0.000
KS	145	11	6	4	3	1	0	1.448	1.728	0.735	0.164	0.000	0.000
KS	147	14	9	1	0	2	0	1.127	0.804	0.348	0.161	0.048	0.000
KS	149	11	8	2	1	0	0	1.694	1.441	0.376	0.040	0.000	0.000
KS	151	23	2	5	3	0	0	1.746	1.424	0.599	0.131	0.000	0.000
KS	153	11	9	4	3	0	0	0.591	0.445	0.131	0.019	0.000	0.000
KS	155	17	7	7	4	1	1	2.883	3.197	1.491	0.613	0.214	0.057
KS	157	8	6	6	1	0	0	1.223	1.000	0.220	0.021	0.000	0.000
KS	159	14	6	1	4	1	0	1.807	1.912	0.823	0.254	0.020	0.000
KS	161	10	6	0	1	0	0	0.345	0.316	0.138	0.040	0.000	0.000
KS	163	10	8	3	3	1	0	2.360	2.195	0.965	0.433	0.110	0.000
KS	165	9	3	3	1	0	0	0.418	0.139	0.012	0.002	0.000	0.000
KS	167	11	9	3	2	1	0	1.315	1.034	0.496	0.208	0.048	0.000
KS	169	15	5	2	2	0	0	0.400	0.165	0.015	0.003	0.000	0.000
KS	171	15	6	3	1	0	0	0.938	0.443	0.014	0.000	0.000	0.000
KS	173	33	14	10	6	1	1	3.505	3.512	1.636	0.686	0.212	0.057
KS	175	5	7	2	2	0	0	1.182	1.225	0.386	0.045	0.000	0.000
KS	177	11	8	10	4	2	1	2.445	2.749	1.210	0.425	0.131	0.025
KS	179	3	4	2	1	0	0	0.771	0.758	0.350	0.098	0.000	0.000
KS	181	44	11	5	1	0	0	1.381	0.712	0.146	0.006	0.000	0.000
KS	183	10	8	7	2	1	0	2.155	1.510	0.233	0.013	0.000	0.000
KS	185	17	11	1	4	0	0	1.876	2.078	0.842	0.215	0.000	0.000
KS	187	10	3	4	0	0	0	0.141	0.059	0.016	0.000	0.000	0.000

SPC Raw Tornado Data

KS	189	8	2	4	1	1	0	1.018	0.991	0.504	0.200	0.048	0.000
KS	191	24	7	4	2	1	2	2.328	1.474	0.480	0.093	0.001	0.000
KS	193	19	4	4	0	0	0	1.335	1.077	0.250	0.000	0.000	0.000
KS	195	7	6	3	3	1	0	1.509	2.013	0.942	0.247	0.001	0.000
KS	197	8	6	5	1	1	0	3.479	2.391	0.377	0.035	0.010	0.000
KS	199	15	3	0	1	0	0	0.395	0.108	0.048	0.014	0.000	0.000
KS	201	6	4	2	2	0	0	0.219	0.167	0.051	0.003	0.000	0.000
KS	203	12	2	2	1	0	0	1.222	1.236	0.485	0.101	0.000	0.000
KS	205	1	6	1	0	0	0	0.957	0.929	0.229	0.000	0.000	0.000
KS	207	3	0	2	1	1	0	0.425	0.506	0.166	0.005	0.000	0.000
KS	209	2	2	1	0	1	0	0.034	0.019	0.005	0.001	0.000	0.000
KS	888	1	2	7	8	4	2	0.046	0.049	0.021	0.006	0.001	0.000
KS	0	1111	610	404	168	54	16	131.845	111.398	41.278	11.143	2.198	0.409
KS	46	1111	610	404	168	54	16	3.5E-05	3.0E-05	1.1E-05	3.0E-06	5.8E-07	1.1E-07
KY	1	0	0	2	0	1	0	0.114	0.141	0.045	0.001	0.000	0.000
KY	3	0	1	0	0	0	0	0.107	0.060	0.000	0.000	0.000	0.000
KY	5	2	1	2	0	1	0	1.196	1.364	0.762	0.371	0.110	0.000
KY	7	2	0	0	1	0	0	0.019	0.004	0.002	0.001	0.000	0.000
KY	9	1	1	1	2	0	0	0.089	0.087	0.035	0.009	0.000	0.000
KY	11	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
KY	13	1	0	0	1	0	0	0.084	0.121	0.062	0.018	0.000	0.000
KY	15	3	7	3	0	0	1	0.750	0.354	0.023	0.001	0.000	0.000
KY	19	0	1	1	1	0	0	0.086	0.127	0.062	0.018	0.000	0.000
KY	21	0	3	1	1	0	0	0.761	0.825	0.230	0.000	0.000	0.000
KY	23	0	1	1	0	1	0	0.015	0.011	0.002	0.001	0.000	0.000
KY	25	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
KY	27	1	1	1	0	0	1	0.524	0.579	0.324	0.184	0.086	0.025
KY	29	1	1	1	1	0	0	0.410	0.479	0.164	0.018	0.000	0.000
KY	31	0	1	0	2	0	0	0.042	0.061	0.030	0.009	0.000	0.000
KY	33	1	1	2	1	1	0	0.088	0.077	0.024	0.001	0.000	0.000
KY	35	1	7	0	0	2	0	0.723	0.585	0.300	0.149	0.044	0.000
KY	37	0	1	1	0	0	0	0.031	0.019	0.001	0.000	0.000	0.000
KY	41	3	1	1	1	1	0	0.168	0.179	0.094	0.040	0.010	0.000
KY	43	1	1	0	0	0	0	0.029	0.003	0.000	0.000	0.000	0.000
KY	45	0	0	0	1	0	0	0.436	0.666	0.339	0.098	0.000	0.000
KY	47	1	1	1	2	1	0	0.340	0.461	0.201	0.045	0.000	0.000
KY	49	1	0	2	0	1	0	0.177	0.213	0.068	0.001	0.000	0.000
KY	51	3	0	2	0	0	0	0.041	0.005	0.002	0.000	0.000	0.000
KY	53	1	1	0	0	1	0	0.022	0.010	0.001	0.001	0.000	0.000
KY	55	0	0	3	0	0	0	0.693	0.858	0.272	0.000	0.000	0.000
KY	57	0	1	0	1	1	0	1.174	1.365	0.766	0.377	0.110	0.000
KY	59	1	1	4	1	0	0	1.106	1.654	0.818	0.228	0.000	0.000
KY	61	0	0	1	0	1	0	0.003	0.004	0.002	0.001	0.000	0.000
KY	63	0	1	0	0	0	0	0.029	0.016	0.000	0.000	0.000	0.000
KY	65	0	0	1	1	0	0	0.022	0.031	0.014	0.003	0.000	0.000
KY	67	1	4	1	0	0	0	0.250	0.169	0.020	0.000	0.000	0.000
KY	69	2	2	2	0	0	0	0.139	0.106	0.026	0.000	0.000	0.000
KY	71	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
KY	73	3	1	2	0	1	0	0.136	0.085	0.027	0.001	0.000	0.000

SPC Raw Tornado Data

KY	75	0	3	1	0	0	0	0.079	0.062	0.010	0.000	0.000	0.000
KY	79	1	1	0	0	1	0	0.540	0.602	0.331	0.165	0.049	0.000
KY	81	1	1	0	0	0	0	0.098	0.016	0.000	0.000	0.000	0.000
KY	83	1	3	1	0	0	0	0.119	0.107	0.025	0.000	0.000	0.000
KY	85	0	1	1	3	1	0	0.180	0.230	0.118	0.045	0.010	0.000
KY	87	0	1	1	0	2	0	0.366	0.400	0.212	0.105	0.031	0.000
KY	89	2	0	1	1	0	0	0.346	0.337	0.109	0.002	0.000	0.000
KY	91	4	1	0	1	0	0	0.033	0.005	0.001	0.000	0.000	0.000
KY	93	0	6	4	0	1	0	0.550	0.634	0.256	0.071	0.021	0.000
KY	97	0	0	1	1	0	0	0.437	0.669	0.339	0.098	0.000	0.000
KY	99	0	3	0	0	0	0	0.095	0.053	0.000	0.000	0.000	0.000
KY	101	1	3	4	2	0	0	0.106	0.105	0.030	0.001	0.000	0.000
KY	103	3	4	1	1	0	0	0.329	0.182	0.023	0.006	0.000	0.000
KY	105	0	0	2	0	0	0	0.587	0.727	0.230	0.000	0.000	0.000
KY	107	0	2	1	1	0	0	1.495	1.899	0.832	0.228	0.000	0.000
KY	111	1	2	1	0	1	0	0.296	0.289	0.153	0.071	0.021	0.000
KY	113	2	0	1	0	0	0	0.079	0.062	0.020	0.000	0.000	0.000
KY	115	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
KY	117	2	5	0	0	0	0	0.120	0.026	0.000	0.000	0.000	0.000
KY	119	0	0	1	0	0	0	0.123	0.152	0.048	0.000	0.000	0.000
KY	123	1	1	0	1	0	0	0.051	0.036	0.010	0.003	0.000	0.000
KY	125	1	4	5	2	0	0	0.678	0.698	0.192	0.001	0.000	0.000
KY	129	0	1	0	1	0	0	0.007	0.005	0.001	0.000	0.000	0.000
KY	131	1	0	0	0	0	0	0.024	0.000	0.000	0.000	0.000	0.000
KY	133	0	2	0	0	0	0	0.442	0.248	0.000	0.000	0.000	0.000
KY	135	1	2	1	0	0	0	0.142	0.059	0.010	0.000	0.000	0.000
KY	137	2	1	0	1	0	0	0.020	0.005	0.001	0.000	0.000	0.000
KY	139	0	0	1	1	0	0	0.124	0.155	0.049	0.000	0.000	0.000
KY	141	1	4	3	1	0	0	1.072	1.132	0.347	0.040	0.000	0.000
KY	143	0	0	0	1	0	0	0.001	0.002	0.001	0.000	0.000	0.000
KY	145	0	3	3	0	0	0	0.061	0.063	0.017	0.000	0.000	0.000
KY	147	0	0	5	1	1	0	0.474	0.614	0.222	0.021	0.000	0.000
KY	151	1	3	4	1	1	0	0.352	0.301	0.086	0.018	0.000	0.000
KY	155	0	2	0	0	0	0	0.185	0.103	0.000	0.000	0.000	0.000
KY	157	1	1	0	2	2	0	0.135	0.165	0.083	0.025	0.000	0.000
KY	161	0	2	1	1	0	0	0.051	0.053	0.015	0.002	0.000	0.000
KY	163	0	2	0	0	0	1	0.017	0.010	0.001	0.001	0.000	0.000
KY	165	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
KY	167	1	3	4	0	0	0	0.167	0.144	0.040	0.000	0.000	0.000
KY	169	1	1	2	0	0	0	0.165	0.081	0.025	0.000	0.000	0.000
KY	171	1	0	0	0	0	0	0.024	0.000	0.000	0.000	0.000	0.000
KY	173	0	2	0	1	0	0	0.046	0.062	0.029	0.008	0.000	0.000
KY	175	0	1	1	0	0	0	0.050	0.032	0.002	0.000	0.000	0.000
KY	177	0	1	3	2	0	0	0.152	0.212	0.094	0.021	0.000	0.000
KY	179	0	4	0	0	1	0	0.025	0.015	0.001	0.001	0.000	0.000
KY	181	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
KY	183	0	1	2	2	0	0	0.176	0.159	0.046	0.011	0.000	0.000
KY	185	1	2	0	1	1	0	0.106	0.092	0.030	0.009	0.000	0.000
KY	187	1	2	0	0	0	0	0.087	0.010	0.000	0.000	0.000	0.000

SPC Raw Tornado Data

KY	189	0	0	1	0	0	0	0.260	0.322	0.102	0.000	0.000	0.000
KY	191	0	1	1	0	1	0	0.558	0.659	0.356	0.165	0.049	0.000
KY	193	0	1	1	0	0	0	0.152	0.169	0.048	0.000	0.000	0.000
KY	197	1	1	2	0	0	0	0.271	0.311	0.095	0.000	0.000	0.000
KY	199	2	4	2	3	1	0	0.994	1.357	0.633	0.173	0.000	0.000
KY	201	0	0	0	1	0	0	0.001	0.002	0.001	0.000	0.000	0.000
KY	203	0	2	0	1	0	0	0.238	0.135	0.001	0.000	0.000	0.000
KY	205	0	1	1	0	0	0	0.042	0.049	0.014	0.000	0.000	0.000
KY	207	0	2	1	1	1	0	0.258	0.362	0.181	0.058	0.004	0.000
KY	209	0	4	3	1	1	0	0.889	0.918	0.243	0.001	0.000	0.000
KY	211	2	4	5	0	0	0	0.722	0.443	0.115	0.000	0.000	0.000
KY	213	0	4	3	1	0	0	0.490	0.568	0.211	0.044	0.000	0.000
KY	215	1	0	1	0	1	0	0.027	0.023	0.008	0.001	0.000	0.000
KY	217	1	1	2	0	1	0	0.036	0.032	0.010	0.001	0.000	0.000
KY	219	1	2	2	0	0	0	0.555	0.660	0.204	0.000	0.000	0.000
KY	221	1	1	2	1	1	0	0.916	1.155	0.417	0.041	0.000	0.000
KY	223	0	3	1	0	0	0	0.042	0.041	0.010	0.000	0.000	0.000
KY	225	4	2	1	1	0	0	0.126	0.150	0.072	0.021	0.000	0.000
KY	227	1	7	5	2	0	0	0.400	0.459	0.139	0.001	0.000	0.000
KY	231	0	0	0	2	3	0	0.836	1.212	0.634	0.215	0.022	0.000
KY	233	0	0	3	1	0	0	0.425	0.583	0.241	0.044	0.000	0.000
KY	235	0	0	1	2	0	0	0.016	0.024	0.012	0.003	0.000	0.000
KY	239	2	1	1	0	0	0	0.069	0.048	0.014	0.000	0.000	0.000
KY	888	0	0	2	2	0	0	0.007	0.009	0.004	0.001	0.000	0.000
KY	0	79	168	133	65	35	3	28.992	31.452	12.522	3.293	0.572	0.026
KY	46	79	168	133	65	35	3	1.6E-05	1.7E-05	6.9E-06	1.8E-06	3.1E-07	1.4E-08
LA	1	9	17	7	5	0	0	0.934	0.816	0.267	0.042	0.000	0.000
LA	3	3	2	1	1	0	0	0.211	0.281	0.140	0.040	0.000	0.000
LA	5	0	3	3	1	0	0	0.185	0.226	0.090	0.021	0.000	0.000
LA	7	4	2	6	0	0	0	0.295	0.294	0.087	0.000	0.000	0.000
LA	9	4	10	7	2	0	0	1.038	0.931	0.229	0.015	0.000	0.000
LA	11	3	13	3	0	0	0	0.856	0.698	0.138	0.000	0.000	0.000
LA	13	4	11	2	3	0	0	0.587	0.528	0.147	0.019	0.000	0.000
LA	15	1	20	3	7	2	0	1.136	1.110	0.359	0.088	0.009	0.000
LA	17	6	28	7	6	1	0	2.814	2.620	1.006	0.258	0.000	0.000
LA	19	21	31	6	4	0	0	1.432	1.237	0.337	0.018	0.000	0.000
LA	21	1	3	2	3	0	0	0.356	0.338	0.114	0.033	0.000	0.000
LA	23	17	13	5	2	0	0	0.569	0.402	0.113	0.021	0.000	0.000
LA	25	3	5	3	2	0	0	0.831	1.090	0.512	0.145	0.000	0.000
LA	27	0	10	3	3	0	0	1.355	0.838	0.047	0.001	0.000	0.000
LA	29	2	12	2	3	0	0	0.603	0.353	0.032	0.006	0.000	0.000
LA	31	3	16	6	6	1	0	3.166	3.902	1.690	0.473	0.023	0.000
LA	33	4	13	7	3	0	0	0.786	0.615	0.169	0.030	0.000	0.000
LA	35	1	10	7	2	0	1	0.348	0.226	0.029	0.004	0.000	0.000
LA	37	3	4	3	1	0	0	0.453	0.350	0.063	0.000	0.000	0.000
LA	39	2	11	2	0	0	0	0.246	0.216	0.049	0.000	0.000	0.000
LA	41	1	9	7	1	0	0	0.623	0.710	0.253	0.044	0.000	0.000
LA	43	1	6	3	1	1	0	0.709	0.410	0.010	0.001	0.000	0.000
LA	45	6	5	4	0	0	0	0.303	0.239	0.057	0.000	0.000	0.000

SPC Raw Tornado Data

LA	47	1	4	3	1	0	0	0.256	0.286	0.095	0.011	0.000	0.000
LA	49	2	10	5	1	0	0	0.734	0.664	0.160	0.006	0.000	0.000
LA	51	8	11	9	0	0	0	0.876	0.704	0.191	0.000	0.000	0.000
LA	53	8	9	7	2	0	0	1.625	1.775	0.664	0.092	0.000	0.000
LA	55	3	14	6	1	0	0	1.182	0.990	0.205	0.008	0.000	0.000
LA	57	2	15	1	0	1	0	0.252	0.175	0.029	0.005	0.001	0.000
LA	59	2	2	1	1	1	0	0.236	0.130	0.022	0.001	0.000	0.000
LA	61	4	3	7	0	0	0	1.027	0.902	0.198	0.000	0.000	0.000
LA	63	2	14	2	1	0	0	0.662	0.571	0.164	0.044	0.000	0.000
LA	65	6	12	12	5	0	1	2.479	2.768	1.160	0.399	0.129	0.038
LA	67	2	16	4	1	1	0	1.016	0.591	0.018	0.001	0.000	0.000
LA	69	4	8	5	5	0	0	0.715	0.705	0.206	0.010	0.000	0.000
LA	71	2	6	4	0	0	0	0.100	0.073	0.015	0.000	0.000	0.000
LA	73	10	14	3	1	1	0	0.656	0.480	0.165	0.066	0.020	0.000
LA	75	3	8	4	0	0	0	0.186	0.105	0.007	0.000	0.000	0.000
LA	77	0	8	1	2	0	0	0.114	0.086	0.017	0.005	0.000	0.000
LA	79	6	13	8	4	1	0	1.134	1.099	0.348	0.070	0.000	0.000
LA	81	0	2	3	0	0	0	0.055	0.056	0.014	0.000	0.000	0.000
LA	83	2	8	5	3	0	0	0.891	0.838	0.252	0.049	0.000	0.000
LA	85	3	5	5	5	0	0	0.742	0.769	0.309	0.060	0.000	0.000
LA	87	1	3	1	0	0	0	0.044	0.024	0.001	0.000	0.000	0.000
LA	89	0	4	1	1	0	0	0.275	0.166	0.008	0.000	0.000	0.000
LA	91	0	3	3	1	0	0	0.290	0.370	0.162	0.044	0.000	0.000
LA	95	5	3	1	1	1	0	0.318	0.258	0.091	0.038	0.009	0.000
LA	97	1	18	6	3	0	0	0.864	0.896	0.286	0.049	0.000	0.000
LA	99	2	5	4	1	0	0	0.193	0.215	0.072	0.006	0.000	0.000
LA	101	2	9	3	1	0	0	0.134	0.107	0.023	0.002	0.000	0.000
LA	103	7	9	3	0	0	0	0.388	0.240	0.038	0.000	0.000	0.000
LA	105	7	17	9	1	0	0	1.269	0.694	0.122	0.000	0.000	0.000
LA	107	4	6	5	3	0	0	1.108	1.379	0.611	0.154	0.000	0.000
LA	109	5	10	1	1	0	0	0.194	0.133	0.035	0.003	0.000	0.000
LA	111	2	14	5	3	0	0	1.010	0.812	0.154	0.007	0.000	0.000
LA	113	9	20	3	3	0	0	2.251	1.383	0.128	0.029	0.000	0.000
LA	115	3	14	6	0	1	0	2.127	2.449	0.889	0.165	0.049	0.000
LA	117	2	9	2	1	0	0	0.352	0.237	0.033	0.006	0.000	0.000
LA	119	3	17	5	3	1	0	1.124	1.254	0.451	0.088	0.000	0.000
LA	121	3	3	3	1	0	0	0.382	0.341	0.090	0.006	0.000	0.000
LA	123	0	6	7	2	0	0	0.564	0.610	0.174	0.005	0.000	0.000
LA	125	0	3	2	0	0	0	0.163	0.179	0.051	0.000	0.000	0.000
LA	127	0	11	4	3	0	0	0.699	0.696	0.219	0.044	0.000	0.000
LA	888	0	0	0	5	3	0	0.012	0.017	0.009	0.003	0.000	0.000
LA	0	225	620	268	123	16	2	48.533	44.658	13.828	2.735	0.241	0.038
LA	46	225	620	268	123	16	2	2.4E-05	2.2E-05	6.9E-06	1.4E-06	1.2E-07	1.9E-08
W3		33	79	30	4	2	0	4.14	2.881	0.658	0.087	0.01	0
		148						2.1E-06	1.4E-06	3.3E-07	4.3E-08	5.0E-09	0.0E+00
MA	1	0	2	0	0	0	0	0.007	0.004	0.000	0.000	0.000	0.000
MA	3	2	3	4	0	2	0	0.755	0.543	0.158	0.072	0.021	0.000
MA	5	1	3	1	1	0	0	0.138	0.044	0.003	0.000	0.000	0.000

SPC Raw Tornado Data

MA	7	0	0	1	0	0	0	0.002	0.002	0.001	0.000	0.000	0.000
MA	9	2	8	2	0	0	0	0.247	0.152	0.020	0.000	0.000	0.000
MA	11	6	10	4	0	0	0	0.597	0.256	0.015	0.000	0.000	0.000
MA	13	3	10	2	0	0	0	0.172	0.116	0.021	0.000	0.000	0.000
MA	15	0	4	2	1	0	0	0.114	0.111	0.028	0.000	0.000	0.000
MA	17	2	10	4	2	0	0	0.313	0.203	0.021	0.001	0.000	0.000
MA	21	3	2	1	1	0	0	0.081	0.038	0.002	0.000	0.000	0.000
MA	23	3	3	1	0	0	0	0.043	0.014	0.001	0.000	0.000	0.000
MA	27	2	17	9	3	1	0	1.934	2.393	1.240	0.498	0.110	0.000
MA	0	24	72	31	8	3	0	4.402	3.877	1.510	0.572	0.132	0.000
MA	45	24	72	31	8	3	0	1.2E-05	1.1E-05	4.3E-06	1.6E-06	3.7E-07	0.0E+00
MD	1	0	0	1	0	0	0	0.013	0.016	0.005	0.000	0.000	0.000
MD	3	5	10	1	1	0	0	0.703	0.381	0.045	0.001	0.000	0.000
MD	5	3	4	3	0	0	0	0.122	0.066	0.005	0.000	0.000	0.000
MD	9	2	2	2	0	0	0	0.091	0.054	0.011	0.000	0.000	0.000
MD	11	2	2	2	0	0	0	0.549	0.652	0.204	0.000	0.000	0.000
MD	13	3	4	1	1	0	0	0.079	0.037	0.008	0.000	0.000	0.000
MD	15	2	6	1	0	0	0	0.105	0.053	0.004	0.000	0.000	0.000
MD	17	4	4	3	0	0	0	0.149	0.066	0.011	0.000	0.000	0.000
MD	19	1	2	0	0	0	0	0.175	0.095	0.000	0.000	0.000	0.000
MD	21	2	11	2	1	0	0	1.148	0.651	0.013	0.002	0.000	0.000
MD	23	0	3	1	2	0	0	1.475	0.831	0.004	0.001	0.000	0.000
MD	25	7	3	2	0	0	0	0.108	0.040	0.008	0.000	0.000	0.000
MD	27	3	1	1	0	0	0	0.125	0.051	0.001	0.000	0.000	0.000
MD	29	2	2	1	0	0	0	0.647	0.389	0.020	0.000	0.000	0.000
MD	31	0	8	0	0	0	0	0.189	0.106	0.000	0.000	0.000	0.000
MD	33	1	7	2	0	0	0	0.376	0.258	0.029	0.000	0.000	0.000
MD	35	3	3	2	0	0	0	0.239	0.179	0.044	0.000	0.000	0.000
MD	37	5	5	1	0	0	0	0.192	0.098	0.010	0.000	0.000	0.000
MD	39	0	1	0	0	0	0	0.029	0.016	0.000	0.000	0.000	0.000
MD	41	0	3	0	0	0	0	0.052	0.029	0.000	0.000	0.000	0.000
MD	43	1	1	0	0	0	0	0.026	0.012	0.000	0.000	0.000	0.000
MD	45	2	4	0	0	0	0	0.051	0.017	0.000	0.000	0.000	0.000
MD	47	1	6	0	0	0	0	0.082	0.041	0.000	0.000	0.000	0.000
MD	0	49	92	26	5	0	0	6.726	4.140	0.421	0.004	0.000	0.000
MD	46	49	92	26	5	0	0	1.5E-05	9.2E-06	9.4E-07	8.2E-09	0.0E+00	0.0E+00
ME	1	1	1	2	0	0	0	0.050	0.050	0.015	0.000	0.000	0.000
ME	3	2	9	3	0	0	0	0.806	0.468	0.032	0.000	0.000	0.000
ME	5	2	3	0	0	0	0	0.079	0.016	0.000	0.000	0.000	0.000
ME	7	1	3	0	0	0	0	0.072	0.036	0.000	0.000	0.000	0.000
ME	9	0	1	0	0	0	0	0.010	0.006	0.000	0.000	0.000	0.000
ME	11	2	6	1	0	0	0	0.124	0.077	0.014	0.000	0.000	0.000
ME	13	1	0	0	0	0	0	0.024	0.000	0.000	0.000	0.000	0.000
ME	15	1	1	0	0	0	0	0.027	0.002	0.000	0.000	0.000	0.000
ME	17	2	3	0	0	0	0	0.053	0.013	0.000	0.000	0.000	0.000
ME	19	0	5	4	0	0	0	0.391	0.414	0.113	0.000	0.000	0.000
ME	21	1	2	0	0	0	0	0.097	0.051	0.000	0.000	0.000	0.000
ME	25	3	3	3	0	0	0	0.150	0.083	0.022	0.000	0.000	0.000
ME	27	0	2	1	0	0	0	0.065	0.048	0.006	0.000	0.000	0.000

SPC Raw Tornado Data

ME	29	2	1	1	0	0	0	0.172	0.035	0.010	0.000	0.000	0.000
ME	31	3	4	2	0	0	0	0.172	0.084	0.002	0.000	0.000	0.000
ME	0	21	44	17	0	0	0	2.292	1.383	0.215	0.000	0.000	0.000
ME	42	21	44	17	0	0	0	1.8E-06	1.1E-06	1.7E-07	0.0E+00	0.0E+00	0.0E+00
MI	1	1	4	1	3	0	0	0.422	0.573	0.266	0.072	0.000	0.000
MI	3	3	1	1	0	0	0	0.099	0.039	0.001	0.000	0.000	0.000
MI	5	4	9	7	1	0	1	1.408	1.167	0.297	0.080	0.037	0.011
MI	7	5	5	0	0	0	0	0.158	0.064	0.000	0.000	0.000	0.000
MI	9	1	3	1	1	0	0	0.411	0.417	0.112	0.003	0.000	0.000
MI	11	0	1	3	0	0	0	0.155	0.182	0.055	0.000	0.000	0.000
MI	13	1	0	1	0	0	0	0.014	0.007	0.002	0.000	0.000	0.000
MI	15	4	5	5	2	0	0	1.843	1.462	0.500	0.044	0.000	0.000
MI	17	4	1	3	1	0	0	0.538	0.766	0.373	0.101	0.000	0.000
MI	19	0	3	0	0	1	0	0.119	0.068	0.001	0.001	0.000	0.000
MI	21	7	7	10	0	0	0	0.829	0.702	0.170	0.000	0.000	0.000
MI	23	1	8	3	1	2	0	2.103	2.399	1.326	0.653	0.193	0.000
MI	25	2	7	1	1	0	0	1.159	1.022	0.258	0.006	0.000	0.000
MI	27	1	5	2	0	0	0	0.302	0.255	0.052	0.000	0.000	0.000
MI	29	1	1	1	0	0	0	0.025	0.011	0.001	0.000	0.000	0.000
MI	31	3	1	0	0	0	0	0.159	0.025	0.000	0.000	0.000	0.000
MI	33	4	2	0	0	0	0	0.096	0.030	0.000	0.000	0.000	0.000
MI	35	3	2	0	0	0	0	0.063	0.025	0.000	0.000	0.000	0.000
MI	37	2	6	5	0	2	0	0.704	0.828	0.305	0.051	0.015	0.000
MI	39	0	4	2	0	0	0	0.149	0.097	0.008	0.000	0.000	0.000
MI	41	2	2	2	1	0	0	0.279	0.362	0.168	0.048	0.000	0.000
MI	43	0	1	1	1	0	0	0.217	0.329	0.166	0.048	0.000	0.000
MI	45	2	9	4	0	1	0	0.876	0.832	0.352	0.160	0.048	0.000
MI	47	1	3	0	0	0	0	0.071	0.035	0.000	0.000	0.000	0.000
MI	49	6	8	8	2	1	1	1.180	1.030	0.405	0.195	0.087	0.025
MI	51	1	3	2	1	0	0	0.172	0.218	0.092	0.021	0.000	0.000
MI	53	1	1	0	0	0	0	0.013	0.003	0.000	0.000	0.000	0.000
MI	55	0	0	2	1	1	0	0.490	0.659	0.261	0.041	0.000	0.000
MI	57	0	0	9	0	0	0	0.321	0.397	0.126	0.000	0.000	0.000
MI	59	5	3	9	1	2	0	1.182	1.243	0.363	0.019	0.000	0.000
MI	61	1	0	0	0	0	0	0.069	0.000	0.000	0.000	0.000	0.000
MI	63	4	2	1	1	0	0	0.080	0.018	0.005	0.000	0.000	0.000
MI	65	6	8	5	0	0	0	0.632	0.676	0.202	0.000	0.000	0.000
MI	67	5	6	3	0	0	0	0.219	0.161	0.031	0.000	0.000	0.000
MI	69	2	6	1	2	0	0	1.105	1.305	0.465	0.069	0.000	0.000
MI	71	2	2	1	0	0	0	0.038	0.027	0.007	0.000	0.000	0.000
MI	73	1	5	1	0	0	0	0.250	0.141	0.004	0.000	0.000	0.000
MI	75	5	4	5	1	0	0	0.690	0.827	0.312	0.044	0.000	0.000
MI	77	8	6	1	2	1	0	0.737	0.722	0.329	0.094	0.009	0.000
MI	79	1	2	1	0	0	0	0.023	0.012	0.002	0.000	0.000	0.000
MI	81	3	11	5	1	1	1	0.609	0.515	0.131	0.019	0.000	0.000
MI	83	1	0	0	0	0	0	0.069	0.000	0.000	0.000	0.000	0.000
MI	85	0	1	0	0	0	0	0.044	0.025	0.000	0.000	0.000	0.000
MI	87	3	6	0	0	1	1	1.213	1.332	0.746	0.371	0.111	0.000
MI	89	1	1	0	0	0	0	0.131	0.048	0.000	0.000	0.000	0.000

SPC Raw Tornado Data

MI	91	10	8	7	1	2	0	0.436	0.286	0.070	0.001	0.000	0.000
MI	93	4	2	9	2	1	0	0.609	0.709	0.274	0.052	0.010	0.000
MI	95	1	1	0	0	0	0	0.034	0.016	0.000	0.000	0.000	0.000
MI	97	0	3	1	0	0	0	0.084	0.049	0.001	0.000	0.000	0.000
MI	99	5	6	2	2	1	0	0.560	0.697	0.358	0.130	0.020	0.000
MI	101	0	0	0	0	1	0	0.472	0.568	0.331	0.165	0.049	0.000
MI	103	3	1	0	0	0	0	0.025	0.002	0.000	0.000	0.000	0.000
MI	105	1	2	1	0	0	0	0.018	0.008	0.001	0.000	0.000	0.000
MI	107	0	3	3	1	0	0	0.430	0.544	0.221	0.048	0.000	0.000
MI	109	0	1	2	3	0	0	0.879	1.294	0.624	0.167	0.000	0.000
MI	111	3	3	1	0	0	0	0.118	0.041	0.004	0.000	0.000	0.000
MI	113	4	1	1	0	0	0	0.113	0.027	0.001	0.000	0.000	0.000
MI	115	5	9	6	2	4	0	0.689	0.538	0.128	0.032	0.009	0.000
MI	117	1	4	3	0	0	1	0.422	0.448	0.125	0.001	0.000	0.000
MI	119	2	1	0	0	0	0	0.036	0.009	0.000	0.000	0.000	0.000
MI	121	3	1	1	0	0	0	0.030	0.007	0.001	0.000	0.000	0.000
MI	123	1	6	2	0	0	0	0.176	0.133	0.021	0.000	0.000	0.000
MI	125	4	9	7	3	2	0	0.325	0.325	0.126	0.036	0.004	0.000
MI	127	0	3	2	0	0	0	0.184	0.146	0.025	0.000	0.000	0.000
MI	129	1	4	3	4	0	0	0.621	0.788	0.330	0.077	0.000	0.000
MI	131	1	1	0	0	0	0	0.444	0.246	0.000	0.000	0.000	0.000
MI	133	2	4	1	1	0	0	0.114	0.086	0.021	0.000	0.000	0.000
MI	135	0	2	1	0	0	0	0.160	0.146	0.032	0.000	0.000	0.000
MI	137	1	1	0	1	0	0	0.133	0.062	0.001	0.000	0.000	0.000
MI	139	5	5	5	0	1	1	0.731	0.658	0.245	0.072	0.021	0.000
MI	141	0	3	2	0	0	0	0.380	0.424	0.122	0.000	0.000	0.000
MI	143	3	3	2	0	0	0	0.098	0.042	0.002	0.000	0.000	0.000
MI	145	1	5	4	0	0	0	1.085	0.821	0.157	0.000	0.000	0.000
MI	147	1	8	1	2	2	0	1.175	1.354	0.715	0.324	0.083	0.000
MI	149	0	2	4	0	0	0	0.043	0.047	0.013	0.000	0.000	0.000
MI	151	2	7	0	1	0	0	0.329	0.356	0.151	0.044	0.000	0.000
MI	153	1	0	1	1	0	0	0.340	0.477	0.213	0.048	0.000	0.000
MI	155	3	9	6	0	1	0	0.559	0.367	0.076	0.001	0.000	0.000
MI	157	0	4	4	0	0	0	0.314	0.379	0.117	0.000	0.000	0.000
MI	159	1	4	7	2	0	0	1.209	1.471	0.601	0.145	0.000	0.000
MI	161	4	9	6	3	0	0	0.715	0.781	0.260	0.030	0.000	0.000
MI	163	12	5	6	2	1	0	0.626	0.254	0.101	0.032	0.009	0.000
MI	165	1	3	2	0	0	0	0.068	0.057	0.013	0.000	0.000	0.000
MI	888	1	0	0	2	1	1	0.011	0.008	0.004	0.002	0.000	0.000
MI	0	195	308	210	57	30	7	36.263	35.722	13.377	3.546	0.707	0.036
MI	45	195	308	210	57	30	7	1.4E-05	1.4E-05	5.2E-06	1.4E-06	2.8E-07	1.4E-08
MN	1	6	2	3	2	1	0	1.912	1.655	0.477	0.099	0.000	0.000
MN	3	3	3	2	0	4	0	0.535	0.586	0.238	0.071	0.021	0.000
MN	5	7	5	1	0	0	0	1.127	0.609	0.001	0.000	0.000	0.000
MN	7	3	4	0	0	0	0	1.873	1.041	0.000	0.000	0.000	0.000
MN	9	1	1	4	0	0	0	0.067	0.045	0.009	0.000	0.000	0.000
MN	11	1	1	1	0	0	0	0.012	0.005	0.001	0.000	0.000	0.000
MN	13	6	8	4	0	0	0	0.622	0.533	0.118	0.000	0.000	0.000
MN	15	6	4	2	0	0	0	0.464	0.033	0.002	0.000	0.000	0.000

SPC Raw Tornado Data

MN	17	1	4	1	0	0	0	0.095	0.029	0.001	0.000	0.000	0.000
MN	19	6	3	1	0	2	0	0.388	0.361	0.202	0.100	0.030	0.000
MN	21	2	9	2	3	1	0	0.499	0.574	0.241	0.069	0.000	0.000
MN	23	1	3	0	0	0	0	0.108	0.058	0.000	0.000	0.000	0.000
MN	25	3	3	0	0	1	0	0.711	0.390	0.028	0.014	0.004	0.000
MN	27	8	7	1	1	1	1	0.992	0.840	0.264	0.090	0.020	0.000
MN	29	3	1	3	0	0	0	0.111	0.061	0.004	0.000	0.000	0.000
MN	31	2	0	0	0	0	0	0.029	0.000	0.000	0.000	0.000	0.000
MN	33	1	3	3	0	0	0	0.515	0.498	0.122	0.000	0.000	0.000
MN	35	9	3	2	3	2	0	2.710	2.781	1.391	0.558	0.160	0.000
MN	37	4	8	1	0	0	0	0.237	0.119	0.001	0.000	0.000	0.000
MN	39	5	5	0	0	0	0	0.279	0.142	0.000	0.000	0.000	0.000
MN	41	6	1	3	0	0	0	0.354	0.259	0.080	0.000	0.000	0.000
MN	43	4	8	1	0	0	0	0.742	0.401	0.004	0.000	0.000	0.000
MN	45	4	2	1	1	1	0	0.576	0.679	0.260	0.048	0.000	0.000
MN	47	10	7	3	3	3	0	1.427	1.390	0.549	0.195	0.031	0.000
MN	49	5	2	0	1	0	0	0.309	0.324	0.151	0.044	0.000	0.000
MN	51	3	5	1	1	0	0	0.897	0.880	0.230	0.000	0.000	0.000
MN	53	5	4	4	4	2	0	1.530	1.897	0.898	0.295	0.048	0.000
MN	55	0	5	0	1	0	0	0.052	0.030	0.001	0.000	0.000	0.000
MN	57	2	1	0	0	0	0	0.020	0.006	0.000	0.000	0.000	0.000
MN	59	3	3	1	0	0	0	1.003	0.468	0.007	0.000	0.000	0.000
MN	61	2	5	1	0	0	0	0.075	0.038	0.001	0.000	0.000	0.000
MN	63	3	5	1	1	0	0	0.845	0.641	0.103	0.000	0.000	0.000
MN	65	0	4	1	0	0	0	0.017	0.011	0.001	0.000	0.000	0.000
MN	67	7	11	0	0	0	0	1.065	0.498	0.000	0.000	0.000	0.000
MN	69	7	4	0	0	0	0	0.314	0.137	0.000	0.000	0.000	0.000
MN	71	6	1	1	0	0	0	0.260	0.155	0.048	0.000	0.000	0.000
MN	73	0	3	0	0	0	0	0.105	0.059	0.000	0.000	0.000	0.000
MN	75	0	4	0	0	0	0	0.027	0.015	0.000	0.000	0.000	0.000
MN	77	2	1	1	0	0	0	0.192	0.103	0.001	0.000	0.000	0.000
MN	79	3	1	4	0	0	0	0.765	0.926	0.292	0.000	0.000	0.000
MN	81	4	4	1	0	0	0	0.163	0.100	0.020	0.000	0.000	0.000
MN	83	4	9	1	1	1	1	0.933	0.646	0.143	0.055	0.010	0.000
MN	85	3	5	1	0	1	0	1.046	0.893	0.346	0.165	0.049	0.000
MN	87	4	1	1	0	0	0	0.059	0.011	0.001	0.000	0.000	0.000
MN	89	5	4	0	0	0	0	0.422	0.201	0.000	0.000	0.000	0.000
MN	91	5	4	3	0	0	0	0.745	0.391	0.030	0.000	0.000	0.000
MN	93	7	2	1	0	0	0	0.150	0.060	0.001	0.000	0.000	0.000
MN	95	2	4	3	0	0	0	0.457	0.333	0.054	0.000	0.000	0.000
MN	97	3	6	2	0	0	0	0.068	0.033	0.004	0.000	0.000	0.000
MN	99	10	6	5	0	0	0	0.842	0.467	0.117	0.000	0.000	0.000
MN	101	2	7	3	2	1	2	1.196	0.988	0.356	0.147	0.048	0.013
MN	103	4	4	1	0	0	0	0.098	0.045	0.001	0.000	0.000	0.000
MN	105	4	6	3	0	0	1	0.925	0.886	0.300	0.079	0.037	0.011
MN	107	7	1	1	0	0	0	0.468	0.357	0.102	0.000	0.000	0.000
MN	109	13	6	6	0	2	0	0.363	0.173	0.042	0.001	0.000	0.000
MN	111	9	7	6	0	0	0	2.428	2.806	0.859	0.000	0.000	0.000
MN	113	1	2	2	0	0	0	0.056	0.035	0.008	0.000	0.000	0.000

SPC Raw Tornado Data

MN	115	5	1	0	0	0	0	0.414	0.116	0.000	0.000	0.000	0.000
MN	117	4	2	2	1	0	0	0.178	0.197	0.082	0.018	0.000	0.000
MN	119	11	7	5	0	0	0	0.595	0.277	0.026	0.000	0.000	0.000
MN	121	2	2	2	1	0	0	0.520	0.528	0.170	0.018	0.000	0.000
MN	123	0	2	0	2	1	0	0.249	0.314	0.141	0.041	0.000	0.000
MN	125	1	1	2	0	0	0	0.121	0.141	0.044	0.000	0.000	0.000
MN	127	4	7	5	2	0	1	0.683	0.622	0.193	0.042	0.000	0.000
MN	129	6	1	6	0	0	0	0.179	0.124	0.039	0.000	0.000	0.000
MN	131	4	3	2	1	0	0	0.810	0.877	0.294	0.044	0.000	0.000
MN	133	3	4	2	0	0	0	0.670	0.452	0.049	0.000	0.000	0.000
MN	135	11	4	1	0	0	0	0.457	0.345	0.094	0.000	0.000	0.000
MN	137	11	9	4	5	0	0	3.690	3.884	1.426	0.295	0.000	0.000
MN	139	0	1	1	0	0	0	0.017	0.011	0.001	0.000	0.000	0.000
MN	141	5	0	1	0	0	0	0.074	0.002	0.001	0.000	0.000	0.000
MN	143	7	6	1	1	0	0	1.001	1.010	0.300	0.021	0.000	0.000
MN	145	12	9	4	2	0	0	0.787	0.778	0.242	0.026	0.000	0.000
MN	147	4	5	0	1	1	0	0.270	0.109	0.002	0.001	0.000	0.000
MN	149	4	4	1	0	0	0	0.453	0.270	0.032	0.000	0.000	0.000
MN	151	6	3	3	0	0	0	0.442	0.184	0.054	0.000	0.000	0.000
MN	153	6	1	0	0	0	0	0.214	0.035	0.000	0.000	0.000	0.000
MN	155	2	2	0	1	0	0	0.346	0.265	0.071	0.021	0.000	0.000
MN	157	3	0	2	0	0	0	0.038	0.024	0.008	0.000	0.000	0.000
MN	159	2	3	2	0	0	0	0.101	0.085	0.020	0.000	0.000	0.000
MN	161	4	6	4	1	1	0	0.592	0.578	0.160	0.001	0.000	0.000
MN	163	3	1	3	1	0	0	0.452	0.552	0.188	0.011	0.000	0.000
MN	165	3	3	4	0	0	0	0.832	0.807	0.235	0.000	0.000	0.000
MN	167	1	4	1	2	0	0	0.257	0.335	0.154	0.044	0.000	0.000
MN	169	5	2	2	1	1	0	0.951	0.952	0.251	0.001	0.000	0.000
MN	171	2	5	2	1	0	0	0.326	0.374	0.134	0.021	0.000	0.000
MN	173	4	4	1	2	0	0	0.796	0.863	0.261	0.007	0.000	0.000
MN	888	0	2	1	4	1	0	0.016	0.017	0.006	0.002	0.000	0.000
MN	0	372	336	158	53	28	6	50.812	42.833	12.790	2.647	0.461	0.024
MN	46	372	336	158	53	28	6	1.4E-05	1.2E-05	3.5E-06	7.2E-07	1.3E-07	6.6E-09
MO	1	2	2	1	0	0	0	0.079	0.048	0.006	0.000	0.000	0.000
MO	3	7	9	1	0	0	0	0.360	0.163	0.002	0.000	0.000	0.000
MO	5	1	3	3	0	1	0	0.395	0.467	0.165	0.023	0.007	0.000
MO	7	4	5	2	1	0	0	0.386	0.376	0.121	0.021	0.000	0.000
MO	9	0	10	4	1	0	0	1.082	0.800	0.118	0.006	0.000	0.000
MO	11	6	7	1	2	0	0	0.935	0.700	0.155	0.044	0.000	0.000
MO	13	4	6	3	1	0	0	0.477	0.518	0.200	0.044	0.000	0.000
MO	15	7	5	2	4	0	0	1.199	1.437	0.642	0.184	0.000	0.000
MO	17	1	3	2	0	0	0	0.105	0.066	0.007	0.000	0.000	0.000
MO	19	8	10	4	2	0	0	1.066	0.851	0.183	0.012	0.000	0.000
MO	21	1	4	5	1	0	0	0.368	0.337	0.077	0.000	0.000	0.000
MO	23	4	3	4	3	0	0	0.553	0.720	0.335	0.092	0.000	0.000
MO	25	2	2	0	1	1	0	0.321	0.222	0.060	0.029	0.009	0.000
MO	27	8	10	2	0	0	0	1.041	0.178	0.008	0.000	0.000	0.000
MO	29	1	7	5	0	0	0	0.321	0.296	0.074	0.000	0.000	0.000
MO	31	5	8	7	0	0	0	1.093	1.186	0.348	0.000	0.000	0.000

SPC Raw Tornado Data

MO	33	4	2	2	0	1	0	0.105	0.083	0.022	0.001	0.000	0.000
MO	35	2	2	2	1	2	0	0.852	0.912	0.410	0.131	0.009	0.000
MO	37	8	7	0	4	0	0	0.307	0.175	0.075	0.022	0.000	0.000
MO	39	1	3	1	2	0	0	0.056	0.043	0.010	0.002	0.000	0.000
MO	41	2	6	1	2	2	0	0.639	0.530	0.175	0.077	0.021	0.000
MO	43	4	8	2	0	1	0	0.887	0.751	0.233	0.071	0.021	0.000
MO	45	0	2	2	1	0	0	0.246	0.321	0.123	0.018	0.000	0.000
MO	47	5	9	3	1	1	0	0.578	0.374	0.093	0.001	0.000	0.000
MO	49	4	7	4	1	0	0	0.350	0.184	0.070	0.018	0.000	0.000
MO	51	3	3	2	0	0	0	0.331	0.207	0.020	0.000	0.000	0.000
MO	53	5	3	3	0	0	0	0.241	0.206	0.059	0.000	0.000	0.000
MO	55	3	3	3	0	0	0	0.453	0.329	0.051	0.000	0.000	0.000
MO	57	3	2	2	1	0	0	0.391	0.306	0.063	0.008	0.000	0.000
MO	59	1	2	0	0	0	0	0.111	0.059	0.000	0.000	0.000	0.000
MO	61	2	4	4	0	0	0	0.358	0.244	0.058	0.000	0.000	0.000
MO	63	2	3	3	0	0	0	0.225	0.199	0.053	0.000	0.000	0.000
MO	65	3	3	0	1	0	0	0.336	0.249	0.062	0.018	0.000	0.000
MO	67	1	1	6	1	0	0	0.543	0.693	0.268	0.044	0.000	0.000
MO	69	5	12	5	0	1	0	1.116	1.126	0.464	0.165	0.049	0.000
MO	71	4	5	3	0	1	0	0.881	0.788	0.349	0.165	0.049	0.000
MO	73	0	4	1	0	0	0	0.363	0.237	0.020	0.000	0.000	0.000
MO	75	3	4	2	0	0	0	0.205	0.156	0.030	0.000	0.000	0.000
MO	77	1	12	6	1	1	0	0.865	0.808	0.274	0.089	0.021	0.000
MO	79	0	2	4	0	0	0	0.272	0.273	0.069	0.000	0.000	0.000
MO	81	4	6	3	3	0	0	0.632	0.741	0.281	0.044	0.000	0.000
MO	83	1	5	1	0	1	0	0.259	0.280	0.142	0.065	0.020	0.000
MO	85	1	2	0	0	0	0	0.026	0.011	0.000	0.000	0.000	0.000
MO	87	2	3	0	0	0	0	0.057	0.020	0.000	0.000	0.000	0.000
MO	89	2	2	1	0	0	0	0.045	0.037	0.010	0.000	0.000	0.000
MO	91	0	14	8	1	1	0	1.356	1.449	0.399	0.001	0.000	0.000
MO	93	0	3	3	0	1	0	0.588	0.546	0.193	0.071	0.021	0.000
MO	95	8	8	6	2	1	1	1.183	1.104	0.403	0.116	0.021	0.000
MO	97	6	14	5	3	1	0	0.975	0.821	0.180	0.010	0.000	0.000
MO	99	6	11	3	1	0	0	1.165	0.506	0.053	0.008	0.000	0.000
MO	101	1	6	4	0	0	0	0.371	0.407	0.117	0.000	0.000	0.000
MO	103	1	1	1	0	0	0	0.257	0.148	0.010	0.000	0.000	0.000
MO	105	1	3	3	0	0	0	0.580	0.692	0.214	0.000	0.000	0.000
MO	107	4	5	3	1	0	0	0.518	0.454	0.162	0.021	0.000	0.000
MO	109	1	5	1	1	0	0	0.100	0.056	0.002	0.000	0.000	0.000
MO	111	0	1	2	0	0	0	0.127	0.155	0.049	0.000	0.000	0.000
MO	113	1	6	1	1	0	0	0.156	0.173	0.068	0.018	0.000	0.000
MO	115	3	3	0	2	1	0	0.703	0.868	0.473	0.204	0.048	0.000
MO	117	2	5	0	0	0	0	0.133	0.067	0.000	0.000	0.000	0.000
MO	119	0	6	4	0	0	0	0.694	0.549	0.093	0.000	0.000	0.000
MO	121	2	2	1	1	2	0	1.306	1.156	0.449	0.207	0.056	0.000
MO	123	1	4	5	0	0	0	0.503	0.567	0.166	0.000	0.000	0.000
MO	125	0	1	3	0	0	0	0.138	0.169	0.053	0.000	0.000	0.000
MO	127	3	0	2	0	0	0	0.162	0.174	0.055	0.000	0.000	0.000
MO	129	1	4	2	0	1	0	0.422	0.465	0.202	0.071	0.021	0.000

SPC Raw Tornado Data

MO	131	4	12	3	0	0	0	0.274	0.197	0.033	0.000	0.000	0.000
MO	133	4	5	6	1	1	0	0.339	0.283	0.078	0.018	0.000	0.000
MO	135	5	10	4	0	0	0	0.402	0.296	0.072	0.000	0.000	0.000
MO	137	2	3	0	0	0	0	0.150	0.078	0.000	0.000	0.000	0.000
MO	139	1	2	5	0	0	0	0.305	0.349	0.105	0.000	0.000	0.000
MO	141	3	6	6	0	0	0	0.746	0.640	0.148	0.000	0.000	0.000
MO	143	1	3	4	2	1	0	0.239	0.271	0.095	0.009	0.000	0.000
MO	145	6	12	4	1	1	0	0.542	0.478	0.202	0.082	0.021	0.000
MO	147	4	10	3	2	1	0	1.986	1.956	0.701	0.214	0.021	0.000
MO	149	2	3	3	2	1	0	1.059	1.273	0.457	0.062	0.000	0.000
MO	151	1	4	0	1	0	0	0.463	0.323	0.062	0.018	0.000	0.000
MO	153	7	7	2	1	1	0	0.848	0.818	0.294	0.072	0.021	0.000
MO	155	4	11	2	0	1	0	0.565	0.381	0.155	0.065	0.020	0.000
MO	157	1	6	4	2	0	0	0.477	0.600	0.257	0.065	0.000	0.000
MO	159	4	9	2	3	0	0	0.804	1.092	0.522	0.147	0.000	0.000
MO	161	1	7	3	0	0	0	0.044	0.028	0.004	0.000	0.000	0.000
MO	163	2	2	1	0	0	0	0.067	0.036	0.004	0.000	0.000	0.000
MO	165	2	3	2	3	1	0	0.322	0.186	0.078	0.022	0.000	0.000
MO	167	5	2	2	0	0	0	0.224	0.123	0.033	0.000	0.000	0.000
MO	169	2	5	4	0	0	0	0.553	0.570	0.155	0.000	0.000	0.000
MO	171	0	2	0	0	1	0	0.032	0.019	0.001	0.001	0.000	0.000
MO	173	0	1	2	0	0	0	0.078	0.090	0.027	0.000	0.000	0.000
MO	175	1	3	0	1	0	0	0.087	0.075	0.023	0.007	0.000	0.000
MO	177	3	8	4	2	2	0	1.577	1.822	0.962	0.415	0.111	0.000
MO	179	1	3	1	0	0	0	0.106	0.089	0.020	0.000	0.000	0.000
MO	181	3	1	4	1	0	0	0.445	0.472	0.155	0.008	0.000	0.000
MO	183	4	7	5	5	0	0	0.207	0.171	0.049	0.009	0.000	0.000
MO	185	2	5	1	1	0	0	0.281	0.148	0.011	0.000	0.000	0.000
MO	186	0	2	1	0	0	0	0.017	0.011	0.001	0.000	0.000	0.000
MO	187	1	3	6	1	1	0	0.564	0.593	0.231	0.072	0.021	0.000
MO	189	2	8	4	3	2	0	0.878	0.958	0.445	0.180	0.042	0.000
MO	195	4	4	4	0	0	0	1.221	0.875	0.120	0.000	0.000	0.000
MO	197	1	3	1	0	1	0	0.388	0.389	0.168	0.071	0.021	0.000
MO	199	2	1	1	1	0	0	0.169	0.182	0.063	0.006	0.000	0.000
MO	201	4	8	7	0	0	0	0.846	0.591	0.088	0.000	0.000	0.000
MO	203	1	4	1	1	0	0	0.095	0.057	0.008	0.000	0.000	0.000
MO	205	1	6	1	1	1	0	0.357	0.206	0.006	0.001	0.000	0.000
MO	207	5	8	3	2	0	0	0.899	0.605	0.077	0.001	0.000	0.000
MO	209	2	4	3	0	0	0	0.172	0.161	0.043	0.000	0.000	0.000
MO	211	1	3	0	0	0	0	0.061	0.029	0.000	0.000	0.000	0.000
MO	213	3	1	1	0	0	0	0.294	0.325	0.102	0.000	0.000	0.000
MO	215	2	7	7	1	1	0	0.656	0.617	0.181	0.034	0.010	0.000
MO	217	5	7	1	3	0	0	0.492	0.457	0.158	0.044	0.000	0.000
MO	219	0	3	2	0	0	0	0.178	0.181	0.047	0.000	0.000	0.000
MO	221	0	3	3	2	2	0	0.901	1.089	0.538	0.211	0.048	0.000
MO	223	3	6	0	1	0	0	0.188	0.095	0.001	0.000	0.000	0.000
MO	225	3	4	4	0	0	0	1.325	0.912	0.107	0.000	0.000	0.000
MO	227	4	2	1	1	0	0	0.076	0.041	0.008	0.000	0.000	0.000
MO	229	1	5	3	0	1	0	0.276	0.296	0.096	0.014	0.004	0.000

SPC Raw Tornado Data

MO	510	0	1	0	1	1	0	0.442	0.671	0.340	0.099	0.000	0.000
MO	677	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
MO	888	0	8	34	15	6	0	0.217	0.257	0.086	0.008	0.001	0.000
MO	0	298	577	334	109	48	1	56.884	51.702	16.941	4.077	0.717	0.000
MO	46	298	577	334	109	48	1	1.8E-05	1.6E-05	5.3E-06	1.3E-06	2.3E-07	2.6E-11
MS	1	2	5	2	0	0	0	0.183	0.099	0.008	0.000	0.000	0.000
MS	3	2	4	4	2	1	0	0.439	0.384	0.093	0.009	0.000	0.000
MS	5	0	12	2	1	0	0	1.050	1.042	0.304	0.044	0.000	0.000
MS	7	2	9	1	2	3	0	1.809	2.053	1.097	0.507	0.145	0.000
MS	9	1	2	1	1	0	0	0.319	0.364	0.152	0.044	0.000	0.000
MS	11	4	11	6	0	0	0	0.844	0.702	0.142	0.000	0.000	0.000
MS	13	1	4	3	1	0	0	0.277	0.270	0.086	0.018	0.000	0.000
MS	15	1	2	3	2	0	0	0.749	0.878	0.367	0.099	0.000	0.000
MS	17	2	10	1	1	0	0	2.019	1.177	0.091	0.021	0.000	0.000
MS	19	3	1	1	0	2	0	0.536	0.562	0.324	0.161	0.048	0.000
MS	21	3	6	2	1	0	0	0.901	0.597	0.092	0.021	0.000	0.000
MS	23	6	7	5	1	1	0	1.559	1.663	0.859	0.379	0.110	0.000
MS	25	3	1	3	2	0	0	0.208	0.260	0.109	0.021	0.000	0.000
MS	27	2	11	5	2	0	0	0.957	1.010	0.338	0.062	0.000	0.000
MS	29	8	10	4	4	3	0	3.858	3.842	1.866	0.785	0.214	0.000
MS	31	3	3	4	2	0	0	0.905	1.165	0.511	0.116	0.000	0.000
MS	33	4	5	6	1	0	0	0.814	0.608	0.130	0.004	0.000	0.000
MS	35	2	8	3	1	0	0	0.339	0.292	0.094	0.021	0.000	0.000
MS	37	0	4	2	0	0	0	0.142	0.125	0.027	0.000	0.000	0.000
MS	39	0	4	4	2	0	0	0.389	0.474	0.193	0.047	0.000	0.000
MS	41	0	2	3	2	0	0	0.115	0.102	0.028	0.007	0.000	0.000
MS	43	0	4	6	2	1	0	0.561	0.677	0.231	0.023	0.000	0.000
MS	45	4	11	7	1	0	0	0.595	0.662	0.244	0.040	0.000	0.000
MS	47	12	15	11	5	0	0	0.839	0.939	0.376	0.081	0.000	0.000
MS	49	6	21	10	4	0	1	2.647	2.088	0.691	0.204	0.061	0.018
MS	51	6	2	3	2	1	0	1.163	1.092	0.521	0.143	0.000	0.000
MS	53	2	2	10	0	2	1	0.991	1.018	0.438	0.161	0.048	0.000
MS	55	2	4	4	1	1	1	1.543	1.792	0.817	0.293	0.074	0.000
MS	57	0	3	3	0	0	0	0.076	0.073	0.018	0.000	0.000	0.000
MS	59	12	13	9	0	0	0	0.467	0.305	0.070	0.000	0.000	0.000
MS	61	3	6	2	5	1	0	2.784	3.317	1.796	0.790	0.193	0.000
MS	63	0	4	1	1	1	0	2.000	2.655	1.341	0.476	0.074	0.000
MS	65	2	2	2	4	1	0	0.899	1.145	0.525	0.138	0.000	0.000
MS	67	5	7	12	5	1	0	2.381	2.758	1.321	0.505	0.110	0.000
MS	69	2	5	3	2	1	0	2.241	2.495	0.884	0.161	0.048	0.000
MS	71	0	5	5	2	0	0	0.434	0.526	0.184	0.021	0.000	0.000
MS	73	3	5	4	0	0	0	0.831	0.851	0.253	0.000	0.000	0.000
MS	75	12	5	3	1	2	0	1.872	1.899	0.963	0.332	0.048	0.000
MS	77	5	2	3	1	2	0	0.875	0.528	0.183	0.032	0.004	0.000
MS	79	1	4	4	6	1	1	1.565	2.055	1.039	0.352	0.048	0.000
MS	81	1	6	4	2	1	0	0.630	0.703	0.295	0.095	0.020	0.000
MS	83	2	3	10	4	1	0	1.124	1.450	0.574	0.094	0.000	0.000
MS	85	6	8	10	2	1	0	2.552	2.190	0.494	0.027	0.000	0.000
MS	87	0	6	11	1	0	0	1.083	1.138	0.320	0.014	0.000	0.000

SPC Raw Tornado Data

MS	89	4	11	9	3	1	0	2.317	2.580	1.068	0.303	0.048	0.000
MS	91	2	5	7	1	0	0	0.798	0.882	0.276	0.021	0.000	0.000
MS	93	4	4	1	0	2	0	0.288	0.276	0.145	0.072	0.021	0.000
MS	95	2	8	6	3	0	0	0.659	0.646	0.198	0.036	0.000	0.000
MS	97	2	4	3	1	0	0	0.529	0.504	0.139	0.008	0.000	0.000
MS	99	2	9	8	4	0	0	1.423	0.973	0.127	0.022	0.000	0.000
MS	101	2	6	5	2	2	0	3.486	3.991	1.857	0.711	0.193	0.000
MS	103	0	5	6	1	0	0	1.347	1.468	0.416	0.004	0.000	0.000
MS	105	1	3	3	1	1	0	0.156	0.137	0.032	0.001	0.000	0.000
MS	107	1	5	3	0	0	0	0.410	0.417	0.110	0.000	0.000	0.000
MS	109	3	7	9	0	0	0	2.077	0.559	0.167	0.000	0.000	0.000
MS	111	0	4	0	2	0	0	0.286	0.251	0.072	0.021	0.000	0.000
MS	113	4	4	4	1	1	0	1.537	1.032	0.162	0.029	0.009	0.000
MS	115	1	4	4	1	0	0	0.845	0.701	0.143	0.011	0.000	0.000
MS	117	2	5	4	4	0	0	0.487	0.360	0.122	0.022	0.000	0.000
MS	119	0	1	4	1	0	0	0.430	0.527	0.165	0.000	0.000	0.000
MS	121	6	15	11	1	3	1	2.151	1.710	0.479	0.162	0.048	0.000
MS	123	6	4	3	0	3	0	1.191	1.004	0.456	0.190	0.057	0.000
MS	125	2	7	3	2	2	1	1.746	1.526	0.531	0.205	0.048	0.000
MS	127	8	7	8	4	5	0	4.692	5.171	2.060	0.488	0.096	0.000
MS	129	6	11	4	3	3	0	3.478	3.671	1.752	0.770	0.193	0.000
MS	131	1	8	2	0	0	0	0.393	0.223	0.003	0.000	0.000	0.000
MS	133	4	2	4	2	0	1	0.416	0.457	0.160	0.018	0.000	0.000
MS	135	0	5	8	1	0	0	0.813	0.821	0.211	0.000	0.000	0.000
MS	137	1	4	2	0	0	0	0.226	0.129	0.003	0.000	0.000	0.000
MS	139	3	3	1	3	1	0	0.994	1.306	0.667	0.221	0.023	0.000
MS	141	0	5	5	3	0	0	0.401	0.435	0.145	0.024	0.000	0.000
MS	143	3	3	3	0	0	0	2.533	3.019	0.949	0.000	0.000	0.000
MS	145	0	3	4	4	0	0	0.376	0.483	0.200	0.045	0.000	0.000
MS	147	1	8	5	0	0	0	0.872	0.790	0.179	0.000	0.000	0.000
MS	149	5	10	5	1	1	1	1.885	1.400	0.511	0.176	0.057	0.010
MS	151	3	5	6	0	2	1	1.658	1.779	0.664	0.174	0.052	0.000
MS	153	2	2	1	3	1	0	1.249	1.494	0.834	0.389	0.110	0.000
MS	155	1	3	0	2	0	0	1.595	2.074	0.949	0.276	0.000	0.000
MS	157	1	5	2	0	0	0	0.517	0.403	0.068	0.000	0.000	0.000
MS	159	1	1	4	0	1	0	1.050	1.020	0.387	0.071	0.021	0.000
MS	161	0	2	3	1	0	0	0.130	0.121	0.028	0.000	0.000	0.000
MS	163	7	6	6	0	1	0	1.840	1.239	0.335	0.001	0.000	0.000
MS	888	0	0	1	2	1	1	0.032	0.040	0.015	0.002	0.000	0.000
MS	0	226	468	369	136	59	10	95.880	95.645	37.275	10.820	2.223	0.029
MS	46	226	468	369	136	59	10	4.4E-05	4.4E-05	1.7E-05	5.0E-06	1.0E-06	1.3E-08
MT	1	7	1	2	0	0	0	0.149	0.020	0.006	0.000	0.000	0.000
MT	3	4	4	0	0	0	0	0.057	0.021	0.000	0.000	0.000	0.000
MT	7	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
MT	9	1	1	0	0	0	0	0.008	0.002	0.000	0.000	0.000	0.000
MT	11	4	4	0	0	0	0	0.066	0.025	0.000	0.000	0.000	0.000
MT	13	9	1	1	0	0	0	0.327	0.004	0.001	0.000	0.000	0.000
MT	15	9	1	0	3	0	0	0.630	0.891	0.452	0.131	0.000	0.000
MT	17	5	0	2	0	0	0	0.081	0.065	0.020	0.000	0.000	0.000

SPC Raw Tornado Data

MT	19	6	2	0	0	0	0	0.152	0.062	0.000	0.000	0.000	0.000
MT	21	9	0	2	0	0	0	1.502	1.681	0.532	0.000	0.000	0.000
MT	25	4	1	0	0	0	0	0.768	0.002	0.000	0.000	0.000	0.000
MT	27	4	1	3	0	0	0	0.061	0.040	0.010	0.000	0.000	0.000
MT	31	1	1	0	0	0	0	0.008	0.002	0.000	0.000	0.000	0.000
MT	33	5	0	0	0	0	0	0.026	0.000	0.000	0.000	0.000	0.000
MT	35	1	1	0	0	0	0	0.008	0.002	0.000	0.000	0.000	0.000
MT	39	2	0	0	0	0	0	0.032	0.000	0.000	0.000	0.000	0.000
MT	41	4	2	0	0	0	0	0.065	0.004	0.000	0.000	0.000	0.000
MT	45	3	1	3	0	0	0	0.094	0.087	0.025	0.000	0.000	0.000
MT	47	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
MT	49	5	0	0	0	0	0	0.038	0.000	0.000	0.000	0.000	0.000
MT	51	1	1	0	0	0	0	0.008	0.002	0.000	0.000	0.000	0.000
MT	55	3	1	2	0	0	0	0.668	0.767	0.232	0.000	0.000	0.000
MT	57	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
MT	59	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
MT	63	2	0	0	0	0	0	0.020	0.000	0.000	0.000	0.000	0.000
MT	65	2	0	1	0	0	0	0.012	0.002	0.001	0.000	0.000	0.000
MT	69	2	0	1	0	0	0	0.012	0.002	0.001	0.000	0.000	0.000
MT	71	4	3	0	0	0	0	0.049	0.005	0.000	0.000	0.000	0.000
MT	75	3	4	3	0	0	0	0.076	0.047	0.008	0.000	0.000	0.000
MT	77	1	1	0	0	0	0	0.026	0.012	0.000	0.000	0.000	0.000
MT	79	0	1	1	0	0	0	0.196	0.210	0.058	0.000	0.000	0.000
MT	81	2	0	1	0	0	0	0.023	0.016	0.005	0.000	0.000	0.000
MT	83	8	0	2	0	0	0	0.069	0.035	0.011	0.000	0.000	0.000
MT	85	7	2	1	0	0	0	0.127	0.053	0.001	0.000	0.000	0.000
MT	87	7	1	0	0	0	0	0.039	0.002	0.000	0.000	0.000	0.000
MT	89	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
MT	91	2	0	1	0	0	0	0.117	0.132	0.042	0.000	0.000	0.000
MT	97	1	1	0	0	0	0	0.015	0.005	0.000	0.000	0.000	0.000
MT	99	3	0	1	0	0	0	0.128	0.004	0.001	0.000	0.000	0.000
MT	101	6	0	1	0	0	0	0.034	0.004	0.001	0.000	0.000	0.000
MT	103	0	1	0	0	0	0	0.029	0.016	0.000	0.000	0.000	0.000
MT	105	15	3	4	0	0	0	0.296	0.196	0.055	0.000	0.000	0.000
MT	107	3	0	0	0	0	0	0.015	0.000	0.000	0.000	0.000	0.000
MT	109	4	0	0	1	0	0	0.343	0.073	0.037	0.011	0.000	0.000
MT	111	10	2	1	0	0	0	0.201	0.008	0.001	0.000	0.000	0.000
MT	0	174	42	33	4	0	0	6.600	4.498	1.499	0.142	0.000	0.000
MT	44	174	42	33	4	0	0	1.0E-06	7.0E-07	2.3E-07	2.2E-08	0.0E+00	0.0E+00
NC	1	1	3	0	0	0	0	0.041	0.020	0.000	0.000	0.000	0.000
NC	3	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
NC	5	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
NC	7	0	1	1	0	0	0	0.230	0.163	0.020	0.000	0.000	0.000
NC	11	0	0	1	0	0	0	0.013	0.016	0.005	0.000	0.000	0.000
NC	13	0	5	6	0	0	0	0.147	0.106	0.014	0.000	0.000	0.000
NC	15	3	6	3	4	0	0	1.015	1.430	0.681	0.185	0.000	0.000
NC	17	3	2	1	1	0	0	1.214	1.627	0.785	0.228	0.000	0.000
NC	19	4	6	1	0	0	0	0.140	0.057	0.001	0.000	0.000	0.000
NC	21	1	4	0	0	0	0	0.032	0.015	0.000	0.000	0.000	0.000

SPC Raw Tornado Data

NC	23	0	1	1	0	0	0	0.050	0.032	0.002	0.000	0.000	0.000
NC	25	3	5	0	0	0	0	0.176	0.090	0.000	0.000	0.000	0.000
NC	27	2	1	2	0	0	0	0.202	0.190	0.055	0.000	0.000	0.000
NC	29	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
NC	31	5	10	4	0	0	0	0.246	0.124	0.019	0.000	0.000	0.000
NC	33	0	0	1	0	0	0	0.026	0.032	0.010	0.000	0.000	0.000
NC	35	1	6	3	0	1	0	1.966	1.426	0.342	0.160	0.048	0.000
NC	37	1	3	2	0	0	0	0.262	0.151	0.045	0.000	0.000	0.000
NC	39	3	2	0	0	1	0	0.218	0.105	0.001	0.001	0.000	0.000
NC	41	1	4	1	1	0	0	0.487	0.650	0.290	0.072	0.000	0.000
NC	43	1	2	0	0	0	0	0.052	0.026	0.000	0.000	0.000	0.000
NC	45	2	5	1	1	1	0	0.955	0.823	0.324	0.160	0.048	0.000
NC	47	1	4	5	1	0	0	0.288	0.337	0.117	0.014	0.000	0.000
NC	49	2	4	2	1	0	0	0.171	0.165	0.044	0.000	0.000	0.000
NC	51	5	5	3	2	2	0	0.393	0.396	0.128	0.019	0.000	0.000
NC	53	2	2	0	0	0	0	0.039	0.014	0.000	0.000	0.000	0.000
NC	55	12	9	4	1	0	0	0.581	0.457	0.134	0.002	0.000	0.000
NC	57	3	5	0	0	0	0	0.088	0.036	0.000	0.000	0.000	0.000
NC	59	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
NC	61	1	6	7	2	1	0	0.405	0.356	0.106	0.009	0.000	0.000
NC	63	1	1	2	0	0	0	0.078	0.087	0.027	0.000	0.000	0.000
NC	65	0	3	1	2	0	0	0.411	0.543	0.250	0.073	0.000	0.000
NC	67	2	4	3	2	0	0	1.359	1.068	0.241	0.062	0.000	0.000
NC	69	0	4	1	0	1	0	0.542	0.608	0.332	0.165	0.049	0.000
NC	71	1	4	0	1	0	0	0.820	0.493	0.029	0.008	0.000	0.000
NC	73	1	1	0	1	0	0	0.489	0.683	0.339	0.098	0.000	0.000
NC	75	0	0	1	0	0	0	0.123	0.152	0.048	0.000	0.000	0.000
NC	77	0	3	2	0	0	0	0.077	0.079	0.021	0.000	0.000	0.000
NC	79	2	1	0	1	1	0	0.057	0.062	0.030	0.009	0.000	0.000
NC	81	0	6	1	0	0	0	0.256	0.177	0.020	0.000	0.000	0.000
NC	83	2	4	2	0	1	0	0.875	0.765	0.334	0.165	0.049	0.000
NC	85	2	9	3	1	0	0	0.669	0.748	0.290	0.072	0.000	0.000
NC	87	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
NC	89	0	3	0	0	0	0	0.128	0.072	0.000	0.000	0.000	0.000
NC	91	1	4	3	0	0	0	0.274	0.247	0.056	0.000	0.000	0.000
NC	93	2	2	2	0	0	0	0.820	0.926	0.278	0.000	0.000	0.000
NC	95	5	5	2	0	0	0	0.344	0.182	0.006	0.000	0.000	0.000
NC	97	4	6	0	0	0	0	1.224	0.626	0.000	0.000	0.000	0.000
NC	99	1	0	1	0	0	0	0.007	0.002	0.001	0.000	0.000	0.000
NC	101	0	4	0	1	0	0	0.443	0.558	0.248	0.072	0.000	0.000
NC	103	0	2	1	1	0	0	0.346	0.285	0.072	0.021	0.000	0.000
NC	105	0	0	1	0	0	0	0.123	0.152	0.048	0.000	0.000	0.000
NC	107	0	8	0	1	1	0	1.427	1.482	0.746	0.371	0.110	0.000
NC	109	3	2	0	0	1	0	0.585	0.607	0.322	0.160	0.048	0.000
NC	113	0	2	0	0	0	0	0.030	0.017	0.000	0.000	0.000	0.000
NC	115	0	3	0	0	0	0	0.230	0.129	0.000	0.000	0.000	0.000
NC	117	1	3	1	1	0	0	0.416	0.583	0.273	0.072	0.000	0.000
NC	119	2	8	4	1	0	0	0.825	0.776	0.256	0.044	0.000	0.000
NC	123	1	3	1	0	0	0	0.276	0.222	0.042	0.000	0.000	0.000

SPC Raw Tornado Data

NC	125	0	6	2	0	0	0	0.468	0.481	0.126	0.000	0.000	0.000
NC	127	2	3	3	1	1	0	0.688	0.803	0.417	0.176	0.049	0.000
NC	129	3	4	0	0	0	0	0.070	0.031	0.000	0.000	0.000	0.000
NC	131	4	1	4	0	1	0	0.691	0.772	0.391	0.165	0.049	0.000
NC	133	10	8	3	0	0	0	0.190	0.080	0.009	0.000	0.000	0.000
NC	135	1	1	1	1	0	0	0.293	0.406	0.180	0.040	0.000	0.000
NC	137	1	2	1	1	0	0	0.233	0.135	0.005	0.000	0.000	0.000
NC	139	2	3	4	1	0	0	0.441	0.568	0.260	0.072	0.000	0.000
NC	141	3	6	3	0	0	0	0.100	0.051	0.003	0.000	0.000	0.000
NC	143	1	2	2	0	0	0	0.022	0.015	0.003	0.000	0.000	0.000
NC	145	1	3	1	0	0	0	0.127	0.092	0.020	0.000	0.000	0.000
NC	147	2	6	2	1	1	0	0.581	0.449	0.136	0.009	0.000	0.000
NC	149	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
NC	151	3	5	4	1	0	0	0.362	0.394	0.122	0.001	0.000	0.000
NC	153	0	1	0	1	0	0	0.005	0.004	0.001	0.000	0.000	0.000
NC	155	4	9	4	0	3	0	0.316	0.224	0.037	0.003	0.001	0.000
NC	157	0	3	0	0	0	0	0.046	0.026	0.000	0.000	0.000	0.000
NC	159	1	4	0	0	0	0	0.079	0.041	0.000	0.000	0.000	0.000
NC	161	1	1	1	0	1	0	0.097	0.107	0.060	0.029	0.009	0.000
NC	163	2	3	1	3	2	0	0.886	0.892	0.479	0.205	0.048	0.000
NC	165	1	2	1	2	3	0	0.150	0.120	0.030	0.006	0.000	0.000
NC	167	1	5	2	0	0	0	0.082	0.051	0.005	0.000	0.000	0.000
NC	169	1	2	0	0	0	0	1.000	0.555	0.000	0.000	0.000	0.000
NC	171	0	3	0	0	0	0	0.019	0.010	0.000	0.000	0.000	0.000
NC	173	0	1	1	0	0	0	0.007	0.005	0.001	0.000	0.000	0.000
NC	175	1	1	1	0	0	0	0.087	0.041	0.010	0.000	0.000	0.000
NC	177	1	3	2	0	0	0	0.131	0.139	0.039	0.000	0.000	0.000
NC	179	1	6	5	1	1	0	0.665	0.785	0.277	0.038	0.005	0.000
NC	181	2	0	1	0	0	0	0.022	0.011	0.004	0.000	0.000	0.000
NC	183	6	8	5	0	1	0	0.975	0.904	0.409	0.165	0.049	0.000
NC	185	1	0	2	0	0	0	0.043	0.024	0.008	0.000	0.000	0.000
NC	187	0	1	3	0	0	0	0.322	0.393	0.122	0.000	0.000	0.000
NC	191	5	7	2	1	1	0	0.291	0.295	0.108	0.018	0.000	0.000
NC	193	1	4	0	0	0	0	0.279	0.143	0.000	0.000	0.000	0.000
NC	195	0	0	1	3	0	0	0.418	0.638	0.323	0.093	0.000	0.000
NC	197	0	5	0	0	0	0	1.083	0.606	0.000	0.000	0.000	0.000
NC	199	0	2	0	0	0	0	0.008	0.005	0.000	0.000	0.000	0.000
NC	888	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
NC	0	153	321	143	44	26	0	34.005	31.481	11.017	3.264	0.563	0.000
NC	46	153	321	143	44	26	0	1.5E-05	1.4E-05	4.9E-06	1.5E-06	2.5E-07	0.0E+00
ND	1	4	2	0	0	0	0	0.071	0.026	0.000	0.000	0.000	0.000
ND	3	17	9	4	2	0	0	0.544	0.301	0.040	0.009	0.000	0.000
ND	5	9	5	1	1	0	0	0.122	0.089	0.033	0.007	0.000	0.000
ND	7	3	2	0	0	0	0	0.121	0.059	0.000	0.000	0.000	0.000
ND	9	13	3	2	1	0	0	0.714	0.837	0.347	0.070	0.000	0.000
ND	11	3	4	1	0	0	0	0.186	0.130	0.020	0.000	0.000	0.000
ND	13	6	2	1	0	0	0	0.042	0.009	0.001	0.000	0.000	0.000
ND	15	18	5	3	1	1	0	0.549	0.506	0.219	0.078	0.023	0.000
ND	17	30	11	6	3	0	1	1.051	0.788	0.316	0.092	0.037	0.011

SPC Raw Tornado Data

ND	19	9	7	3	0	0	0	0.292	0.124	0.016	0.000	0.000	0.000
ND	21	13	2	3	0	0	0	0.170	0.065	0.005	0.000	0.000	0.000
ND	23	4	1	0	1	0	0	0.125	0.048	0.023	0.007	0.000	0.000
ND	25	9	3	1	0	0	0	0.066	0.013	0.001	0.000	0.000	0.000
ND	27	2	2	1	0	0	0	0.031	0.012	0.002	0.000	0.000	0.000
ND	29	13	7	4	1	0	1	0.227	0.167	0.051	0.002	0.000	0.000
ND	31	5	4	1	0	0	0	0.073	0.033	0.004	0.000	0.000	0.000
ND	33	4	1	0	0	0	0	0.452	0.016	0.000	0.000	0.000	0.000
ND	35	12	2	3	1	0	0	0.125	0.074	0.023	0.000	0.000	0.000
ND	37	13	6	0	0	2	0	0.373	0.303	0.144	0.072	0.021	0.000
ND	39	12	1	3	2	0	0	0.224	0.203	0.067	0.003	0.000	0.000
ND	41	2	5	1	0	1	0	1.242	1.372	0.746	0.371	0.110	0.000
ND	43	7	3	0	0	0	0	0.049	0.008	0.000	0.000	0.000	0.000
ND	45	16	2	1	1	0	0	0.295	0.304	0.152	0.044	0.000	0.000
ND	47	2	5	2	1	0	0	0.131	0.076	0.007	0.001	0.000	0.000
ND	49	10	3	1	0	0	0	0.301	0.129	0.001	0.000	0.000	0.000
ND	51	6	3	2	0	0	0	0.788	0.034	0.002	0.000	0.000	0.000
ND	53	8	1	1	0	0	0	0.060	0.022	0.006	0.000	0.000	0.000
ND	55	9	9	2	1	0	0	0.316	0.153	0.003	0.000	0.000	0.000
ND	57	7	4	1	1	0	0	0.252	0.251	0.096	0.021	0.000	0.000
ND	59	11	6	1	2	0	1	0.757	0.843	0.454	0.223	0.083	0.025
ND	61	11	8	2	0	1	0	0.679	0.408	0.069	0.034	0.010	0.000
ND	63	9	1	0	0	0	0	0.051	0.003	0.000	0.000	0.000	0.000
ND	65	0	2	1	0	0	0	0.059	0.067	0.020	0.000	0.000	0.000
ND	67	4	5	0	0	0	0	0.233	0.119	0.000	0.000	0.000	0.000
ND	69	1	6	1	0	0	0	0.084	0.053	0.005	0.000	0.000	0.000
ND	71	14	13	3	0	0	0	0.159	0.050	0.003	0.000	0.000	0.000
ND	73	7	4	3	0	0	0	0.306	0.232	0.059	0.000	0.000	0.000
ND	75	12	0	0	0	0	0	0.180	0.000	0.000	0.000	0.000	0.000
ND	77	17	3	3	3	1	0	0.480	0.469	0.200	0.059	0.004	0.000
ND	79	4	3	1	0	0	0	0.166	0.099	0.010	0.000	0.000	0.000
ND	81	3	3	2	1	0	0	0.168	0.092	0.005	0.001	0.000	0.000
ND	83	8	5	0	0	0	0	0.182	0.023	0.000	0.000	0.000	0.000
ND	85	5	1	0	0	0	0	0.029	0.002	0.000	0.000	0.000	0.000
ND	87	5	2	0	0	0	0	0.136	0.062	0.000	0.000	0.000	0.000
ND	89	6	2	3	0	0	0	0.185	0.103	0.030	0.000	0.000	0.000
ND	91	12	6	1	1	0	0	0.443	0.401	0.151	0.044	0.000	0.000
ND	93	19	9	7	1	0	0	0.682	0.548	0.128	0.000	0.000	0.000
ND	95	7	1	0	0	0	0	0.121	0.048	0.000	0.000	0.000	0.000
ND	97	4	2	3	1	0	0	0.071	0.042	0.009	0.001	0.000	0.000
ND	99	12	5	0	0	0	0	0.153	0.034	0.000	0.000	0.000	0.000
ND	101	28	3	5	0	0	0	0.410	0.191	0.057	0.000	0.000	0.000
ND	103	11	5	2	1	0	0	0.202	0.143	0.037	0.001	0.000	0.000
ND	105	14	2	3	1	0	0	0.140	0.051	0.009	0.001	0.000	0.000
ND	888	0	0	2	0	1	0	0.005	0.007	0.003	0.001	0.000	0.000
ND	0	490	211	91	28	7	3	15.072	10.245	3.571	1.141	0.290	0.036
ND	46	490	211	91	28	7	3	4.7E-06	3.2E-06	1.1E-06	3.6E-07	9.1E-08	1.1E-08
NE	1	15	12	8	1	0	1	4.051	4.606	2.242	0.811	0.192	0.057
NE	3	9	8	3	1	1	0	0.936	1.055	0.425	0.102	0.000	0.000

SPC Raw Tornado Data

NE	5	2	1	0	0	0	0	0.082	0.003	0.000	0.000	0.000	0.000
NE	7	9	6	0	1	0	0	0.974	0.076	0.001	0.000	0.000	0.000
NE	9	1	2	1	0	0	0	0.826	0.538	0.048	0.000	0.000	0.000
NE	11	7	5	2	1	2	0	0.567	0.395	0.079	0.019	0.000	0.000
NE	13	18	8	3	0	0	0	1.039	0.925	0.265	0.000	0.000	0.000
NE	15	4	4	0	2	0	0	2.101	2.903	1.404	0.408	0.000	0.000
NE	17	6	7	3	0	0	0	0.517	0.474	0.122	0.000	0.000	0.000
NE	19	25	22	8	5	1	0	5.347	6.496	2.914	0.795	0.007	0.000
NE	21	3	3	3	1	1	0	0.620	0.751	0.335	0.099	0.009	0.000
NE	23	13	5	3	1	1	0	2.731	2.857	1.043	0.249	0.074	0.000
NE	25	11	5	3	0	1	0	0.277	0.160	0.024	0.001	0.000	0.000
NE	27	5	2	5	1	0	0	0.363	0.252	0.072	0.000	0.000	0.000
NE	29	6	3	4	0	0	0	0.292	0.249	0.067	0.000	0.000	0.000
NE	31	23	6	5	1	0	0	0.878	0.465	0.105	0.000	0.000	0.000
NE	33	27	5	4	2	0	0	0.525	0.394	0.144	0.021	0.000	0.000
NE	35	16	6	3	2	1	1	3.330	4.263	2.117	0.690	0.074	0.000
NE	37	7	1	2	2	1	0	1.566	2.000	1.011	0.365	0.074	0.000
NE	39	4	15	1	0	0	0	0.315	0.147	0.004	0.000	0.000	0.000
NE	41	26	15	6	7	2	0	3.134	2.289	0.942	0.296	0.033	0.000
NE	43	2	1	0	1	0	0	0.253	0.340	0.165	0.048	0.000	0.000
NE	45	15	7	3	0	0	0	0.203	0.051	0.003	0.000	0.000	0.000
NE	47	16	16	3	5	0	0	4.360	5.996	2.895	0.841	0.000	0.000
NE	49	13	4	0	0	0	0	0.413	0.147	0.000	0.000	0.000	0.000
NE	51	6	3	2	1	0	0	0.383	0.431	0.191	0.048	0.000	0.000
NE	53	6	4	2	0	0	0	0.119	0.033	0.004	0.000	0.000	0.000
NE	55	5	3	2	1	1	0	0.297	0.329	0.125	0.021	0.000	0.000
NE	57	10	3	2	0	0	0	0.994	0.373	0.115	0.000	0.000	0.000
NE	59	9	4	2	2	2	0	1.486	1.608	0.852	0.364	0.095	0.000
NE	61	9	8	2	1	0	0	1.879	1.863	0.610	0.101	0.000	0.000
NE	63	6	4	4	3	0	0	1.049	1.237	0.593	0.158	0.000	0.000
NE	65	6	8	4	1	0	0	0.668	0.640	0.213	0.048	0.000	0.000
NE	67	15	5	7	2	0	0	0.778	0.731	0.252	0.044	0.000	0.000
NE	69	7	3	2	0	0	0	0.106	0.038	0.003	0.000	0.000	0.000
NE	71	2	4	1	0	0	0	0.074	0.040	0.002	0.000	0.000	0.000
NE	73	7	3	0	1	0	0	1.975	2.729	1.367	0.398	0.000	0.000
NE	75	10	2	0	0	0	0	0.515	0.141	0.000	0.000	0.000	0.000
NE	77	7	4	2	0	1	0	0.299	0.238	0.084	0.017	0.005	0.000
NE	79	20	27	6	6	2	0	4.641	5.567	2.370	0.621	0.047	0.000
NE	81	18	10	5	1	0	0	3.118	2.938	1.429	0.398	0.000	0.000
NE	83	4	7	2	0	0	0	0.398	0.213	0.005	0.000	0.000	0.000
NE	85	6	2	0	0	0	0	0.051	0.005	0.000	0.000	0.000	0.000
NE	87	14	8	0	0	1	0	1.000	1.020	0.561	0.279	0.083	0.000
NE	89	15	14	4	1	1	0	0.787	0.560	0.192	0.082	0.021	0.000
NE	91	3	3	0	0	0	0	0.035	0.008	0.000	0.000	0.000	0.000
NE	93	10	10	4	6	1	0	3.851	5.257	2.549	0.739	0.012	0.000
NE	95	4	2	5	2	0	0	1.102	1.240	0.494	0.118	0.000	0.000
NE	97	4	7	1	0	0	0	0.384	0.165	0.020	0.000	0.000	0.000
NE	99	8	3	5	1	0	0	2.042	2.428	0.861	0.101	0.000	0.000
NE	101	17	9	2	0	0	0	0.640	0.285	0.003	0.000	0.000	0.000

SPC Raw Tornado Data

NE	103	2	3	2	0	0	0	0.107	0.022	0.002	0.000	0.000	0.000
NE	105	16	3	2	1	0	0	1.904	0.740	0.359	0.098	0.000	0.000
NE	107	11	12	4	0	0	0	1.243	1.148	0.304	0.000	0.000	0.000
NE	109	8	10	4	0	1	0	0.634	0.440	0.070	0.001	0.000	0.000
NE	111	30	12	4	2	1	0	1.945	1.408	0.646	0.260	0.074	0.000
NE	113	2	5	2	1	0	0	0.401	0.278	0.041	0.000	0.000	0.000
NE	115	3	5	0	0	0	0	0.419	0.223	0.000	0.000	0.000	0.000
NE	117	3	0	0	0	0	0	0.018	0.000	0.000	0.000	0.000	0.000
NE	119	9	9	7	1	1	0	0.870	0.924	0.270	0.001	0.000	0.000
NE	121	4	8	2	1	0	0	0.486	0.531	0.200	0.044	0.000	0.000
NE	123	17	9	3	0	1	0	0.369	0.201	0.032	0.001	0.000	0.000
NE	125	1	6	2	1	0	0	0.414	0.502	0.200	0.044	0.000	0.000
NE	127	6	3	4	1	0	0	0.515	0.550	0.180	0.018	0.000	0.000
NE	129	8	10	3	2	1	0	1.508	1.465	0.653	0.268	0.074	0.000
NE	131	8	4	3	2	0	0	0.565	0.620	0.256	0.055	0.000	0.000
NE	133	4	5	3	0	0	0	0.122	0.052	0.003	0.000	0.000	0.000
NE	135	14	5	2	1	0	0	0.735	0.545	0.175	0.021	0.000	0.000
NE	137	9	7	3	0	0	0	0.274	0.191	0.044	0.000	0.000	0.000
NE	139	8	4	3	2	1	0	0.636	0.471	0.166	0.031	0.003	0.000
NE	141	10	7	1	0	1	0	0.477	0.399	0.168	0.071	0.021	0.000
NE	143	12	7	2	2	0	1	2.626	3.545	1.755	0.497	0.000	0.000
NE	145	10	8	0	0	1	0	2.102	1.492	0.561	0.279	0.083	0.000
NE	147	1	7	0	0	0	0	0.287	0.158	0.000	0.000	0.000	0.000
NE	149	3	1	1	0	1	0	0.132	0.097	0.026	0.001	0.000	0.000
NE	151	5	5	4	1	0	0	0.513	0.578	0.229	0.044	0.000	0.000
NE	153	1	2	1	0	1	0	0.233	0.263	0.107	0.029	0.009	0.000
NE	155	11	8	4	0	1	0	1.334	0.863	0.155	0.034	0.010	0.000
NE	157	14	14	5	2	1	0	1.173	1.148	0.491	0.127	0.005	0.000
NE	159	10	2	4	3	2	0	1.861	1.769	0.900	0.337	0.074	0.000
NE	161	13	9	6	2	0	0	1.452	1.732	0.645	0.088	0.000	0.000
NE	163	5	9	4	1	1	0	2.292	3.071	1.453	0.427	0.009	0.000
NE	165	5	5	2	0	0	0	0.610	0.117	0.002	0.000	0.000	0.000
NE	167	5	5	2	2	1	0	0.461	0.522	0.227	0.065	0.000	0.000
NE	169	9	10	6	5	1	0	2.572	2.689	0.979	0.221	0.000	0.000
NE	171	0	3	1	0	0	0	0.153	0.169	0.048	0.000	0.000	0.000
NE	173	6	3	1	1	0	0	0.407	0.034	0.002	0.000	0.000	0.000
NE	175	3	1	6	1	1	0	0.320	0.389	0.149	0.021	0.000	0.000
NE	177	4	4	1	0	0	0	0.310	0.176	0.010	0.000	0.000	0.000
NE	179	4	2	4	0	0	0	0.541	0.333	0.032	0.000	0.000	0.000
NE	181	10	9	4	2	1	0	3.014	3.934	1.944	0.646	0.074	0.000
NE	183	2	0	0	0	0	0	0.013	0.000	0.000	0.000	0.000	0.000
NE	185	10	14	2	1	1	1	1.473	1.332	0.563	0.257	0.074	0.000
NE	888	0	1	2	4	2	0	0.016	0.019	0.008	0.002	0.000	0.000
NE	0	827	585	255	105	42	4	101.906	103.088	43.378	12.267	1.240	0.057
NE	46	827	585	255	105	42	4	2.9E-05	2.9E-05	1.2E-05	3.5E-06	3.5E-07	1.6E-08
NH	1	0	4	1	0	0	0	0.034	0.021	0.001	0.000	0.000	0.000
NH	3	3	3	1	0	0	0	0.063	0.026	0.001	0.000	0.000	0.000
NH	5	5	6	2	0	0	0	0.476	0.086	0.009	0.000	0.000	0.000
NH	7	5	0	0	0	0	0	0.047	0.000	0.000	0.000	0.000	0.000

SPC Raw Tornado Data

NH	9	2	3	2	0	0	0	0.145	0.093	0.022	0.000	0.000	0.000
NH	11	3	10	3	1	0	0	0.506	0.337	0.056	0.002	0.000	0.000
NH	13	0	3	0	0	0	0	0.014	0.008	0.000	0.000	0.000	0.000
NH	15	2	2	3	1	0	0	0.277	0.267	0.073	0.003	0.000	0.000
NH	17	1	1	3	0	0	0	0.103	0.097	0.028	0.000	0.000	0.000
NH	19	2	2	0	0	0	0	0.220	0.051	0.000	0.000	0.000	0.000
NH	0	24	34	15	2	0	0	1.893	0.986	0.190	0.004	0.000	0.000
NH	45	24	34	15	2	0	0	4.7E-06	2.4E-06	4.7E-07	1.1E-08	0.0E+00	0.0E+00
NJ	1	3	0	3	0	0	0	0.283	0.061	0.019	0.000	0.000	0.000
NJ	3	2	3	3	0	0	0	0.323	0.113	0.019	0.000	0.000	0.000
NJ	5	1	10	1	0	0	0	0.267	0.128	0.002	0.000	0.000	0.000
NJ	7	0	5	0	0	0	0	0.340	0.190	0.000	0.000	0.000	0.000
NJ	9	3	3	2	0	0	0	0.148	0.096	0.027	0.000	0.000	0.000
NJ	11	4	3	2	0	0	0	0.092	0.053	0.012	0.000	0.000	0.000
NJ	13	1	1	0	0	0	0	0.020	0.009	0.000	0.000	0.000	0.000
NJ	15	2	5	1	0	0	0	0.581	0.309	0.001	0.000	0.000	0.000
NJ	17	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
NJ	19	2	3	2	0	0	0	0.093	0.043	0.005	0.000	0.000	0.000
NJ	21	1	3	3	0	0	0	1.224	0.377	0.043	0.000	0.000	0.000
NJ	23	4	2	0	0	0	0	0.127	0.056	0.000	0.000	0.000	0.000
NJ	25	2	3	1	0	0	0	0.078	0.069	0.020	0.000	0.000	0.000
NJ	27	0	4	1	2	0	0	0.424	0.314	0.045	0.001	0.000	0.000
NJ	29	4	3	1	1	0	0	0.089	0.032	0.005	0.000	0.000	0.000
NJ	31	2	1	0	0	0	0	0.626	0.048	0.000	0.000	0.000	0.000
NJ	33	1	1	2	0	0	0	0.154	0.181	0.056	0.000	0.000	0.000
NJ	35	2	0	0	1	0	0	0.052	0.007	0.003	0.001	0.000	0.000
NJ	37	2	0	0	0	0	0	0.332	0.000	0.000	0.000	0.000	0.000
NJ	39	5	5	0	0	0	0	0.127	0.027	0.000	0.000	0.000	0.000
NJ	41	2	2	1	0	0	0	0.140	0.082	0.005	0.000	0.000	0.000
NJ	0	43	58	23	4	0	0	5.535	2.200	0.262	0.002	0.000	0.000
NJ	45	43	58	23	4	0	0	1.7E-05	6.6E-06	7.9E-07	7.1E-09	0.0E+00	0.0E+00
NM	1	9	1	0	0	0	0	0.074	0.002	0.000	0.000	0.000	0.000
NM	5	19	7	2	0	0	0	0.142	0.022	0.002	0.000	0.000	0.000
NM	7	5	1	0	1	0	0	0.094	0.009	0.003	0.001	0.000	0.000
NM	9	21	10	2	0	0	0	0.897	0.308	0.058	0.000	0.000	0.000
NM	11	3	3	0	0	0	0	0.108	0.052	0.000	0.000	0.000	0.000
NM	13	4	3	0	0	0	0	0.168	0.061	0.000	0.000	0.000	0.000
NM	15	36	6	3	0	0	0	0.446	0.151	0.018	0.000	0.000	0.000
NM	17	1	3	0	1	0	0	0.034	0.035	0.015	0.004	0.000	0.000
NM	19	3	1	1	0	0	0	0.043	0.009	0.002	0.000	0.000	0.000
NM	21	2	0	1	1	0	0	0.055	0.052	0.017	0.000	0.000	0.000
NM	23	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
NM	25	55	18	7	1	0	0	1.380	0.866	0.168	0.000	0.000	0.000
NM	27	3	6	0	0	0	0	0.169	0.086	0.000	0.000	0.000	0.000
NM	29	1	1	0	0	0	0	0.013	0.003	0.000	0.000	0.000	0.000
NM	33	4	1	0	0	0	0	0.024	0.002	0.000	0.000	0.000	0.000
NM	35	5	4	1	0	0	0	0.082	0.012	0.001	0.000	0.000	0.000
NM	37	13	14	4	0	0	0	1.232	0.683	0.079	0.000	0.000	0.000
NM	41	24	8	3	0	0	0	1.288	0.179	0.018	0.000	0.000	0.000

SPC Raw Tornado Data

NM	43	1	2	0	0	0	0	0.018	0.007	0.000	0.000	0.000	0.000
NM	45	2	0	2	0	0	0	0.015	0.006	0.002	0.000	0.000	0.000
NM	47	5	4	1	0	0	0	0.136	0.015	0.002	0.000	0.000	0.000
NM	49	12	4	0	0	0	0	0.312	0.037	0.000	0.000	0.000	0.000
NM	51	4	1	0	0	0	0	0.093	0.002	0.000	0.000	0.000	0.000
NM	53	2	1	0	0	0	0	0.095	0.048	0.000	0.000	0.000	0.000
NM	57	9	0	0	0	0	0	0.046	0.000	0.000	0.000	0.000	0.000
NM	59	16	3	2	0	0	0	0.816	0.221	0.052	0.000	0.000	0.000
NM	61	2	1	2	0	0	0	0.315	0.030	0.008	0.000	0.000	0.000
NM	0	261	104	31	4	0	0	8.099	2.900	0.444	0.006	0.000	0.000
NM	46	261	104	31	4	0	0	1.5E-06	5.2E-07	8.0E-08	1.1E-09	0.0E+00	0.0E+00
NV	1	3	0	0	0	0	0	0.034	0.000	0.000	0.000	0.000	0.000
NV	3	6	3	0	0	0	0	0.103	0.016	0.000	0.000	0.000	0.000
NV	7	9	2	0	0	0	0	0.482	0.049	0.000	0.000	0.000	0.000
NV	9	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
NV	11	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
NV	13	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
NV	15	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
NV	17	4	0	0	0	0	0	0.071	0.000	0.000	0.000	0.000	0.000
NV	19	2	0	0	0	0	0	0.048	0.000	0.000	0.000	0.000	0.000
NV	23	3	0	0	0	0	0	0.015	0.000	0.000	0.000	0.000	0.000
NV	31	3	2	0	0	0	0	0.162	0.077	0.000	0.000	0.000	0.000
NV	33	8	0	0	0	0	0	0.145	0.000	0.000	0.000	0.000	0.000
NV	0	41	8	0	0	0	0	1.091	0.151	0.000	0.000	0.000	0.000
NV	34	41	8	0	0	0	0	2.9E-07	4.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NY	1	3	1	0	1	1	0	1.093	1.280	0.746	0.371	0.110	0.000
NY	3	0	0	1	0	0	0	0.026	0.032	0.010	0.000	0.000	0.000
NY	7	1	2	0	0	0	0	0.199	0.102	0.000	0.000	0.000	0.000
NY	9	3	5	1	2	0	0	0.300	0.225	0.068	0.019	0.000	0.000
NY	11	1	1	0	1	0	0	0.268	0.299	0.151	0.044	0.000	0.000
NY	13	7	6	5	4	0	0	1.174	1.319	0.558	0.121	0.000	0.000
NY	15	0	0	0	1	0	0	0.194	0.296	0.151	0.044	0.000	0.000
NY	17	1	2	1	0	0	0	0.104	0.079	0.014	0.000	0.000	0.000
NY	21	0	2	1	0	1	0	0.352	0.427	0.161	0.029	0.009	0.000
NY	23	1	1	0	0	0	0	0.034	0.006	0.000	0.000	0.000	0.000
NY	25	1	1	1	0	0	0	0.031	0.014	0.001	0.000	0.000	0.000
NY	27	4	2	0	0	0	0	0.271	0.128	0.000	0.000	0.000	0.000
NY	29	5	5	4	1	0	0	0.284	0.267	0.089	0.006	0.000	0.000
NY	31	1	1	1	0	0	0	0.117	0.135	0.042	0.000	0.000	0.000
NY	33	0	1	0	0	0	0	0.010	0.005	0.000	0.000	0.000	0.000
NY	35	3	3	0	0	0	0	0.056	0.019	0.000	0.000	0.000	0.000
NY	37	0	1	0	0	0	0	0.180	0.101	0.000	0.000	0.000	0.000
NY	39	1	1	0	1	1	0	1.284	1.603	0.910	0.419	0.110	0.000
NY	41	2	1	1	0	0	0	0.340	0.122	0.007	0.000	0.000	0.000
NY	43	4	1	0	0	0	0	0.418	0.009	0.000	0.000	0.000	0.000
NY	45	1	2	0	0	0	0	0.195	0.106	0.000	0.000	0.000	0.000
NY	49	1	1	0	0	0	0	0.018	0.006	0.000	0.000	0.000	0.000
NY	51	1	1	0	0	0	0	0.021	0.003	0.000	0.000	0.000	0.000
NY	53	2	0	1	0	0	0	0.071	0.022	0.007	0.000	0.000	0.000

SPC Raw Tornado Data

NY	55	1	1	0	0	0	0	0.044	0.016	0.000	0.000	0.000	0.000
NY	57	0	1	0	0	1	0	1.077	1.284	0.745	0.371	0.110	0.000
NY	59	2	1	2	0	0	0	0.044	0.035	0.009	0.000	0.000	0.000
NY	63	2	2	0	0	0	0	0.063	0.019	0.000	0.000	0.000	0.000
NY	65	6	4	1	1	0	0	0.371	0.253	0.070	0.006	0.000	0.000
NY	67	3	2	0	1	0	0	0.223	0.043	0.001	0.000	0.000	0.000
NY	69	0	1	0	0	0	0	0.029	0.016	0.000	0.000	0.000	0.000
NY	71	3	1	2	1	0	0	0.214	0.189	0.056	0.008	0.000	0.000
NY	73	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
NY	75	6	3	0	1	0	0	0.217	0.094	0.010	0.003	0.000	0.000
NY	77	4	3	1	0	0	0	0.100	0.043	0.002	0.000	0.000	0.000
NY	79	1	1	2	0	0	0	0.043	0.042	0.013	0.000	0.000	0.000
NY	81	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
NY	83	1	4	1	0	0	0	0.076	0.051	0.007	0.000	0.000	0.000
NY	85	1	1	0	0	0	0	0.044	0.016	0.000	0.000	0.000	0.000
NY	87	1	0	0	0	0	0	0.097	0.000	0.000	0.000	0.000	0.000
NY	89	3	3	2	0	0	0	0.098	0.048	0.002	0.000	0.000	0.000
NY	91	4	2	0	1	0	0	0.078	0.011	0.001	0.000	0.000	0.000
NY	93	1	0	0	1	0	0	0.033	0.042	0.021	0.006	0.000	0.000
NY	95	0	1	0	0	1	0	1.147	1.323	0.745	0.371	0.110	0.000
NY	97	0	2	1	1	0	0	1.040	0.601	0.012	0.002	0.000	0.000
NY	101	1	2	0	0	0	0	0.158	0.080	0.000	0.000	0.000	0.000
NY	103	3	6	1	0	0	0	0.074	0.033	0.001	0.000	0.000	0.000
NY	105	0	3	2	0	0	0	0.230	0.203	0.043	0.000	0.000	0.000
NY	107	1	1	0	2	0	0	1.058	0.649	0.049	0.014	0.000	0.000
NY	109	3	2	0	0	0	0	1.055	0.558	0.000	0.000	0.000	0.000
NY	111	2	5	2	0	0	0	0.260	0.145	0.004	0.000	0.000	0.000
NY	113	1	1	0	0	0	0	0.025	0.006	0.000	0.000	0.000	0.000
NY	115	2	2	1	0	0	0	0.067	0.032	0.002	0.000	0.000	0.000
NY	117	1	1	0	0	0	0	0.195	0.101	0.000	0.000	0.000	0.000
NY	119	4	2	0	0	0	0	0.381	0.011	0.000	0.000	0.000	0.000
NY	121	0	2	0	0	0	0	0.145	0.081	0.000	0.000	0.000	0.000
NY	123	0	3	0	0	0	0	0.089	0.050	0.000	0.000	0.000	0.000
NY	888	1	0	0	1	0	0	0.007	0.002	0.001	0.000	0.000	0.000
NY	0	101	106	35	21	5	0	15.840	12.698	4.707	1.834	0.451	0.000
NY	44	101	106	35	21	5	0	7.6E-06	6.1E-06	2.3E-06	8.8E-07	2.2E-07	0.0E+00
OH	1	0	6	0	1	1	0	0.541	0.492	0.152	0.044	0.000	0.000
OH	3	4	4	0	2	1	0	0.661	0.773	0.422	0.191	0.049	0.000
OH	5	6	4	1	0	0	0	2.438	1.906	0.531	0.000	0.000	0.000
OH	7	1	6	4	1	0	0	1.130	1.264	0.367	0.000	0.000	0.000
OH	9	0	1	0	0	0	0	0.010	0.006	0.000	0.000	0.000	0.000
OH	11	0	4	0	0	0	0	0.125	0.070	0.000	0.000	0.000	0.000
OH	13	2	1	0	0	0	0	0.153	0.009	0.000	0.000	0.000	0.000
OH	15	3	4	1	0	2	0	0.477	0.240	0.022	0.001	0.000	0.000
OH	17	2	5	4	1	1	0	1.007	1.100	0.510	0.204	0.048	0.000
OH	19	0	2	1	0	0	0	0.018	0.012	0.001	0.000	0.000	0.000
OH	21	0	1	2	1	0	0	0.512	0.758	0.370	0.101	0.000	0.000
OH	23	3	7	1	1	0	1	0.394	0.390	0.104	0.001	0.000	0.000
OH	25	2	4	1	1	1	0	0.818	0.763	0.374	0.165	0.049	0.000

SPC Raw Tornado Data

OH	27	4	4	3	1	1	0	0.837	0.926	0.283	0.001	0.000	0.000
OH	29	6	5	3	1	0	0	0.695	0.625	0.212	0.018	0.000	0.000
OH	31	0	3	1	1	0	0	0.023	0.016	0.002	0.000	0.000	0.000
OH	33	1	9	1	0	0	0	0.447	0.248	0.001	0.000	0.000	0.000
OH	35	3	2	3	2	2	0	0.278	0.266	0.115	0.030	0.000	0.000
OH	37	5	2	4	3	0	0	0.525	0.431	0.184	0.044	0.000	0.000
OH	39	4	0	2	0	0	0	0.159	0.070	0.022	0.000	0.000	0.000
OH	41	0	2	1	0	0	0	0.008	0.006	0.001	0.000	0.000	0.000
OH	43	4	3	1	0	1	0	0.130	0.070	0.016	0.001	0.000	0.000
OH	45	0	8	1	1	0	0	0.156	0.091	0.002	0.000	0.000	0.000
OH	47	0	1	3	1	0	0	0.988	1.094	0.320	0.008	0.000	0.000
OH	49	7	8	5	2	0	0	0.607	0.390	0.090	0.009	0.000	0.000
OH	51	4	6	1	0	0	0	0.121	0.067	0.007	0.000	0.000	0.000
OH	53	0	2	0	0	0	1	0.090	0.051	0.001	0.001	0.000	0.000
OH	55	3	4	2	0	0	0	0.377	0.242	0.051	0.000	0.000	0.000
OH	57	0	4	4	1	0	1	0.579	0.650	0.339	0.184	0.086	0.025
OH	59	2	2	3	0	0	0	0.336	0.192	0.010	0.000	0.000	0.000
OH	61	0	5	1	2	2	1	1.018	1.192	0.622	0.277	0.069	0.000
OH	63	2	4	3	0	1	0	0.292	0.243	0.052	0.001	0.000	0.000
OH	65	2	4	0	0	0	0	0.132	0.065	0.000	0.000	0.000	0.000
OH	67	0	1	0	1	0	0	0.033	0.045	0.021	0.006	0.000	0.000
OH	69	3	2	2	0	1	0	0.363	0.375	0.180	0.078	0.023	0.000
OH	71	2	4	4	2	0	0	0.816	0.866	0.334	0.062	0.000	0.000
OH	73	0	2	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
OH	75	0	3	2	0	0	0	0.131	0.109	0.021	0.000	0.000	0.000
OH	77	3	6	6	1	0	0	0.581	0.487	0.113	0.000	0.000	0.000
OH	79	3	1	0	0	0	0	0.226	0.116	0.000	0.000	0.000	0.000
OH	81	0	1	1	0	0	0	0.013	0.009	0.001	0.000	0.000	0.000
OH	83	3	0	5	0	0	0	0.167	0.111	0.035	0.000	0.000	0.000
OH	85	0	0	1	0	0	0	0.050	0.062	0.020	0.000	0.000	0.000
OH	87	1	3	0	0	0	1	0.071	0.015	0.001	0.001	0.000	0.000
OH	89	2	8	2	1	0	0	0.654	0.590	0.155	0.021	0.000	0.000
OH	91	1	2	1	1	0	0	0.068	0.071	0.025	0.003	0.000	0.000
OH	93	8	8	3	0	2	0	0.735	0.551	0.183	0.072	0.021	0.000
OH	95	1	0	2	0	1	0	0.204	0.240	0.103	0.029	0.009	0.000
OH	97	0	5	1	1	0	0	0.401	0.310	0.049	0.000	0.000	0.000
OH	99	5	3	3	2	0	0	0.408	0.242	0.031	0.001	0.000	0.000
OH	101	2	5	4	0	0	0	0.448	0.446	0.118	0.000	0.000	0.000
OH	103	5	7	0	1	0	0	0.596	0.301	0.062	0.018	0.000	0.000
OH	105	0	1	1	0	0	0	0.091	0.055	0.002	0.000	0.000	0.000
OH	107	3	7	1	0	1	0	0.569	0.310	0.005	0.001	0.000	0.000
OH	109	2	8	3	0	0	0	0.206	0.132	0.013	0.000	0.000	0.000
OH	111	1	1	0	0	0	0	0.053	0.016	0.000	0.000	0.000	0.000
OH	113	1	5	0	1	0	0	0.073	0.051	0.010	0.003	0.000	0.000
OH	117	2	2	7	1	0	0	1.271	1.443	0.446	0.018	0.000	0.000
OH	119	0	7	6	0	0	0	0.689	0.565	0.103	0.000	0.000	0.000
OH	121	0	2	0	0	0	0	0.113	0.063	0.000	0.000	0.000	0.000
OH	123	2	2	1	0	0	0	0.377	0.272	0.048	0.000	0.000	0.000
OH	125	0	5	1	1	0	0	0.429	0.390	0.103	0.018	0.000	0.000

SPC Raw Tornado Data

OH	127	0	5	1	1	0	0	0.133	0.101	0.016	0.000	0.000	0.000
OH	129	1	6	3	1	0	0	0.396	0.333	0.070	0.003	0.000	0.000
OH	131	0	1	2	0	0	0	0.201	0.127	0.009	0.000	0.000	0.000
OH	133	0	5	1	1	0	1	0.623	0.636	0.317	0.184	0.086	0.025
OH	135	0	4	2	1	1	0	0.247	0.334	0.155	0.044	0.000	0.000
OH	137	4	5	1	1	0	0	0.372	0.288	0.072	0.018	0.000	0.000
OH	139	4	8	7	0	0	0	0.932	0.788	0.167	0.000	0.000	0.000
OH	141	0	5	1	0	0	0	2.432	1.364	0.001	0.000	0.000	0.000
OH	143	0	3	0	0	1	0	0.618	0.347	0.001	0.001	0.000	0.000
OH	145	0	6	2	1	0	1	0.332	0.252	0.051	0.015	0.006	0.002
OH	147	3	6	3	2	0	0	0.742	0.798	0.281	0.055	0.000	0.000
OH	149	1	0	1	1	1	0	0.258	0.305	0.165	0.073	0.021	0.000
OH	151	0	2	2	0	0	0	0.120	0.142	0.043	0.000	0.000	0.000
OH	153	1	4	1	2	0	0	0.213	0.243	0.101	0.029	0.000	0.000
OH	155	5	3	1	2	0	1	0.891	0.393	0.156	0.045	0.000	0.000
OH	157	1	4	2	0	0	0	0.237	0.274	0.083	0.000	0.000	0.000
OH	159	3	3	1	0	0	0	0.364	0.358	0.102	0.000	0.000	0.000
OH	161	0	6	1	0	2	0	0.223	0.139	0.011	0.003	0.001	0.000
OH	165	4	3	3	1	2	0	1.315	1.490	0.605	0.161	0.048	0.000
OH	167	2	1	2	0	0	0	0.230	0.045	0.014	0.000	0.000	0.000
OH	169	1	6	4	0	0	0	0.209	0.121	0.017	0.000	0.000	0.000
OH	171	1	2	3	2	0	0	0.472	0.460	0.165	0.018	0.000	0.000
OH	173	5	1	5	1	1	0	0.235	0.252	0.090	0.009	0.000	0.000
OH	175	1	4	3	0	0	0	0.777	0.856	0.244	0.000	0.000	0.000
OH	888	0	0	0	0	1	1	0.460	0.553	0.323	0.161	0.048	0.000
OH	0	157	321	166	53	27	9	38.964	33.967	10.625	2.432	0.566	0.053
OH	46	157	321	166	53	27	9	2.1E-05	1.8E-05	5.6E-06	1.3E-06	3.0E-07	2.8E-08
OK	1	2	5	2	1	0	0	1.565	1.239	0.272	0.048	0.000	0.000
OK	3	5	8	11	1	0	0	1.363	1.451	0.429	0.000	0.000	0.000
OK	5	7	9	7	0	1	0	1.644	1.615	0.463	0.001	0.000	0.000
OK	7	19	10	6	1	1	0	1.063	0.212	0.048	0.008	0.002	0.000
OK	9	24	16	4	3	0	0	2.730	1.954	0.585	0.145	0.000	0.000
OK	11	6	13	3	1	1	0	0.527	0.247	0.036	0.010	0.000	0.000
OK	13	5	7	12	4	1	0	1.449	1.524	0.503	0.039	0.009	0.000
OK	15	20	15	23	5	2	0	4.014	4.409	1.610	0.279	0.069	0.000
OK	17	14	17	12	1	3	0	2.414	1.904	0.677	0.186	0.055	0.000
OK	19	10	15	6	6	1	0	4.194	4.276	1.449	0.321	0.004	0.000
OK	21	5	7	3	1	0	0	0.465	0.342	0.077	0.006	0.000	0.000
OK	23	3	6	2	3	1	1	0.892	0.777	0.377	0.201	0.087	0.025
OK	25	15	6	3	0	1	0	1.178	0.953	0.391	0.165	0.049	0.000
OK	27	13	13	14	3	1	0	2.454	2.783	1.012	0.173	0.021	0.000
OK	29	4	4	5	1	0	0	0.606	0.568	0.201	0.021	0.000	0.000
OK	31	16	17	8	1	1	0	1.651	1.107	0.153	0.009	0.000	0.000
OK	33	14	7	4	4	2	0	1.235	1.380	0.654	0.235	0.056	0.000
OK	35	6	14	9	4	1	0	1.719	1.919	0.695	0.134	0.021	0.000
OK	37	10	9	8	4	4	1	1.703	1.779	0.806	0.316	0.091	0.000
OK	39	18	13	7	3	1	0	1.837	1.770	0.581	0.085	0.009	0.000
OK	41	6	8	6	4	0	0	1.110	0.683	0.084	0.004	0.000	0.000
OK	43	18	15	7	0	0	0	1.619	1.033	0.136	0.000	0.000	0.000

SPC Raw Tornado Data

OK	45	26	15	9	1	0	0	1.725	1.265	0.282	0.001	0.000	0.000
OK	47	22	14	7	6	2	0	3.071	3.197	1.462	0.494	0.111	0.000
OK	49	10	19	12	4	1	0	2.374	2.711	1.009	0.174	0.000	0.000
OK	51	7	17	15	5	0	0	2.368	2.441	0.707	0.051	0.000	0.000
OK	53	11	8	8	5	1	0	2.624	2.956	1.288	0.412	0.049	0.000
OK	55	12	6	6	1	0	0	0.828	0.413	0.042	0.008	0.000	0.000
OK	57	7	9	3	0	0	0	1.033	0.808	0.160	0.000	0.000	0.000
OK	59	6	6	3	1	0	0	0.574	0.749	0.356	0.098	0.000	0.000
OK	61	4	3	2	0	1	0	0.091	0.044	0.012	0.001	0.000	0.000
OK	63	8	4	12	1	1	0	0.665	0.488	0.123	0.029	0.009	0.000
OK	65	26	12	16	4	0	0	3.640	3.429	1.192	0.216	0.000	0.000
OK	67	10	10	2	2	1	0	0.834	0.604	0.196	0.053	0.000	0.000
OK	69	6	7	5	0	1	0	0.526	0.326	0.077	0.029	0.009	0.000
OK	71	32	15	20	4	2	2	4.535	4.624	2.113	0.888	0.325	0.082
OK	73	14	14	10	2	0	0	1.315	1.081	0.318	0.029	0.000	0.000
OK	75	25	17	10	2	0	0	2.576	1.913	0.414	0.052	0.000	0.000
OK	77	0	8	3	0	2	0	1.826	1.883	0.632	0.142	0.042	0.000
OK	79	4	7	9	4	2	1	0.991	1.207	0.579	0.214	0.058	0.011
OK	81	15	18	12	7	2	0	2.097	2.097	0.718	0.150	0.000	0.000
OK	83	11	8	7	2	0	0	1.256	0.456	0.109	0.021	0.000	0.000
OK	85	4	5	4	3	0	0	2.347	3.203	1.423	0.330	0.000	0.000
OK	87	9	8	8	1	0	0	1.153	0.939	0.291	0.018	0.000	0.000
OK	89	5	14	12	2	0	1	2.563	1.759	0.296	0.004	0.000	0.000
OK	91	9	6	6	1	0	0	0.832	0.872	0.312	0.044	0.000	0.000
OK	93	9	10	6	2	1	0	2.997	3.196	1.061	0.162	0.048	0.000
OK	95	3	5	4	3	1	0	0.997	1.270	0.620	0.189	0.009	0.000
OK	97	12	15	10	4	0	0	1.530	1.731	0.696	0.161	0.000	0.000
OK	99	3	11	8	0	1	0	1.822	1.383	0.216	0.001	0.000	0.000
OK	101	11	4	10	1	1	0	0.965	1.097	0.468	0.128	0.009	0.000
OK	103	8	9	5	0	1	0	1.605	1.631	0.790	0.371	0.110	0.000
OK	105	10	5	5	1	0	0	0.314	0.245	0.072	0.000	0.000	0.000
OK	107	8	7	4	2	2	0	1.069	0.581	0.015	0.002	0.000	0.000
OK	109	14	20	18	14	1	0	2.493	3.049	1.352	0.341	0.000	0.000
OK	111	8	8	4	4	1	0	1.376	1.534	0.691	0.184	0.000	0.000
OK	113	18	16	12	1	4	0	3.822	3.993	2.080	1.019	0.303	0.000
OK	115	5	4	5	3	1	0	0.473	0.379	0.139	0.052	0.010	0.000
OK	117	10	6	3	1	3	0	2.226	2.480	1.380	0.656	0.193	0.000
OK	119	8	16	10	4	0	0	0.915	0.905	0.301	0.037	0.000	0.000
OK	121	9	22	10	1	1	0	3.707	2.655	0.709	0.089	0.021	0.000
OK	123	8	11	12	5	1	0	1.605	1.685	0.622	0.157	0.020	0.000
OK	125	15	7	13	2	4	1	3.333	3.933	1.803	0.659	0.230	0.057
OK	127	1	11	6	2	1	0	0.935	0.785	0.159	0.006	0.000	0.000
OK	129	9	6	9	1	1	0	1.417	1.307	0.373	0.001	0.000	0.000
OK	131	9	14	10	6	2	0	1.600	1.517	0.559	0.133	0.028	0.000
OK	133	7	7	13	6	2	0	3.187	3.785	1.772	0.567	0.111	0.000
OK	135	8	6	6	3	3	0	1.007	0.827	0.241	0.075	0.007	0.000
OK	137	15	13	11	4	0	0	1.407	0.977	0.302	0.061	0.000	0.000
OK	139	17	13	7	2	0	0	1.514	1.339	0.501	0.142	0.000	0.000
OK	141	22	16	9	3	2	0	1.330	0.830	0.201	0.018	0.000	0.000

SPC Raw Tornado Data

OK	143	18	14	14	7	2	0	2.173	2.261	0.841	0.179	0.009	0.000
OK	145	7	2	9	2	0	0	0.443	0.399	0.134	0.009	0.000	0.000
OK	147	4	9	6	2	0	0	0.575	0.471	0.102	0.005	0.000	0.000
OK	149	11	13	5	3	1	0	1.350	1.067	0.255	0.056	0.009	0.000
OK	151	16	15	8	1	0	0	1.518	1.195	0.394	0.044	0.000	0.000
OK	153	19	8	2	2	0	0	1.425	1.092	0.487	0.139	0.000	0.000
OK	888	0	1	9	8	8	2	0.047	0.059	0.026	0.008	0.002	0.000
OK	0	845	808	626	209	83	9	130.454	123.048	44.709	11.494	2.197	0.175
OK	46	845	808	626	209	83	9	4.1E-05	3.9E-05	1.4E-05	3.6E-06	7.0E-07	5.5E-08
OR	1	2	0	0	0	0	0	0.010	0.000	0.000	0.000	0.000	
OR	5	1	1	0	0	0	0	0.039	0.003	0.000	0.000	0.000	0.000
OR	7	2	1	0	0	0	0	0.020	0.006	0.000	0.000	0.000	0.000
OR	9	1	1	0	0	0	0	0.010	0.003	0.000	0.000	0.000	0.000
OR	15	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
OR	17	1	1	0	0	0	0	0.015	0.005	0.000	0.000	0.000	0.000
OR	21	1	0	0	0	0	0	0.280	0.000	0.000	0.000	0.000	0.000
OR	25	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
OR	31	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
OR	35	1	1	0	0	0	0	0.010	0.003	0.000	0.000	0.000	0.000
OR	37	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
OR	39	2	2	0	0	0	0	0.021	0.006	0.000	0.000	0.000	0.000
OR	41	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
OR	43	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
OR	45	2	2	0	0	0	0	0.290	0.151	0.000	0.000	0.000	0.000
OR	47	1	1	0	0	0	0	0.011	0.002	0.000	0.000	0.000	0.000
OR	51	1	2	0	0	0	0	0.054	0.028	0.000	0.000	0.000	0.000
OR	57	0	1	0	0	0	0	0.010	0.005	0.000	0.000	0.000	0.000
OR	59	2	0	0	0	0	0	0.010	0.000	0.000	0.000	0.000	0.000
OR	61	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
OR	63	1	1	1	0	0	0	0.264	0.302	0.094	0.000	0.000	0.000
OR	65	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
OR	67	3	1	1	0	0	0	0.074	0.065	0.020	0.000	0.000	0.000
OR	71	2	0	1	0	0	0	0.064	0.062	0.020	0.000	0.000	0.000
OR	0	31	15	3	0	0	0	1.232	0.641	0.133	0.000	0.000	0.000
OR	45	31	15	3	0	0	0	2.9E-07	1.5E-07	3.1E-08	0.0E+00	0.0E+00	0.0E+00
PA	1	0	2	4	1	0	0	0.602	0.749	0.243	0.006	0.000	0.000
PA	3	4	2	2	1	1	0	0.696	0.816	0.264	0.011	0.003	0.000
PA	5	2	2	3	0	1	0	0.056	0.049	0.015	0.001	0.000	0.000
PA	7	1	7	3	1	0	0	0.610	0.811	0.370	0.101	0.000	0.000
PA	9	0	4	0	0	0	0	0.060	0.034	0.000	0.000	0.000	0.000
PA	11	1	8	8	1	0	0	0.546	0.592	0.168	0.000	0.000	0.000
PA	13	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
PA	15	3	5	1	0	0	0	0.174	0.087	0.004	0.000	0.000	0.000
PA	17	2	13	1	0	0	0	0.918	0.483	0.007	0.000	0.000	0.000
PA	19	6	4	3	1	0	0	0.191	0.085	0.009	0.000	0.000	0.000
PA	21	1	9	2	0	0	0	0.284	0.240	0.048	0.000	0.000	0.000
PA	23	0	1	0	0	0	0	0.085	0.048	0.000	0.000	0.000	0.000
PA	25	1	0	1	0	0	0	0.007	0.002	0.001	0.000	0.000	0.000
PA	27	1	3	1	0	1	0	0.085	0.046	0.002	0.001	0.000	0.000

SPC Raw Tornado Data

PA	29	3	10	5	2	0	0	0.645	0.640	0.216	0.049	0.000	0.000
PA	31	2	2	1	0	0	0	0.105	0.055	0.001	0.000	0.000	0.000
PA	33	1	1	1	0	1	0	1.992	2.372	1.340	0.646	0.193	0.000
PA	35	1	1	0	0	2	0	0.023	0.012	0.002	0.001	0.000	0.000
PA	37	0	4	1	0	0	0	0.087	0.066	0.010	0.000	0.000	0.000
PA	39	5	7	7	3	1	0	0.792	0.797	0.299	0.063	0.000	0.000
PA	41	2	4	0	1	0	0	0.161	0.068	0.003	0.001	0.000	0.000
PA	43	2	3	4	0	0	0	0.133	0.126	0.036	0.000	0.000	0.000
PA	45	0	3	1	0	0	0	0.087	0.055	0.004	0.000	0.000	0.000
PA	47	0	0	1	1	1	0	0.041	0.062	0.031	0.009	0.000	0.000
PA	49	1	7	4	1	2	0	0.658	0.784	0.398	0.163	0.042	0.000
PA	51	2	3	3	0	0	0	0.268	0.263	0.069	0.000	0.000	0.000
PA	53	0	1	1	0	2	0	0.293	0.343	0.104	0.001	0.000	0.000
PA	55	2	3	1	0	0	0	0.065	0.047	0.010	0.000	0.000	0.000
PA	59	1	3	1	0	0	0	0.021	0.010	0.001	0.000	0.000	0.000
PA	61	2	2	2	0	0	0	0.413	0.460	0.136	0.000	0.000	0.000
PA	63	3	1	4	0	0	0	0.111	0.038	0.011	0.000	0.000	0.000
PA	65	0	4	1	0	0	0	0.514	0.331	0.025	0.000	0.000	0.000
PA	69	0	2	0	0	0	0	0.010	0.006	0.000	0.000	0.000	0.000
PA	71	1	9	8	1	0	0	0.655	0.546	0.154	0.008	0.000	0.000
PA	73	4	1	4	0	0	0	0.083	0.050	0.015	0.000	0.000	0.000
PA	75	2	5	3	1	0	0	0.393	0.299	0.064	0.014	0.000	0.000
PA	77	1	4	3	0	0	0	0.295	0.183	0.012	0.000	0.000	0.000
PA	79	2	6	3	0	0	0	0.609	0.325	0.007	0.000	0.000	0.000
PA	81	1	4	1	2	0	0	1.200	1.477	0.681	0.192	0.000	0.000
PA	83	1	0	1	0	1	0	0.100	0.004	0.002	0.001	0.000	0.000
PA	85	4	1	4	1	1	1	0.848	0.913	0.506	0.249	0.086	0.011
PA	87	1	1	1	0	0	0	0.021	0.006	0.001	0.000	0.000	0.000
PA	89	2	5	2	1	0	0	0.066	0.034	0.006	0.000	0.000	0.000
PA	91	4	6	3	1	0	0	0.330	0.215	0.040	0.003	0.000	0.000
PA	93	1	2	0	0	0	0	0.017	0.005	0.000	0.000	0.000	0.000
PA	95	2	6	1	1	0	0	0.169	0.080	0.022	0.004	0.000	0.000
PA	97	1	2	2	1	0	0	0.041	0.027	0.005	0.000	0.000	0.000
PA	99	0	1	2	0	0	0	0.042	0.031	0.005	0.000	0.000	0.000
PA	101	0	3	2	0	0	0	0.139	0.098	0.011	0.000	0.000	0.000
PA	105	0	3	2	0	0	0	0.038	0.027	0.003	0.000	0.000	0.000
PA	107	4	4	2	0	0	0	0.116	0.047	0.004	0.000	0.000	0.000
PA	109	2	2	2	0	0	0	0.141	0.091	0.011	0.000	0.000	0.000
PA	111	2	2	2	0	0	0	0.306	0.181	0.013	0.000	0.000	0.000
PA	113	0	2	2	0	0	0	0.214	0.197	0.045	0.000	0.000	0.000
PA	115	1	0	2	0	0	0	0.117	0.139	0.044	0.000	0.000	0.000
PA	117	0	1	1	0	0	0	0.047	0.044	0.010	0.000	0.000	0.000
PA	119	0	0	0	1	0	0	0.001	0.002	0.001	0.000	0.000	0.000
PA	121	3	1	2	0	2	0	0.550	0.619	0.343	0.161	0.048	0.000
PA	123	0	3	0	1	2	0	0.778	0.918	0.473	0.204	0.048	0.000
PA	125	0	5	1	0	0	0	0.045	0.034	0.005	0.000	0.000	0.000
PA	127	0	0	1	0	0	0	0.106	0.132	0.042	0.000	0.000	0.000
PA	129	3	12	5	1	1	0	0.299	0.264	0.074	0.009	0.000	0.000
PA	131	0	1	1	0	0	0	0.021	0.023	0.007	0.000	0.000	0.000

SPC Raw Tornado Data

PA	133	2	6	9	1	0	0	0.695	0.712	0.231	0.011	0.000	0.000
PA	888	0	0	4	0	3	1	0.135	0.167	0.055	0.002	0.001	0.000
PA	0	93	220	143	26	22	2	19.367	18.474	6.720	1.912	0.422	0.011
PA	46	93	220	143	26	22	2	9.4E-06	9.0E-06	3.3E-06	9.3E-07	2.0E-07	5.4E-09
RI	1	1	0	0	0	0	0	0.024	0.000	0.000	0.000	0.000	
RI	3	1	1	0	0	0	0	0.093	0.048	0.000	0.000	0.000	
RI	7	1	3	1	0	0	0	0.334	0.255	0.042	0.000	0.000	
RI	0	3	4	1	0	0	0	0.450	0.302	0.042	0.000	0.000	
RI	23	3	4	1	0	0	0	1.9E-05	1.3E-05	1.7E-06	0.0E+00	0.0E+00	0.0E+00
SC	1	0	3	2	0	1	0	0.373	0.386	0.170	0.071	0.021	0.000
SC	3	3	7	6	0	0	0	0.448	0.415	0.107	0.000	0.000	0.000
SC	5	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
SC	7	2	4	3	1	0	0	0.786	0.881	0.267	0.003	0.000	0.000
SC	9	1	2	0	1	0	0	0.100	0.053	0.001	0.000	0.000	0.000
SC	11	1	4	3	1	0	0	0.938	1.185	0.481	0.101	0.000	0.000
SC	13	5	7	0	0	0	0	0.220	0.104	0.000	0.000	0.000	0.000
SC	15	7	3	0	0	0	0	0.126	0.010	0.000	0.000	0.000	0.000
SC	17	1	2	4	0	0	0	0.350	0.279	0.050	0.000	0.000	0.000
SC	19	7	9	1	1	0	0	0.244	0.129	0.036	0.008	0.000	0.000
SC	21	2	9	4	1	1	0	1.439	1.086	0.251	0.066	0.020	0.000
SC	23	1	4	1	0	0	0	0.074	0.048	0.007	0.000	0.000	0.000
SC	25	8	4	1	0	2	0	0.315	0.283	0.147	0.066	0.020	0.000
SC	27	8	5	3	0	0	0	0.567	0.404	0.117	0.000	0.000	0.000
SC	29	4	6	0	0	0	0	0.185	0.057	0.000	0.000	0.000	0.000
SC	31	4	5	3	1	0	0	0.241	0.233	0.089	0.021	0.000	0.000
SC	33	3	3	2	1	0	0	0.237	0.214	0.088	0.018	0.000	0.000
SC	35	2	4	0	0	0	0	0.137	0.065	0.000	0.000	0.000	0.000
SC	37	0	3	1	1	0	0	0.678	0.817	0.350	0.101	0.000	0.000
SC	39	5	2	1	1	1	0	0.530	0.566	0.324	0.160	0.048	0.000
SC	41	2	11	6	0	0	0	0.373	0.358	0.096	0.000	0.000	0.000
SC	43	1	5	1	0	0	0	0.146	0.081	0.007	0.000	0.000	0.000
SC	45	9	4	4	2	0	0	0.563	0.445	0.172	0.041	0.000	0.000
SC	47	4	4	1	2	2	0	0.962	0.511	0.104	0.030	0.001	0.000
SC	49	1	5	0	0	0	0	0.149	0.079	0.000	0.000	0.000	0.000
SC	51	3	13	9	2	0	0	0.690	0.703	0.200	0.009	0.000	0.000
SC	53	0	2	0	0	0	0	0.025	0.014	0.000	0.000	0.000	0.000
SC	55	3	5	1	0	1	0	0.217	0.163	0.061	0.029	0.009	0.000
SC	57	1	4	0	0	2	0	0.393	0.434	0.237	0.118	0.035	0.000
SC	59	2	2	2	1	0	0	1.113	1.010	0.234	0.000	0.000	0.000
SC	61	1	2	1	0	0	0	0.093	0.082	0.020	0.000	0.000	0.000
SC	63	4	8	3	3	0	0	0.453	0.394	0.116	0.025	0.000	0.000
SC	65	1	4	0	1	0	0	0.965	0.901	0.349	0.101	0.000	0.000
SC	67	0	2	3	0	1	0	0.184	0.207	0.061	0.001	0.000	0.000
SC	69	1	3	1	0	3	0	2.385	2.809	1.623	0.807	0.240	0.000
SC	71	4	4	5	4	0	0	2.621	3.423	1.376	0.244	0.000	0.000
SC	73	2	5	4	1	0	0	1.789	2.159	0.878	0.172	0.000	0.000
SC	75	7	20	3	1	0	0	0.713	0.382	0.008	0.000	0.000	0.000
SC	77	2	8	2	0	0	0	0.577	0.425	0.068	0.000	0.000	0.000
SC	79	6	9	6	0	0	0	0.218	0.121	0.018	0.000	0.000	0.000

SPC Raw Tornado Data

SC	81	0	0	2	1	0	0	1.084	1.474	0.598	0.101	0.000	0.000
SC	83	4	11	4	3	1	0	1.598	1.301	0.366	0.110	0.020	0.000
SC	85	4	4	1	0	0	0	0.224	0.139	0.020	0.000	0.000	0.000
SC	87	3	1	3	1	0	0	0.854	0.924	0.312	0.044	0.000	0.000
SC	89	2	5	1	0	0	0	0.059	0.025	0.001	0.000	0.000	0.000
SC	91	5	6	2	0	0	0	0.203	0.101	0.014	0.000	0.000	0.000
SC	0	136	234	100	31	15	0	26.642	25.878	9.423	2.450	0.413	0.000
SC	46	136	234	100	31	15	0	1.9E-05	1.9E-05	6.8E-06	1.8E-06	3.0E-07	0.0E+00
SD	1	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
SD	3	6	2	1	0	0	0	0.097	0.070	0.020	0.000	0.000	0.000
SD	5	14	7	3	0	0	0	0.373	0.248	0.052	0.000	0.000	0.000
SD	7	11	2	1	1	0	0	0.629	0.695	0.339	0.098	0.000	0.000
SD	9	7	5	2	3	0	0	1.214	1.214	0.543	0.125	0.000	0.000
SD	11	10	7	1	1	1	0	1.516	1.526	0.776	0.379	0.110	0.000
SD	13	37	7	4	4	0	0	0.975	0.486	0.195	0.046	0.000	0.000
SD	15	9	4	4	1	0	0	0.571	0.304	0.066	0.006	0.000	0.000
SD	17	13	1	0	1	0	0	0.193	0.022	0.010	0.003	0.000	0.000
SD	19	8	2	1	1	0	0	0.191	0.064	0.018	0.001	0.000	0.000
SD	21	4	2	4	1	0	0	0.964	1.216	0.435	0.040	0.000	0.000
SD	23	17	10	4	3	0	0	0.335	0.211	0.047	0.001	0.000	0.000
SD	25	6	5	6	2	0	0	0.726	0.884	0.382	0.099	0.000	0.000
SD	27	8	4	6	0	0	0	0.397	0.274	0.051	0.000	0.000	0.000
SD	29	8	4	3	2	0	0	0.171	0.076	0.009	0.001	0.000	0.000
SD	31	15	0	1	0	0	0	0.210	0.004	0.001	0.000	0.000	0.000
SD	33	3	2	3	0	0	0	0.046	0.026	0.007	0.000	0.000	0.000
SD	35	6	1	5	3	0	0	0.914	0.832	0.281	0.073	0.000	0.000
SD	37	8	4	1	0	0	0	0.075	0.029	0.006	0.000	0.000	0.000
SD	39	10	1	2	0	0	0	0.263	0.173	0.053	0.000	0.000	0.000
SD	41	11	1	3	0	0	0	0.103	0.047	0.014	0.000	0.000	0.000
SD	43	12	3	2	1	0	0	2.185	2.900	1.415	0.398	0.000	0.000
SD	45	8	6	1	0	0	0	0.220	0.112	0.020	0.000	0.000	0.000
SD	47	15	2	4	0	0	0	0.342	0.136	0.037	0.000	0.000	0.000
SD	49	6	2	2	1	0	0	0.075	0.049	0.016	0.002	0.000	0.000
SD	51	3	4	1	0	0	0	0.122	0.064	0.002	0.000	0.000	0.000
SD	53	6	3	4	2	0	0	1.168	0.468	0.119	0.002	0.000	0.000
SD	55	11	8	4	0	0	0	0.360	0.104	0.012	0.000	0.000	0.000
SD	57	6	1	3	0	0	0	0.284	0.310	0.097	0.000	0.000	0.000
SD	59	12	3	6	1	0	0	0.335	0.162	0.039	0.001	0.000	0.000
SD	61	3	2	1	0	0	0	0.348	0.141	0.007	0.000	0.000	0.000
SD	63	8	2	0	0	1	0	0.170	0.080	0.010	0.005	0.001	0.000
SD	65	9	2	2	1	0	0	0.222	0.079	0.029	0.006	0.000	0.000
SD	67	18	9	4	0	0	0	0.372	0.166	0.021	0.000	0.000	0.000
SD	69	5	1	0	0	0	0	0.448	0.226	0.000	0.000	0.000	0.000
SD	71	10	2	1	0	0	0	0.164	0.089	0.016	0.000	0.000	0.000
SD	73	6	1	0	0	0	0	0.040	0.005	0.000	0.000	0.000	0.000
SD	75	3	1	1	0	0	0	0.030	0.007	0.001	0.000	0.000	0.000
SD	77	8	7	0	2	0	0	0.252	0.154	0.030	0.009	0.000	0.000
SD	79	4	7	5	3	1	0	0.550	0.632	0.281	0.090	0.021	0.000
SD	81	4	4	4	2	0	0	0.388	0.240	0.065	0.003	0.000	0.000

SPC Raw Tornado Data

SD	83	7	2	10	1	0	0	0.600	0.686	0.215	0.001	0.000	0.000
SD	85	20	8	3	2	0	0	0.341	0.189	0.048	0.004	0.000	0.000
SD	87	10	12	4	3	0	0	0.814	0.606	0.178	0.043	0.000	0.000
SD	89	3	4	3	1	0	0	0.417	0.447	0.128	0.000	0.000	0.000
SD	91	5	2	2	0	0	0	0.175	0.153	0.045	0.000	0.000	0.000
SD	93	20	9	3	2	0	0	0.471	0.213	0.053	0.007	0.000	0.000
SD	95	3	2	1	0	0	0	0.082	0.015	0.001	0.000	0.000	0.000
SD	97	9	3	8	1	0	0	0.475	0.251	0.081	0.003	0.000	0.000
SD	99	15	8	5	1	2	0	3.103	3.550	1.799	0.742	0.221	0.000
SD	101	6	1	1	0	0	0	0.159	0.063	0.001	0.000	0.000	0.000
SD	103	27	7	3	0	0	0	1.289	0.897	0.278	0.000	0.000	0.000
SD	105	22	5	6	0	0	0	0.375	0.232	0.062	0.000	0.000	0.000
SD	107	4	6	5	0	0	0	0.506	0.589	0.183	0.000	0.000	0.000
SD	109	8	5	3	0	0	0	0.280	0.171	0.036	0.000	0.000	0.000
SD	111	8	1	4	0	0	0	0.415	0.438	0.138	0.000	0.000	0.000
SD	113	6	3	0	1	0	0	0.159	0.150	0.071	0.021	0.000	0.000
SD	115	20	6	7	1	0	0	0.888	0.763	0.216	0.018	0.000	0.000
SD	117	11	4	3	0	0	0	0.558	0.430	0.122	0.000	0.000	0.000
SD	119	13	3	1	0	0	0	0.112	0.023	0.005	0.000	0.000	0.000
SD	121	16	3	4	0	0	0	0.303	0.223	0.066	0.000	0.000	0.000
SD	123	9	7	4	0	0	1	1.887	1.549	0.555	0.311	0.145	0.043
SD	125	7	3	8	1	1	0	0.677	0.815	0.309	0.044	0.000	0.000
SD	127	8	5	1	1	0	0	0.454	0.089	0.011	0.000	0.000	0.000
SD	129	7	5	3	2	0	0	0.269	0.173	0.068	0.018	0.000	0.000
SD	131	1	0	1	0	0	0	0.069	0.079	0.025	0.000	0.000	0.000
SD	135	9	4	4	3	1	0	0.726	0.724	0.291	0.077	0.020	0.000
SD	137	8	0	0	1	0	0	0.223	0.121	0.062	0.018	0.000	0.000
SD	0	651	259	197	57	7	1	33.868	28.163	10.571	2.696	0.519	0.043
SD	46	651	259	197	57	7	1	9.7E-06	8.1E-06	3.0E-06	7.7E-07	1.5E-07	1.2E-08
TN	1	1	0	1	1	0	0	0.480	0.304	0.153	0.044	0.000	0.000
TN	3	0	2	1	0	0	0	0.350	0.359	0.094	0.000	0.000	0.000
TN	5	0	0	2	0	1	0	0.064	0.080	0.026	0.001	0.000	0.000
TN	7	3	2	0	0	0	0	0.375	0.148	0.000	0.000	0.000	0.000
TN	9	0	3	1	1	0	0	0.227	0.317	0.152	0.044	0.000	0.000
TN	11	0	2	1	5	0	0	1.455	2.124	1.047	0.303	0.000	0.000
TN	15	0	0	0	1	0	0	0.092	0.140	0.071	0.021	0.000	0.000
TN	17	0	7	1	2	1	0	0.527	0.381	0.068	0.019	0.000	0.000
TN	19	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
TN	21	1	0	1	0	0	0	0.112	0.132	0.042	0.000	0.000	0.000
TN	23	1	3	2	0	1	0	0.785	0.569	0.097	0.001	0.000	0.000
TN	29	1	0	2	0	0	0	0.121	0.143	0.045	0.000	0.000	0.000
TN	31	2	5	1	2	0	0	0.878	0.672	0.162	0.044	0.000	0.000
TN	33	0	2	1	2	0	0	0.681	0.581	0.153	0.039	0.000	0.000
TN	35	2	2	4	2	0	0	0.391	0.252	0.109	0.026	0.000	0.000
TN	37	1	6	5	0	0	0	0.545	0.621	0.184	0.000	0.000	0.000
TN	39	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
TN	41	1	3	0	2	0	0	0.065	0.026	0.002	0.001	0.000	0.000
TN	43	1	4	0	0	0	0	0.092	0.047	0.000	0.000	0.000	0.000
TN	45	3	6	1	2	2	0	0.784	1.029	0.495	0.146	0.012	0.000

SPC Raw Tornado Data

TN	47	7	2	3	2	0	1	0.705	0.803	0.364	0.088	0.000	0.000
TN	49	1	3	4	0	1	0	0.860	1.040	0.392	0.071	0.021	0.000
TN	51	0	4	0	1	2	1	0.267	0.189	0.032	0.010	0.001	0.000
TN	53	2	5	5	0	1	0	0.395	0.417	0.190	0.078	0.023	0.000
TN	55	1	2	5	2	1	0	1.067	1.189	0.544	0.204	0.048	0.000
TN	57	1	1	0	0	0	0	0.034	0.006	0.000	0.000	0.000	0.000
TN	59	0	5	2	0	0	0	0.411	0.416	0.107	0.000	0.000	0.000
TN	61	0	1	1	1	0	0	0.116	0.109	0.032	0.006	0.000	0.000
TN	63	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
TN	65	3	3	1	1	0	0	0.685	0.866	0.380	0.098	0.000	0.000
TN	67	0	0	1	0	0	0	0.260	0.322	0.102	0.000	0.000	0.000
TN	69	4	2	2	0	2	0	0.972	0.858	0.384	0.165	0.049	0.000
TN	71	1	2	1	3	1	0	0.285	0.373	0.168	0.045	0.000	0.000
TN	73	1	0	1	0	0	0	0.115	0.132	0.042	0.000	0.000	0.000
TN	75	1	2	3	0	0	0	0.174	0.173	0.048	0.000	0.000	0.000
TN	77	2	3	2	0	2	0	0.251	0.198	0.070	0.034	0.010	0.000
TN	79	2	0	1	1	0	0	0.174	0.210	0.077	0.008	0.000	0.000
TN	81	0	0	1	0	0	0	0.003	0.004	0.001	0.000	0.000	0.000
TN	85	3	1	1	0	0	0	0.082	0.032	0.005	0.000	0.000	0.000
TN	87	1	2	0	0	0	0	0.217	0.117	0.000	0.000	0.000	0.000
TN	89	1	0	1	0	0	0	1.088	1.263	0.400	0.000	0.000	0.000
TN	93	3	2	1	1	0	0	0.363	0.453	0.192	0.044	0.000	0.000
TN	95	2	0	1	0	0	0	0.133	0.152	0.048	0.000	0.000	0.000
TN	97	4	8	2	2	0	0	0.786	0.365	0.074	0.021	0.000	0.000
TN	99	1	6	3	3	1	0	3.366	4.263	1.953	0.604	0.048	0.000
TN	101	1	0	1	0	0	0	0.031	0.032	0.010	0.000	0.000	0.000
TN	103	2	5	4	1	2	1	1.100	0.924	0.450	0.189	0.051	0.000
TN	105	1	1	2	1	0	0	0.244	0.327	0.160	0.044	0.000	0.000
TN	107	1	3	2	5	1	0	1.229	1.586	0.670	0.156	0.000	0.000
TN	109	0	2	4	2	0	0	0.634	0.824	0.317	0.048	0.000	0.000
TN	111	0	2	1	0	0	0	0.022	0.014	0.001	0.000	0.000	0.000
TN	113	3	8	3	1	0	0	0.679	0.535	0.121	0.021	0.000	0.000
TN	115	3	4	1	0	0	0	0.438	0.401	0.102	0.000	0.000	0.000
TN	117	2	7	1	0	0	0	0.972	0.550	0.010	0.000	0.000	0.000
TN	119	1	3	0	1	0	0	0.188	0.179	0.062	0.018	0.000	0.000
TN	121	0	0	0	1	1	0	0.456	0.691	0.353	0.106	0.002	0.000
TN	123	0	1	2	1	0	0	0.428	0.464	0.172	0.044	0.000	0.000
TN	125	1	5	1	0	1	0	0.351	0.397	0.185	0.071	0.021	0.000
TN	127	0	0	0	0	1	0	0.188	0.225	0.132	0.065	0.020	0.000
TN	129	1	1	0	1	0	0	0.205	0.298	0.151	0.044	0.000	0.000
TN	131	3	1	5	0	0	0	0.434	0.510	0.161	0.000	0.000	0.000
TN	133	1	2	1	1	1	0	0.572	0.259	0.073	0.018	0.000	0.000
TN	137	1	0	0	0	1	0	0.212	0.245	0.143	0.071	0.021	0.000
TN	139	0	0	2	3	0	0	0.071	0.097	0.040	0.007	0.000	0.000
TN	141	1	4	0	1	1	0	0.309	0.258	0.072	0.021	0.000	0.000
TN	143	0	1	0	0	0	0	0.107	0.060	0.000	0.000	0.000	0.000
TN	145	1	1	0	1	0	0	0.225	0.305	0.151	0.044	0.000	0.000
TN	147	1	3	3	0	1	0	0.892	1.064	0.328	0.001	0.000	0.000
TN	149	1	9	2	1	0	0	0.773	0.471	0.085	0.021	0.000	0.000

SPC Raw Tornado Data

TN	151	0	0	0	2	0	0	0.195	0.299	0.152	0.044	0.000	0.000
TN	153	0	0	2	0	0	0	0.021	0.025	0.008	0.000	0.000	0.000
TN	157	5	24	9	7	0	0	1.866	2.357	1.049	0.281	0.000	0.000
TN	159	0	4	0	0	0	0	0.039	0.022	0.000	0.000	0.000	0.000
TN	161	3	0	1	0	0	0	0.027	0.002	0.001	0.000	0.000	0.000
TN	163	1	1	0	0	0	0	2.767	0.048	0.000	0.000	0.000	0.000
TN	165	2	7	6	1	1	0	0.600	0.717	0.244	0.021	0.000	0.000
TN	167	4	7	1	1	0	0	0.393	0.279	0.043	0.000	0.000	0.000
TN	169	0	1	1	0	0	0	0.110	0.134	0.042	0.000	0.000	0.000
TN	171	0	0	0	1	0	0	0.013	0.020	0.010	0.003	0.000	0.000
TN	173	0	1	0	0	0	0	0.062	0.035	0.000	0.000	0.000	0.000
TN	175	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
TN	177	1	4	4	1	0	0	0.406	0.424	0.138	0.018	0.000	0.000
TN	179	0	0	1	0	0	0	0.037	0.046	0.014	0.000	0.000	0.000
TN	181	1	2	2	2	0	0	1.320	1.883	0.882	0.228	0.000	0.000
TN	183	3	7	5	1	0	0	0.508	0.410	0.104	0.018	0.000	0.000
TN	185	0	5	2	0	1	0	0.823	0.936	0.426	0.160	0.048	0.000
TN	187	1	4	0	1	1	0	0.259	0.169	0.029	0.014	0.004	0.000
TN	189	2	7	4	1	0	0	0.841	0.761	0.189	0.018	0.000	0.000
TN	888	0	0	0	0	0	1	0.001	0.002	0.001	0.001	0.000	0.000
TN	0	107	241	139	76	29	4	41.914	41.180	15.784	3.959	0.380	0.000
TN	46	107	241	139	76	29	4	2.2E-05	2.2E-05	8.3E-06	2.1E-06	2.0E-07	1.7E-10
TX	1	2	14	4	4	0	0	1.199	1.114	0.345	0.089	0.000	0.000
TX	3	12	7	2	0	0	0	1.188	0.347	0.049	0.000	0.000	0.000
TX	5	5	15	9	2	0	0	1.011	0.821	0.176	0.022	0.000	0.000
TX	7	3	2	0	1	0	0	0.043	0.025	0.010	0.003	0.000	0.000
TX	9	11	4	2	2	1	0	1.591	1.837	0.962	0.416	0.110	0.000
TX	11	14	5	3	0	0	0	0.505	0.274	0.059	0.000	0.000	0.000
TX	13	7	6	0	0	0	0	0.195	0.084	0.000	0.000	0.000	0.000
TX	15	16	5	3	0	0	0	0.974	0.150	0.013	0.000	0.000	0.000
TX	17	22	16	6	2	0	0	2.359	1.514	0.353	0.022	0.000	0.000
TX	19	5	2	0	0	0	0	0.128	0.037	0.000	0.000	0.000	0.000
TX	21	12	1	4	3	0	0	1.502	0.612	0.246	0.043	0.000	0.000
TX	23	9	5	5	0	1	0	0.556	0.342	0.108	0.029	0.009	0.000
TX	25	11	9	2	1	0	0	0.184	0.075	0.011	0.002	0.000	0.000
TX	27	11	15	14	2	0	0	0.569	0.466	0.114	0.007	0.000	0.000
TX	29	14	16	10	1	1	0	0.844	0.823	0.248	0.015	0.004	0.000
TX	31	4	3	1	2	0	0	0.318	0.118	0.003	0.001	0.000	0.000
TX	33	3	1	0	0	0	0	0.034	0.003	0.000	0.000	0.000	0.000
TX	35	6	9	8	0	0	0	0.586	0.462	0.089	0.000	0.000	0.000
TX	37	8	12	8	3	1	0	1.512	1.885	0.833	0.223	0.020	0.000
TX	39	26	21	3	2	0	0	0.798	0.468	0.139	0.019	0.000	0.000
TX	41	6	1	3	1	0	0	0.171	0.073	0.022	0.003	0.000	0.000
TX	43	9	2	1	0	0	0	0.406	0.018	0.001	0.000	0.000	0.000
TX	45	16	7	2	0	2	0	1.121	0.114	0.024	0.011	0.003	0.000
TX	47	1	3	1	0	0	0	0.025	0.015	0.002	0.000	0.000	0.000
TX	49	6	13	2	0	0	1	0.310	0.219	0.064	0.032	0.015	0.004
TX	51	2	1	5	1	0	0	0.877	0.677	0.214	0.000	0.000	0.000
TX	53	5	11	0	3	0	0	1.197	0.905	0.201	0.059	0.000	0.000

SPC Raw Tornado Data

TX	55	3	6	7	0	0	0	1.055	1.079	0.290	0.000	0.000	0.000
TX	57	8	5	5	0	0	0	0.345	0.342	0.103	0.000	0.000	0.000
TX	59	13	13	4	3	1	0	0.855	0.518	0.052	0.003	0.000	0.000
TX	61	21	9	3	2	0	0	1.416	0.472	0.016	0.001	0.000	0.000
TX	63	4	2	3	0	0	0	0.143	0.143	0.044	0.000	0.000	0.000
TX	65	34	9	7	2	1	0	1.574	1.080	0.462	0.166	0.048	0.000
TX	67	5	15	10	2	0	0	1.216	1.085	0.296	0.044	0.000	0.000
TX	69	27	11	4	1	0	0	1.516	0.668	0.060	0.008	0.000	0.000
TX	71	12	6	3	2	0	0	0.236	0.080	0.022	0.002	0.000	0.000
TX	73	3	8	6	3	0	0	0.787	0.960	0.421	0.120	0.000	0.000
TX	75	9	8	2	0	0	0	0.987	0.772	0.183	0.000	0.000	0.000
TX	77	5	7	3	3	1	0	0.398	0.407	0.161	0.045	0.000	0.000
TX	79	16	5	1	0	1	0	3.589	0.770	0.370	0.160	0.048	0.000
TX	81	2	3	2	0	0	0	0.304	0.099	0.003	0.000	0.000	0.000
TX	83	10	8	7	3	0	0	0.459	0.377	0.114	0.001	0.000	0.000
TX	85	12	10	8	3	0	0	1.523	1.436	0.411	0.005	0.000	0.000
TX	87	11	7	3	5	1	0	3.507	3.295	1.328	0.531	0.110	0.000
TX	89	14	4	5	1	0	0	0.569	0.625	0.281	0.070	0.000	0.000
TX	91	7	2	0	1	0	0	0.131	0.076	0.029	0.008	0.000	0.000
TX	93	9	14	5	3	0	0	1.263	1.282	0.418	0.064	0.000	0.000
TX	95	15	4	0	0	0	0	0.343	0.026	0.000	0.000	0.000	0.000
TX	97	11	12	8	4	0	0	1.500	1.705	0.768	0.184	0.000	0.000
TX	99	4	9	3	0	0	0	0.084	0.041	0.003	0.000	0.000	0.000
TX	101	11	1	4	1	0	0	0.393	0.273	0.107	0.018	0.000	0.000
TX	103	9	6	2	0	0	0	0.468	0.190	0.002	0.000	0.000	0.000
TX	105	1	1	1	0	0	0	0.055	0.051	0.014	0.000	0.000	0.000
TX	107	26	8	4	1	0	0	1.280	0.988	0.363	0.098	0.000	0.000
TX	109	2	1	1	0	0	0	0.149	0.158	0.048	0.000	0.000	0.000
TX	111	9	7	4	0	0	0	1.692	0.894	0.036	0.000	0.000	0.000
TX	113	27	19	12	7	1	0	2.121	2.310	0.952	0.261	0.020	0.000
TX	115	22	12	3	0	0	0	1.428	0.610	0.037	0.000	0.000	0.000
TX	117	12	8	1	1	0	0	0.455	0.101	0.016	0.003	0.000	0.000
TX	119	0	0	3	1	0	0	0.250	0.312	0.101	0.002	0.000	0.000
TX	121	7	9	10	1	0	0	0.880	0.699	0.167	0.003	0.000	0.000
TX	123	8	2	1	0	0	0	0.087	0.007	0.001	0.000	0.000	0.000
TX	125	11	7	0	1	0	0	0.740	0.754	0.339	0.098	0.000	0.000
TX	127	1	1	1	0	0	0	0.017	0.013	0.004	0.000	0.000	0.000
TX	129	16	2	6	1	2	0	1.192	1.102	0.352	0.005	0.000	0.000
TX	131	4	5	1	0	0	0	0.148	0.045	0.005	0.000	0.000	0.000
TX	133	20	16	4	0	0	0	0.763	0.318	0.014	0.000	0.000	0.000
TX	135	26	3	4	0	0	0	0.854	0.092	0.022	0.000	0.000	0.000
TX	137	2	0	0	0	0	0	0.010	0.000	0.000	0.000	0.000	0.000
TX	139	19	8	6	1	1	0	0.550	0.438	0.139	0.018	0.000	0.000
TX	141	1	4	0	0	0	0	0.087	0.044	0.000	0.000	0.000	0.000
TX	143	7	14	5	1	0	0	0.589	0.561	0.154	0.008	0.000	0.000
TX	145	5	3	0	0	0	0	0.062	0.019	0.000	0.000	0.000	0.000
TX	147	18	17	7	2	0	0	0.722	0.648	0.224	0.048	0.000	0.000
TX	149	8	9	5	0	0	0	0.630	0.336	0.005	0.000	0.000	0.000
TX	151	13	9	6	0	0	0	0.490	0.253	0.032	0.000	0.000	0.000

SPC Raw Tornado Data

TX	153	20	11	2	1	1	0	1.832	0.655	0.111	0.001	0.000	0.000
TX	155	4	3	3	1	2	0	2.504	2.329	1.219	0.556	0.160	0.000
TX	157	15	9	1	2	0	0	0.625	0.291	0.024	0.004	0.000	0.000
TX	159	2	3	0	1	0	0	0.117	0.149	0.071	0.021	0.000	0.000
TX	161	3	1	1	0	0	0	0.069	0.064	0.020	0.000	0.000	0.000
TX	163	4	3	3	0	1	0	0.693	0.670	0.333	0.160	0.048	0.000
TX	165	16	4	2	1	0	0	0.222	0.042	0.003	0.001	0.000	0.000
TX	167	39	26	9	5	1	0	1.189	0.591	0.110	0.017	0.001	0.000
TX	169	12	2	2	0	0	0	0.441	0.157	0.045	0.000	0.000	0.000
TX	171	2	5	4	0	0	0	0.605	0.309	0.016	0.000	0.000	0.000
TX	173	4	0	0	0	0	0	0.023	0.000	0.000	0.000	0.000	0.000
TX	175	13	2	0	0	0	0	0.135	0.026	0.000	0.000	0.000	0.000
TX	177	7	5	3	0	0	0	0.385	0.193	0.012	0.000	0.000	0.000
TX	179	27	8	9	4	4	0	2.217	2.072	0.868	0.238	0.051	0.000
TX	181	18	13	11	8	0	0	1.076	1.174	0.446	0.085	0.000	0.000
TX	183	1	12	7	5	0	0	0.620	0.833	0.379	0.101	0.000	0.000
TX	185	1	3	1	0	0	0	0.063	0.043	0.007	0.000	0.000	0.000
TX	187	3	6	4	1	0	0	0.227	0.234	0.090	0.024	0.000	0.000
TX	189	61	31	10	1	2	0	4.515	2.198	0.942	0.389	0.111	0.000
TX	191	22	8	2	1	1	0	1.232	0.485	0.099	0.011	0.000	0.000
TX	193	5	11	2	0	0	0	0.295	0.152	0.002	0.000	0.000	0.000
TX	195	20	9	3	1	2	0	1.383	1.107	0.394	0.121	0.034	0.000
TX	197	15	13	1	0	0	0	0.387	0.123	0.005	0.000	0.000	0.000
TX	199	4	5	5	0	0	0	0.169	0.141	0.039	0.000	0.000	0.000
TX	201	68	53	28	7	1	0	5.599	5.660	2.181	0.539	0.083	0.000
TX	203	7	13	14	2	0	0	1.140	0.867	0.171	0.021	0.000	0.000
TX	205	14	5	3	0	0	0	0.777	0.322	0.055	0.000	0.000	0.000
TX	207	7	9	5	2	2	0	0.294	0.314	0.139	0.042	0.007	0.000
TX	209	3	4	5	1	0	0	0.396	0.306	0.072	0.018	0.000	0.000
TX	211	18	8	2	1	1	0	1.957	1.429	0.643	0.297	0.083	0.000
TX	213	7	9	4	4	0	0	0.546	0.524	0.177	0.026	0.000	0.000
TX	215	12	8	1	2	0	0	0.671	0.686	0.255	0.042	0.000	0.000
TX	217	8	6	13	6	3	0	1.524	1.580	0.809	0.323	0.083	0.000
TX	219	25	14	5	3	3	0	1.112	0.972	0.444	0.181	0.048	0.000
TX	221	4	9	5	0	0	0	0.408	0.380	0.097	0.000	0.000	0.000
TX	223	2	5	12	1	0	0	0.433	0.499	0.152	0.000	0.000	0.000
TX	225	7	4	1	1	0	0	0.118	0.057	0.010	0.001	0.000	0.000
TX	227	29	13	2	0	0	0	1.023	0.227	0.049	0.000	0.000	0.000
TX	229	4	2	0	0	0	0	0.133	0.011	0.000	0.000	0.000	0.000
TX	231	17	17	9	3	0	0	1.267	0.852	0.186	0.004	0.000	0.000
TX	233	22	15	10	1	1	0	1.359	1.096	0.508	0.200	0.048	0.000
TX	235	1	1	3	0	0	0	0.042	0.035	0.009	0.000	0.000	0.000
TX	237	2	4	2	1	0	0	0.138	0.174	0.079	0.021	0.000	0.000
TX	239	18	10	0	4	0	0	0.196	0.080	0.025	0.007	0.000	0.000
TX	241	4	7	2	1	0	0	0.184	0.156	0.052	0.008	0.000	0.000
TX	243	4	0	0	0	0	0	0.049	0.000	0.000	0.000	0.000	0.000
TX	245	39	27	20	5	0	0	1.072	0.697	0.204	0.024	0.000	0.000
TX	249	13	7	4	0	0	0	0.213	0.071	0.009	0.000	0.000	0.000
TX	251	15	28	20	4	1	0	1.523	1.126	0.282	0.082	0.021	0.000

SPC Raw Tornado Data

TX	253	23	17	13	5	0	0	1.135	1.178	0.413	0.062	0.000	0.000
TX	255	11	4	2	1	0	0	0.364	0.270	0.078	0.001	0.000	0.000
TX	257	11	9	4	1	0	0	0.559	0.289	0.036	0.002	0.000	0.000
TX	259	4	4	4	1	0	0	0.578	0.657	0.251	0.048	0.000	0.000
TX	261	2	0	0	1	0	0	0.042	0.020	0.010	0.003	0.000	0.000
TX	263	7	2	1	0	0	0	0.401	0.347	0.102	0.000	0.000	0.000
TX	265	6	2	3	0	0	0	0.538	0.598	0.183	0.000	0.000	0.000
TX	267	1	0	0	1	0	0	0.454	0.687	0.349	0.101	0.000	0.000
TX	269	4	3	3	0	0	0	0.525	0.399	0.070	0.000	0.000	0.000
TX	271	4	2	0	1	1	0	0.302	0.343	0.191	0.085	0.021	0.000
TX	273	13	5	0	0	0	0	0.371	0.165	0.000	0.000	0.000	0.000
TX	275	9	4	6	0	1	0	0.470	0.401	0.117	0.001	0.000	0.000
TX	277	12	3	13	1	2	0	0.643	0.680	0.304	0.101	0.030	0.000
TX	279	39	15	10	5	2	0	2.359	1.844	0.592	0.101	0.009	0.000
TX	281	2	5	1	0	0	0	0.067	0.057	0.014	0.000	0.000	0.000
TX	283	0	5	1	0	0	0	0.042	0.026	0.001	0.000	0.000	0.000
TX	285	2	12	4	2	0	0	0.532	0.582	0.189	0.021	0.000	0.000
TX	287	3	8	4	4	0	0	0.658	0.781	0.297	0.052	0.000	0.000
TX	289	2	5	5	0	0	0	0.533	0.628	0.195	0.000	0.000	0.000
TX	291	19	4	4	4	1	0	1.882	1.972	0.975	0.390	0.083	0.000
TX	293	3	3	4	1	1	0	0.725	0.878	0.287	0.009	0.000	0.000
TX	295	8	7	3	2	0	0	1.868	1.661	0.550	0.065	0.000	0.000
TX	297	4	4	5	1	0	0	0.658	0.335	0.098	0.001	0.000	0.000
TX	299	2	4	0	0	0	0	0.047	0.019	0.000	0.000	0.000	0.000
TX	301	3	0	0	0	0	0	0.352	0.000	0.000	0.000	0.000	0.000
TX	303	36	14	11	1	1	1	2.566	1.130	0.382	0.087	0.038	0.010
TX	305	17	8	2	1	0	0	1.161	0.918	0.357	0.101	0.000	0.000
TX	307	8	4	2	1	0	0	0.985	0.690	0.110	0.018	0.000	0.000
TX	309	10	18	13	0	2	2	1.250	1.110	0.465	0.238	0.103	0.027
TX	311	4	0	1	0	0	0	0.149	0.152	0.048	0.000	0.000	0.000
TX	313	1	1	3	0	0	0	0.363	0.390	0.123	0.000	0.000	0.000
TX	315	1	6	6	0	0	0	0.445	0.347	0.058	0.000	0.000	0.000
TX	317	18	6	4	1	0	0	1.030	0.404	0.060	0.003	0.000	0.000
TX	319	2	1	1	1	0	0	0.169	0.151	0.044	0.008	0.000	0.000
TX	321	18	13	2	2	0	0	0.301	0.127	0.024	0.006	0.000	0.000
TX	323	2	3	3	0	0	0	0.448	0.263	0.011	0.000	0.000	0.000
TX	325	3	5	2	1	0	0	0.944	0.729	0.169	0.018	0.000	0.000
TX	329	15	8	0	1	0	0	0.255	0.055	0.003	0.001	0.000	0.000
TX	331	3	4	7	1	0	0	0.968	1.091	0.324	0.000	0.000	0.000
TX	333	2	4	1	0	0	0	1.735	0.190	0.048	0.000	0.000	0.000
TX	335	20	5	2	0	0	0	0.892	0.282	0.039	0.000	0.000	0.000
TX	337	12	9	4	4	0	0	1.935	1.537	0.579	0.166	0.000	0.000
TX	339	11	11	3	2	0	0	0.384	0.244	0.063	0.007	0.000	0.000
TX	341	23	5	4	1	2	0	2.636	2.376	1.138	0.549	0.158	0.000
TX	343	1	0	5	1	0	0	0.184	0.201	0.078	0.011	0.000	0.000
TX	345	11	3	1	2	0	0	0.679	0.542	0.169	0.019	0.000	0.000
TX	347	8	10	10	3	0	0	1.902	2.234	0.823	0.140	0.000	0.000
TX	349	7	7	13	3	0	0	0.585	0.689	0.246	0.027	0.000	0.000
TX	351	2	0	2	0	0	0	0.025	0.018	0.006	0.000	0.000	0.000

SPC Raw Tornado Data

TX	353	18	4	3	1	0	0	0.525	0.360	0.119	0.018	0.000	0.000
TX	355	47	25	10	1	0	0	1.044	0.672	0.180	0.006	0.000	0.000
TX	357	13	11	7	3	1	0	1.397	1.256	0.452	0.119	0.000	0.000
TX	359	13	3	0	0	0	0	0.657	0.120	0.000	0.000	0.000	0.000
TX	361	8	13	1	0	1	0	0.782	0.465	0.061	0.029	0.009	0.000
TX	363	8	13	2	1	0	0	0.476	0.274	0.022	0.000	0.000	0.000
TX	365	6	7	6	2	0	0	0.834	0.880	0.311	0.062	0.000	0.000
TX	367	15	16	17	0	1	0	1.584	1.522	0.565	0.160	0.048	0.000
TX	369	16	9	10	2	1	0	2.987	3.207	1.557	0.603	0.166	0.000
TX	371	26	15	6	1	1	0	2.770	1.402	0.474	0.160	0.048	0.000
TX	373	7	2	8	0	0	0	0.744	0.744	0.227	0.000	0.000	0.000
TX	375	14	8	5	1	0	0	0.410	0.174	0.033	0.000	0.000	0.000
TX	377	5	0	0	0	0	0	0.029	0.000	0.000	0.000	0.000	0.000
TX	379	3	5	3	1	0	0	0.295	0.276	0.070	0.002	0.000	0.000
TX	381	29	8	8	1	1	0	1.072	0.840	0.258	0.005	0.000	0.000
TX	383	9	0	0	0	0	0	0.180	0.000	0.000	0.000	0.000	0.000
TX	385	0	1	1	0	0	0	0.040	0.048	0.014	0.000	0.000	0.000
TX	387	4	6	7	3	1	0	0.863	1.095	0.466	0.110	0.000	0.000
TX	389	24	4	5	0	1	0	0.792	0.444	0.145	0.023	0.007	0.000
TX	391	10	1	1	1	0	0	0.189	0.166	0.053	0.002	0.000	0.000
TX	393	8	8	2	1	0	0	1.175	0.435	0.014	0.001	0.000	0.000
TX	395	1	1	0	1	0	0	0.205	0.298	0.151	0.044	0.000	0.000
TX	397	6	3	2	0	0	0	0.266	0.126	0.002	0.000	0.000	0.000
TX	399	12	8	14	3	0	0	1.251	1.234	0.490	0.096	0.000	0.000
TX	401	5	12	8	3	0	0	0.270	0.198	0.045	0.006	0.000	0.000
TX	403	4	3	2	2	0	0	0.440	0.433	0.171	0.048	0.000	0.000
TX	405	2	6	1	3	0	0	0.521	0.626	0.285	0.071	0.000	0.000
TX	407	4	3	1	0	0	0	0.195	0.125	0.020	0.000	0.000	0.000
TX	409	15	12	5	2	0	0	0.462	0.409	0.168	0.044	0.000	0.000
TX	411	3	4	1	0	0	0	0.169	0.104	0.020	0.000	0.000	0.000
TX	413	3	0	0	0	0	0	0.021	0.000	0.000	0.000	0.000	0.000
TX	415	16	10	1	3	0	0	0.743	0.415	0.098	0.014	0.000	0.000
TX	417	4	1	1	2	0	0	0.107	0.066	0.032	0.009	0.000	0.000
TX	419	5	11	7	2	0	0	1.016	0.949	0.279	0.044	0.000	0.000
TX	421	16	4	3	0	1	0	0.686	0.249	0.134	0.065	0.020	0.000
TX	423	13	16	16	2	0	0	1.168	1.316	0.515	0.102	0.000	0.000
TX	425	1	0	2	0	0	0	0.040	0.043	0.014	0.000	0.000	0.000
TX	427	0	1	1	0	0	0	0.040	0.048	0.014	0.000	0.000	0.000
TX	429	12	1	0	2	0	0	0.463	0.237	0.119	0.035	0.000	0.000
TX	431	4	1	1	0	0	0	0.294	0.298	0.094	0.000	0.000	0.000
TX	433	11	5	0	0	0	0	0.205	0.072	0.000	0.000	0.000	0.000
TX	435	0	1	0	0	0	0	0.010	0.006	0.000	0.000	0.000	0.000
TX	437	22	13	6	3	2	0	3.636	3.062	1.268	0.458	0.111	0.000
TX	439	18	28	15	1	0	0	1.229	0.771	0.121	0.003	0.000	0.000
TX	441	22	14	8	2	0	0	0.592	0.384	0.074	0.001	0.000	0.000
TX	443	1	2	1	1	0	0	0.068	0.049	0.010	0.003	0.000	0.000
TX	445	13	7	6	0	0	0	1.225	0.586	0.033	0.000	0.000	0.000
TX	447	11	10	1	1	0	0	0.485	0.310	0.062	0.018	0.000	0.000
TX	449	6	3	5	3	0	0	0.415	0.379	0.119	0.001	0.000	0.000

SPC Raw Tornado Data

TX	451	14	13	1	2	1	0	0.669	0.444	0.166	0.075	0.020	0.000
TX	453	18	17	7	3	0	0	3.432	4.034	1.783	0.442	0.000	0.000
TX	455	1	7	5	1	0	0	1.901	2.331	0.756	0.021	0.000	0.000
TX	457	3	1	2	0	0	0	0.464	0.430	0.104	0.000	0.000	0.000
TX	459	4	5	3	2	0	0	0.507	0.635	0.255	0.045	0.000	0.000
TX	461	6	2	1	0	0	0	0.274	0.182	0.042	0.000	0.000	0.000
TX	463	0	2	2	0	0	0	0.055	0.050	0.011	0.000	0.000	0.000
TX	465	10	10	5	0	0	0	1.093	0.787	0.125	0.000	0.000	0.000
TX	467	7	7	4	0	0	0	0.469	0.349	0.064	0.000	0.000	0.000
TX	469	22	8	0	1	0	0	0.555	0.304	0.062	0.018	0.000	0.000
TX	471	3	1	3	0	0	0	0.292	0.215	0.065	0.000	0.000	0.000
TX	473	7	3	4	1	0	0	0.145	0.109	0.030	0.002	0.000	0.000
TX	475	9	1	2	1	0	0	0.310	0.293	0.111	0.018	0.000	0.000
TX	477	8	6	5	1	0	0	0.549	0.377	0.077	0.011	0.000	0.000
TX	479	3	1	2	1	0	0	0.111	0.112	0.035	0.000	0.000	0.000
TX	481	13	21	8	1	0	0	0.566	0.326	0.039	0.003	0.000	0.000
TX	483	14	4	4	5	3	0	2.106	2.179	1.113	0.498	0.131	0.000
TX	485	20	13	7	3	1	1	0.907	0.723	0.279	0.084	0.015	0.004
TX	487	15	9	7	2	2	0	1.855	2.090	0.663	0.023	0.000	0.000
TX	489	2	2	2	0	0	0	0.160	0.168	0.049	0.000	0.000	0.000
TX	491	8	19	8	4	0	0	2.332	1.870	0.517	0.126	0.000	0.000
TX	493	5	0	1	0	0	0	0.032	0.004	0.001	0.000	0.000	0.000
TX	495	5	2	1	0	0	0	0.082	0.053	0.014	0.000	0.000	0.000
TX	497	12	16	6	1	0	0	0.515	0.323	0.056	0.000	0.000	0.000
TX	499	9	9	11	2	0	0	0.916	0.822	0.247	0.019	0.000	0.000
TX	501	7	9	1	0	0	0	0.241	0.070	0.001	0.000	0.000	0.000
TX	503	10	8	10	3	1	0	0.838	0.993	0.383	0.064	0.003	0.000
TX	505	0	0	3	0	0	0	0.038	0.047	0.015	0.000	0.000	0.000
TX	507	1	4	2	0	0	0	0.092	0.085	0.021	0.000	0.000	0.000
TX	888	0	0	5	4	3	0	0.141	0.176	0.059	0.003	0.000	0.000
TX	0	2632	1837	1067	317	76	5	198.122	152.627	52.269	12.795	2.187	0.046
TX	46	2632	1837	1067	317	76	5	1.6E-05	1.3E-05	4.3E-06	1.1E-06	1.8E-07	3.8E-09
UT	1	3	0	0	0	0	0	0.015	0.000	0.000	0.000	0.000	0.000
UT	3	7	0	0	0	0	0	0.036	0.000	0.000	0.000	0.000	0.000
UT	5	1	3	0	0	0	0	0.024	0.010	0.000	0.000	0.000	0.000
UT	11	4	2	1	0	0	0	0.194	0.024	0.002	0.000	0.000	0.000
UT	13	2	0	0	1	0	0	0.446	0.666	0.339	0.098	0.000	0.000
UT	15	4	0	1	0	0	0	0.150	0.002	0.001	0.000	0.000	0.000
UT	19	0	0	1	0	0	0	0.002	0.002	0.001	0.000	0.000	0.000
UT	21	2	1	0	0	0	0	0.190	0.101	0.000	0.000	0.000	0.000
UT	27	2	0	0	0	0	0	0.010	0.000	0.000	0.000	0.000	0.000
UT	31	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
UT	33	0	2	0	0	0	0	0.025	0.014	0.000	0.000	0.000	0.000
UT	35	5	3	1	0	0	0	0.067	0.009	0.001	0.000	0.000	0.000
UT	39	2	1	1	0	0	0	0.050	0.048	0.014	0.000	0.000	0.000
UT	41	1	1	0	0	0	0	0.039	0.009	0.000	0.000	0.000	0.000
UT	45	3	2	0	0	0	0	0.226	0.118	0.000	0.000	0.000	0.000
UT	47	4	0	0	0	0	0	0.023	0.000	0.000	0.000	0.000	0.000
UT	49	4	2	0	0	0	0	0.045	0.014	0.000	0.000	0.000	0.000

SPC Raw Tornado Data

UT	53	1	1	0	0	0	0	0.188	0.101	0.000	0.000	0.000	0.000
UT	55	5	1	0	0	0	0	0.031	0.003	0.000	0.000	0.000	0.000
UT	57	2	0	1	0	0	0	0.023	0.004	0.001	0.000	0.000	0.000
UT	0	53	19	6	1	0	0	1.789	1.124	0.359	0.098	0.000	0.000
UT	43	53	19	6	1	0	0	5.1E-07	3.2E-07	1.0E-07	2.8E-08	0.0E+00	0.0E+00
VA	1	1	3	1	0	0	0	0.058	0.032	0.001	0.000	0.000	0.000
VA	3	0	1	0	2	0	0	0.019	0.024	0.011	0.003	0.000	0.000
VA	7	1	1	0	1	0	0	0.088	0.123	0.062	0.018	0.000	0.000
VA	9	2	0	0	0	0	0	0.029	0.000	0.000	0.000	0.000	0.000
VA	11	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
VA	15	1	3	3	0	0	0	0.876	0.519	0.018	0.000	0.000	0.000
VA	23	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
VA	25	1	3	1	1	0	0	0.499	0.711	0.345	0.098	0.000	0.000
VA	29	0	2	1	1	0	0	0.089	0.069	0.014	0.003	0.000	0.000
VA	31	1	1	0	0	0	0	0.067	0.035	0.000	0.000	0.000	0.000
VA	33	3	1	0	0	0	0	0.046	0.012	0.000	0.000	0.000	0.000
VA	35	0	2	1	0	0	0	0.054	0.036	0.004	0.000	0.000	0.000
VA	36	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
VA	37	1	3	2	1	0	0	1.136	1.066	0.255	0.004	0.000	0.000
VA	39	1	0	0	0	0	0	0.629	0.000	0.000	0.000	0.000	0.000
VA	41	0	6	4	0	3	0	1.387	1.371	0.546	0.214	0.064	0.000
VA	43	1	2	1	0	0	0	0.045	0.024	0.002	0.000	0.000	0.000
VA	47	0	0	1	0	0	0	0.009	0.011	0.004	0.000	0.000	0.000
VA	49	2	0	0	0	0	0	0.039	0.000	0.000	0.000	0.000	0.000
VA	51	0	1	0	0	0	0	0.044	0.025	0.000	0.000	0.000	0.000
VA	53	1	2	1	1	1	0	0.517	0.611	0.256	0.072	0.021	0.000
VA	57	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
VA	59	3	3	2	2	0	0	0.231	0.228	0.093	0.026	0.000	0.000
VA	61	3	4	1	0	0	0	0.121	0.075	0.010	0.000	0.000	0.000
VA	65	0	2	0	1	0	0	0.368	0.379	0.138	0.040	0.000	0.000
VA	67	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
VA	69	1	1	1	0	0	0	0.013	0.004	0.001	0.000	0.000	0.000
VA	73	1	4	0	0	0	0	0.051	0.024	0.000	0.000	0.000	0.000
VA	75	2	2	1	0	0	0	0.200	0.037	0.001	0.000	0.000	0.000
VA	77	0	1	0	0	0	0	0.021	0.012	0.000	0.000	0.000	0.000
VA	79	0	1	0	2	0	0	0.030	0.031	0.011	0.003	0.000	0.000
VA	81	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
VA	83	1	3	1	1	0	0	0.055	0.032	0.003	0.001	0.000	0.000
VA	85	2	0	0	0	0	0	0.013	0.000	0.000	0.000	0.000	0.000
VA	87	1	4	0	0	0	0	0.480	0.266	0.000	0.000	0.000	0.000
VA	89	0	0	2	0	0	0	0.115	0.143	0.045	0.000	0.000	0.000
VA	91	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
VA	93	2	2	1	0	0	0	0.302	0.337	0.102	0.000	0.000	0.000
VA	95	0	1	0	0	0	0	0.085	0.048	0.000	0.000	0.000	0.000
VA	97	0	2	0	0	0	0	0.033	0.018	0.000	0.000	0.000	0.000
VA	99	0	0	1	0	0	0	0.009	0.011	0.004	0.000	0.000	0.000
VA	101	1	0	0	1	0	0	0.084	0.121	0.062	0.018	0.000	0.000
VA	103	1	2	0	0	0	0	0.288	0.135	0.000	0.000	0.000	0.000
VA	105	1	0	0	0	0	0	0.132	0.000	0.000	0.000	0.000	0.000

SPC Raw Tornado Data

VA	107	3	3	3	0	0	0	0.157	0.071	0.009	0.000	0.000	0.000
VA	109	2	3	1	0	0	0	0.214	0.194	0.048	0.000	0.000	0.000
VA	111	0	1	1	0	0	0	0.347	0.388	0.112	0.000	0.000	0.000
VA	113	2	1	1	0	0	0	0.034	0.004	0.001	0.000	0.000	0.000
VA	115	0	2	0	0	0	0	0.033	0.018	0.000	0.000	0.000	0.000
VA	117	2	1	1	0	0	0	0.040	0.034	0.010	0.000	0.000	0.000
VA	119	0	1	1	1	0	0	0.019	0.026	0.011	0.003	0.000	0.000
VA	121	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
VA	123	0	1	0	1	0	0	0.010	0.012	0.005	0.002	0.000	0.000
VA	125	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
VA	127	0	3	0	0	0	0	0.568	0.318	0.000	0.000	0.000	0.000
VA	131	1	2	1	0	0	0	0.020	0.010	0.001	0.000	0.000	0.000
VA	133	1	1	1	0	0	0	0.039	0.035	0.010	0.000	0.000	0.000
VA	135	0	3	3	1	0	0	0.368	0.454	0.147	0.004	0.000	0.000
VA	137	1	1	1	1	0	0	0.032	0.035	0.016	0.004	0.000	0.000
VA	139	0	1	0	0	0	0	0.027	0.015	0.000	0.000	0.000	0.000
VA	143	1	3	2	0	0	0	0.168	0.143	0.030	0.000	0.000	0.000
VA	145	1	0	0	0	0	0	0.046	0.000	0.000	0.000	0.000	0.000
VA	147	0	1	0	0	0	0	0.044	0.025	0.000	0.000	0.000	0.000
VA	149	1	0	3	0	1	0	0.510	0.605	0.257	0.071	0.021	0.000
VA	153	2	0	1	1	0	0	0.052	0.047	0.018	0.002	0.000	0.000
VA	157	0	1	1	0	0	0	0.018	0.012	0.001	0.000	0.000	0.000
VA	159	0	0	2	1	0	0	0.011	0.015	0.005	0.001	0.000	0.000
VA	161	0	0	2	0	0	0	0.189	0.235	0.074	0.000	0.000	0.000
VA	163	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
VA	165	0	2	2	0	0	0	0.058	0.052	0.011	0.000	0.000	0.000
VA	173	2	0	1	1	0	0	0.014	0.005	0.002	0.000	0.000	0.000
VA	175	1	1	1	0	0	0	0.313	0.339	0.102	0.000	0.000	0.000
VA	177	0	2	0	0	0	0	0.073	0.041	0.000	0.000	0.000	0.000
VA	179	3	2	0	0	0	0	0.052	0.017	0.000	0.000	0.000	0.000
VA	181	0	2	0	1	0	0	0.116	0.066	0.001	0.000	0.000	0.000
VA	183	1	1	1	1	0	0	0.695	0.763	0.267	0.048	0.000	0.000
VA	187	1	1	0	0	0	0	0.093	0.048	0.000	0.000	0.000	0.000
VA	191	2	1	2	1	0	0	0.217	0.159	0.073	0.018	0.000	0.000
VA	193	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
VA	195	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
VA	199	0	2	0	0	0	0	0.090	0.050	0.000	0.000	0.000	0.000
VA	520	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
VA	550	2	2	1	0	0	0	0.089	0.057	0.014	0.000	0.000	0.000
VA	590	1	0	0	0	0	0	0.024	0.000	0.000	0.000	0.000	0.000
VA	595	0	0	1	0	0	0	0.017	0.022	0.007	0.000	0.000	0.000
VA	610	0	0	1	1	0	0	0.010	0.013	0.005	0.000	0.000	0.000
VA	620	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
VA	650	0	0	1	0	0	0	0.003	0.004	0.001	0.000	0.000	0.000
VA	670	0	0	0	1	0	0	0.178	0.273	0.138	0.040	0.000	0.000
VA	700	2	3	0	1	0	0	0.543	0.293	0.005	0.002	0.000	0.000
VA	710	2	5	0	0	0	0	0.689	0.373	0.000	0.000	0.000	0.000
VA	730	0	0	1	1	1	0	0.268	0.342	0.192	0.085	0.021	0.000
VA	740	0	2	0	0	0	0	0.090	0.050	0.000	0.000	0.000	0.000

SPC Raw Tornado Data

VA	760	3	0	2	0	0	0	0.124	0.134	0.042	0.000	0.000	0.000
VA	780	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
VA	800	2	3	2	0	0	0	0.082	0.040	0.003	0.000	0.000	0.000
VA	810	2	4	1	0	0	0	0.056	0.025	0.001	0.000	0.000	0.000
VA	0	84	132	68	28	6	0	15.196	12.453	3.608	0.781	0.127	0.000
VA	45	84	132	68	28	6	0	8.5E-06	7.0E-06	2.0E-06	4.4E-07	7.1E-08	0.0E+00
VT	1	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
VT	3	0	1	2	0	0	0	0.011	0.011	0.002	0.000	0.000	0.000
VT	7	2	2	1	0	0	0	0.036	0.014	0.001	0.000	0.000	0.000
VT	9	1	2	0	0	0	0	0.198	0.106	0.000	0.000	0.000	0.000
VT	11	1	3	4	0	0	0	0.517	0.276	0.083	0.000	0.000	0.000
VT	15	0	0	1	0	0	0	0.017	0.022	0.007	0.000	0.000	0.000
VT	17	0	1	0	0	0	0	0.044	0.025	0.000	0.000	0.000	0.000
VT	19	0	4	0	0	0	0	0.323	0.181	0.000	0.000	0.000	0.000
VT	21	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
VT	25	2	0	0	0	0	0	0.013	0.000	0.000	0.000	0.000	0.000
VT	27	0	0	4	0	0	0	0.088	0.109	0.034	0.000	0.000	0.000
VT	0	7	14	12	0	0	0	1.267	0.751	0.127	0.000	0.000	0.000
VT	41	7	14	12	0	0	0	3.3E-06	2.0E-06	3.4E-07	0.0E+00	0.0E+00	0.0E+00
WA	1	2	1	0	0	0	0	0.017	0.002	0.000	0.000	0.000	0.000
WA	5	1	0	0	0	0	0	0.324	0.000	0.000	0.000	0.000	0.000
WA	11	0	2	0	1	0	0	0.040	0.024	0.001	0.000	0.000	0.000
WA	13	0	0	1	0	0	0	0.006	0.007	0.002	0.000	0.000	0.000
WA	15	1	1	0	0	0	0	0.010	0.003	0.000	0.000	0.000	0.000
WA	17	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
WA	21	0	2	0	0	0	0	0.039	0.022	0.000	0.000	0.000	0.000
WA	25	1	1	1	0	0	0	0.036	0.019	0.001	0.000	0.000	0.000
WA	33	2	1	0	1	0	0	0.116	0.060	0.029	0.008	0.000	0.000
WA	35	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
WA	41	0	0	1	0	0	0	0.009	0.011	0.004	0.000	0.000	0.000
WA	43	3	0	0	1	0	0	0.020	0.007	0.003	0.001	0.000	0.000
WA	47	0	2	0	0	0	0	0.013	0.007	0.000	0.000	0.000	0.000
WA	49	2	0	0	0	0	0	0.013	0.000	0.000	0.000	0.000	0.000
WA	51	0	0	1	0	0	0	0.002	0.002	0.001	0.000	0.000	0.000
WA	53	2	0	0	0	0	0	0.020	0.000	0.000	0.000	0.000	0.000
WA	61	0	1	2	0	0	0	0.036	0.024	0.002	0.000	0.000	0.000
WA	63	2	4	2	0	0	0	0.068	0.031	0.006	0.000	0.000	0.000
WA	65	0	2	1	0	0	0	0.024	0.025	0.007	0.000	0.000	0.000
WA	67	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
WA	71	4	0	1	0	0	0	0.507	0.004	0.001	0.000	0.000	0.000
WA	75	1	0	1	0	0	0	0.010	0.002	0.001	0.000	0.000	0.000
WA	77	0	0	1	0	0	0	0.009	0.011	0.004	0.000	0.000	0.000
WA	0	24	17	12	3	0	0	1.340	0.262	0.062	0.010	0.000	0.000
WA	41	24	17	12	3	0	0	4.9E-07	9.6E-08	2.3E-08	3.6E-09	0.0E+00	0.0E+00
WI	1	10	6	2	1	0	0	1.010	0.948	0.382	0.098	0.000	0.000
WI	3	4	1	1	0	0	0	0.247	0.021	0.005	0.000	0.000	0.000
WI	5	3	13	9	1	0	0	2.383	1.710	0.224	0.000	0.000	0.000
WI	7	2	2	1	0	0	0	0.053	0.022	0.001	0.000	0.000	0.000
WI	9	7	6	4	0	0	0	1.127	0.917	0.205	0.000	0.000	0.000

SPC Raw Tornado Data

WI	11	3	3	2	0	1	0	0.307	0.231	0.050	0.001	0.000	0.000
WI	13	2	1	2	0	0	0	0.123	0.106	0.026	0.000	0.000	0.000
WI	15	0	3	6	0	0	0	0.070	0.061	0.013	0.000	0.000	0.000
WI	17	7	11	3	2	3	0	2.709	3.143	1.231	0.294	0.069	0.000
WI	19	2	4	8	2	1	0	0.726	0.797	0.232	0.001	0.000	0.000
WI	21	1	10	5	4	1	1	1.541	1.710	0.571	0.084	0.004	0.000
WI	23	4	4	1	0	0	0	0.693	0.516	0.102	0.000	0.000	0.000
WI	25	7	10	12	3	0	0	1.603	1.790	0.609	0.047	0.000	0.000
WI	27	15	18	8	4	0	0	1.756	1.910	0.712	0.149	0.000	0.000
WI	29	1	2	3	0	0	0	0.089	0.083	0.024	0.000	0.000	0.000
WI	31	2	3	2	0	0	0	0.627	0.463	0.109	0.000	0.000	0.000
WI	33	0	3	4	1	0	1	0.769	0.554	0.072	0.001	0.000	0.000
WI	35	1	4	7	2	2	0	2.016	2.546	1.273	0.476	0.111	0.000
WI	37	0	1	0	0	0	0	0.085	0.048	0.000	0.000	0.000	0.000
WI	39	4	9	9	2	1	0	1.725	2.085	0.823	0.173	0.021	0.000
WI	41	0	1	3	0	0	0	1.229	1.520	0.480	0.000	0.000	0.000
WI	43	6	22	11	0	0	0	2.788	2.604	0.634	0.000	0.000	0.000
WI	45	4	5	3	1	0	0	1.921	1.652	0.392	0.044	0.000	0.000
WI	47	10	4	4	2	1	0	1.807	1.960	0.662	0.074	0.021	0.000
WI	49	1	3	8	0	1	1	0.775	0.896	0.423	0.185	0.086	0.025
WI	51	2	0	1	0	0	0	0.157	0.011	0.004	0.000	0.000	0.000
WI	53	0	4	5	1	0	0	1.117	1.197	0.330	0.000	0.000	0.000
WI	55	2	6	6	1	0	0	2.173	2.284	0.640	0.021	0.000	0.000
WI	57	2	9	6	1	1	0	0.960	0.907	0.245	0.031	0.009	0.000
WI	59	2	1	0	0	0	0	0.207	0.009	0.000	0.000	0.000	0.000
WI	61	4	2	2	0	0	0	0.560	0.549	0.144	0.000	0.000	0.000
WI	63	2	4	3	1	0	0	0.374	0.402	0.119	0.000	0.000	0.000
WI	65	3	8	5	2	0	0	1.547	1.391	0.373	0.065	0.000	0.000
WI	67	1	2	1	1	0	0	0.104	0.068	0.021	0.000	0.000	0.000
WI	69	2	4	2	0	0	0	0.285	0.089	0.007	0.000	0.000	0.000
WI	71	3	8	3	0	1	0	0.281	0.181	0.036	0.014	0.004	0.000
WI	73	3	9	9	2	0	0	5.157	1.765	0.634	0.102	0.000	0.000
WI	75	1	7	4	2	1	0	0.481	0.406	0.107	0.026	0.005	0.000
WI	77	10	4	3	0	0	0	1.150	1.006	0.236	0.000	0.000	0.000
WI	78	0	0	0	1	0	0	0.001	0.002	0.001	0.000	0.000	0.000
WI	79	2	7	6	0	0	0	0.134	0.088	0.012	0.000	0.000	0.000
WI	81	2	4	6	1	0	0	1.411	1.706	0.549	0.018	0.000	0.000
WI	83	0	3	4	1	0	0	0.228	0.266	0.080	0.000	0.000	0.000
WI	85	3	4	3	2	1	0	1.095	1.405	0.711	0.259	0.048	0.000
WI	87	1	5	3	2	1	0	0.433	0.460	0.171	0.042	0.000	0.000
WI	89	0	0	0	0	1	0	0.007	0.009	0.005	0.002	0.001	0.000
WI	91	1	2	0	1	0	0	0.120	0.135	0.062	0.018	0.000	0.000
WI	93	4	3	4	1	0	0	0.681	0.543	0.163	0.000	0.000	0.000
WI	95	3	6	3	2	0	0	0.325	0.272	0.078	0.021	0.000	0.000
WI	97	2	8	7	0	1	0	0.970	1.010	0.311	0.034	0.010	0.000
WI	99	1	9	3	1	0	0	3.079	3.914	1.648	0.398	0.000	0.000
WI	101	4	5	4	0	0	0	0.112	0.061	0.009	0.000	0.000	0.000
WI	103	0	3	3	1	0	0	0.395	0.481	0.189	0.040	0.000	0.000
WI	105	1	9	6	0	0	0	1.077	1.207	0.350	0.000	0.000	0.000

SPC Raw Tornado Data

WI	107	1	1	6	0	0	0	1.083	1.265	0.385	0.000	0.000	0.000
WI	109	6	4	5	2	0	1	1.351	1.446	0.775	0.432	0.192	0.057
WI	111	5	4	4	0	0	0	0.665	0.499	0.147	0.000	0.000	0.000
WI	113	2	4	0	0	0	0	0.083	0.034	0.000	0.000	0.000	0.000
WI	115	1	6	2	1	0	0	0.212	0.202	0.050	0.000	0.000	0.000
WI	117	1	3	0	1	0	0	0.102	0.056	0.001	0.000	0.000	0.000
WI	119	0	1	3	0	0	0	0.031	0.032	0.008	0.000	0.000	0.000
WI	121	4	6	2	1	0	0	0.708	0.441	0.098	0.021	0.000	0.000
WI	123	2	8	4	1	0	0	1.160	0.750	0.184	0.021	0.000	0.000
WI	125	1	10	1	1	0	0	0.612	0.383	0.026	0.000	0.000	0.000
WI	127	6	9	6	0	0	0	0.882	0.408	0.068	0.000	0.000	0.000
WI	129	0	4	2	0	0	0	0.289	0.175	0.008	0.000	0.000	0.000
WI	131	2	3	2	1	1	0	0.121	0.078	0.018	0.005	0.001	0.000
WI	133	3	11	5	2	1	0	0.589	0.400	0.066	0.014	0.004	0.000
WI	135	2	4	3	1	1	0	1.074	1.139	0.399	0.044	0.000	0.000
WI	137	6	5	2	1	1	0	1.213	0.906	0.353	0.099	0.000	0.000
WI	139	2	5	1	0	2	0	0.674	0.749	0.371	0.161	0.048	0.000
WI	141	3	4	5	0	0	0	0.954	0.947	0.249	0.000	0.000	0.000
WI	888	0	1	3	1	0	1	0.012	0.013	0.004	0.001	0.000	0.000
WI	0	204	378	276	62	24	5	64.616	60.037	19.695	3.515	0.636	0.083
WI	46	204	378	276	62	24	5	2.6E-05	2.4E-05	7.9E-06	1.4E-06	2.5E-07	3.3E-08
WV	1	0	1	0	0	0	0	0.005	0.003	0.000	0.000	0.000	0.000
WV	3	1	3	0	0	0	0	0.067	0.035	0.000	0.000	0.000	0.000
WV	7	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
WV	11	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
WV	17	0	1	0	1	0	0	0.043	0.051	0.021	0.006	0.000	0.000
WV	19	0	0	2	1	0	0	0.032	0.039	0.013	0.000	0.000	0.000
WV	21	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
WV	25	2	1	2	1	0	0	0.093	0.092	0.028	0.000	0.000	0.000
WV	33	1	1	1	0	0	0	0.016	0.010	0.002	0.000	0.000	0.000
WV	35	0	1	0	0	0	0	0.015	0.009	0.000	0.000	0.000	0.000
WV	37	1	0	1	0	0	0	0.031	0.032	0.010	0.000	0.000	0.000
WV	39	1	3	0	0	0	0	0.039	0.013	0.000	0.000	0.000	0.000
WV	41	0	2	1	0	0	0	0.065	0.048	0.007	0.000	0.000	0.000
WV	43	1	1	0	0	0	0	0.090	0.048	0.000	0.000	0.000	0.000
WV	47	0	2	0	0	0	0	0.033	0.018	0.000	0.000	0.000	0.000
WV	49	1	2	1	0	0	0	0.021	0.013	0.002	0.000	0.000	0.000
WV	53	1	0	0	0	0	0	0.005	0.000	0.000	0.000	0.000	0.000
WV	55	0	0	1	0	0	0	0.002	0.002	0.001	0.000	0.000	0.000
WV	61	0	2	0	1	0	0	0.111	0.151	0.071	0.021	0.000	0.000
WV	63	0	0	2	0	0	0	0.076	0.095	0.030	0.000	0.000	0.000
WV	65	1	0	0	0	0	0	0.046	0.000	0.000	0.000	0.000	0.000
WV	67	0	2	0	0	0	0	0.035	0.019	0.000	0.000	0.000	0.000
WV	69	1	1	0	0	0	0	0.013	0.003	0.000	0.000	0.000	0.000
WV	71	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
WV	73	0	0	1	0	0	0	0.002	0.002	0.001	0.000	0.000	0.000
WV	77	3	1	1	1	0	0	0.072	0.051	0.011	0.000	0.000	0.000
WV	79	1	1	0	0	0	0	0.010	0.003	0.000	0.000	0.000	0.000
WV	81	1	3	0	2	0	0	1.239	1.723	0.846	0.246	0.000	0.000

SPC Raw Tornado Data

WV	83	1	2	1	0	0	0	0.071	0.023	0.001	0.000	0.000	0.000
WV	87	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
WV	89	1	0	1	0	0	0	0.011	0.007	0.002	0.000	0.000	0.000
WV	91	1	0	1	0	0	0	0.007	0.002	0.001	0.000	0.000	0.000
WV	93	2	1	0	0	0	0	0.023	0.006	0.000	0.000	0.000	0.000
WV	99	1	0	0	1	0	0	0.010	0.002	0.001	0.000	0.000	0.000
WV	107	2	2	0	0	0	0	0.076	0.037	0.000	0.000	0.000	0.000
WV	109	0	1	0	0	0	0	0.044	0.025	0.000	0.000	0.000	0.000
WV	0	27	36	16	8	0	0	2.430	2.566	1.049	0.274	0.000	0.000
WV	45	27	36	16	8	0	0	2.2E-06	2.4E-06	9.7E-07	2.5E-07	0.0E+00	0.0E+00
WY	1	10	6	0	0	0	0	0.153	0.023	0.000	0.000	0.000	0.000
WY	3	4	6	6	1	0	0	0.267	0.225	0.067	0.000	0.000	0.000
WY	5	35	17	6	0	0	0	1.815	0.562	0.116	0.000	0.000	0.000
WY	7	8	3	1	0	0	0	0.516	0.158	0.014	0.000	0.000	0.000
WY	9	23	5	1	0	0	0	0.787	0.075	0.010	0.000	0.000	0.000
WY	11	12	9	4	2	0	0	2.098	1.170	0.079	0.019	0.000	0.000
WY	13	1	7	3	1	0	0	0.100	0.090	0.022	0.001	0.000	0.000
WY	15	26	19	5	1	0	0	0.672	0.331	0.043	0.002	0.000	0.000
WY	17	1	0	0	0	0	0	0.024	0.000	0.000	0.000	0.000	0.000
WY	19	10	5	0	0	0	0	0.216	0.054	0.000	0.000	0.000	0.000
WY	21	45	26	3	2	0	0	1.172	0.432	0.088	0.013	0.000	0.000
WY	23	4	0	0	0	0	0	0.037	0.000	0.000	0.000	0.000	0.000
WY	25	13	7	5	0	0	0	0.558	0.300	0.086	0.000	0.000	0.000
WY	27	11	11	3	0	0	0	0.378	0.179	0.032	0.000	0.000	0.000
WY	29	1	3	2	0	0	0	0.077	0.050	0.009	0.000	0.000	0.000
WY	31	13	9	0	1	0	0	0.334	0.064	0.010	0.003	0.000	0.000
WY	33	6	4	0	0	0	0	0.105	0.024	0.000	0.000	0.000	0.000
WY	35	1	1	0	0	0	0	0.013	0.003	0.000	0.000	0.000	0.000
WY	37	12	3	0	0	0	0	0.201	0.016	0.000	0.000	0.000	0.000
WY	39	0	0	0	0	1	0	0.799	0.960	0.561	0.279	0.083	0.000
WY	41	2	0	1	0	0	0	0.019	0.007	0.002	0.000	0.000	0.000
WY	43	3	0	0	0	0	0	0.015	0.000	0.000	0.000	0.000	0.000
WY	45	6	4	3	0	0	0	0.791	0.853	0.251	0.000	0.000	0.000
WY	0	247	145	43	8	1	0	11.150	5.576	1.391	0.317	0.083	0.000
WY	46	247	145	43	8	1	0	2.5E-06	1.2E-06	3.1E-07	7.1E-08	1.9E-08	0.0E+00
Alabama	AL	1						50750.23	1672.71	52422.94			
Arizona	AZ	4						113642.26	364.00	114006.26			
Arkansas	AR	5						52075.29	1107.07	53182.36			
California	CA	6						155973.09	7734.06	163707.15			
Colorado	CO	8						103729.54	370.78	104100.32			
Connecticut	CT	9						4845.39	698.26	5543.65			
Delaware	DE	10						1954.62	534.76	2489.38			
DC	DC	11						61.41	6.95	68.36			
Florida	FL	12						53997.08	11761.00	65758.08			
Georgia	GA	13						57918.73	1522.49	59441.22			
Idaho	ID	16						82750.93	822.84	83573.77			
Illinois	IL	17						55593.29	2324.55	57917.84			
Indiana	IN	18						35870.18	549.91	36420.09			
Iowa	IA	19						55874.90	400.64	56275.54			

SPC Raw Tornado Data

Kansas	KS	20	81823.02	458.98	82282.00									
Kentucky	KY	21	39732.31	678.93	40411.24									
Louisiana	LA	22	43566.03	8277.44	51843.47									
Maine	ME	23	30864.55	4522.78	35387.33									
Maryland	MD	24	9774.65	2632.80	12407.45									
Massachusetts	MA	25	7837.98	2716.81	10554.79									
Michigan	MI	26	56809.18	40001.04	96810.22									
Minnesota	MN	27	79616.66	7326.05	86942.71									
Mississippi	MS	28	46913.64	1519.95	48433.59									
Missouri	MO	29	68898.01	810.80	69708.81									
Montana	MT	30	145556.34	1489.82	147046.16									
Nebraska	NE	31	76877.73	480.67	77358.40									
Nevada	NV	32	109805.89	761.02	110566.91									
New Hampshire	NH	33	8969.36	381.57	9350.93									
New Jersey	NJ	34	7418.84	1303.11	8721.95									
New Mexico	NM	35	121364.54	233.69	123598.23									
New York	NY	36	47223.85	7250.71	54474.56									
N Carolina	NC	37	48718.08	5103.27	53821.35									
North Dakota	ND	38	68994.24	1709.59	70703.83									
Ohio	OH	39	40952.59	3874.94	44827.53									
Oklahoma	OK	40	68678.57	1224.33	69902.90									
Oregon	OR	41	96002.58	2383.17	98385.75									
Pennsylvania	PA	42	44819.61	1238.63	46058.24									
Rhode Island	RI	44	1044.98	500.12	1545.10									
S Carolina	SC	45	30111.12	1895.99	32007.11									
South Dakota	SD	46	75897.74	1223.72	77121.46									
Tennessee	TN	47	41219.52	926.49	42146.01									
Texas	TX	48	261914.26	6686.70	268600.96									
Utah	UT	49	82168.15	2735.97	84904.12									
Vermont	VT	50	9249.33	365.67	9615.00									
Virginia	VA	51	39597.79	3171.09	42768.88									
Washington	WA	53	66581.95	4720.70	71302.65									
West Virginia	WV	54	24086.55	144.89	24231.44									
Wisconsin	WI	55	54313.71	11189.50	65503.21									
Wyoming	WY	56	97104.55	713.56	97818.11									
U.S. Total	US	99	3536341.73	251083.35	3787425.08									
AL	0	165	364	323	129	36	14	68.557	73.993	30.046	8.595	1.607	0.102	
AZ	0	90	57	11	2	0	0	3.360	1.442	0.180	0.009	0.000	0.000	
AR	0	198	298	331	149	31	0	77.228	84.402	30.356	5.709	0.462	0.000	
CA	0	142	58	21	2	0	0	3.584	1.913	0.421	0.019	0.000	0.000	
CO	0	616	441	99	15	1	0	20.944	9.708	2.015	0.184	0.000	0.000	
CT	0	9	29	20	5	2	0	2.518	2.462	0.808	0.189	0.049	0.000	
DE	0	20	23	11	1	0	0	2.138	1.218	0.122	0.001	0.000	0.000	
DC	0	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000	
FL	0	1156	665	293	30	4	0	36.168	21.380	5.452	0.698	0.050	0.000	
GA	0	147	537	266	65	17	0	78.529	80.587	31.238	9.099	1.143	0.000	

SPC Raw Tornado Data

ID	0	63	53	8	0	0	0	1.617	0.667	0.049	0.000	0.000	0.000
IL	0	431	440	316	113	39	3	76.392	69.359	25.022	6.327	0.839	0.054
IN	0	246	336	263	108	77	8	54.707	57.901	25.024	8.532	2.015	0.111
IA	0	478	506	421	119	74	9	94.698	95.467	34.778	8.027	1.575	0.064
KY	0	79	168	133	65	35	3	28.992	31.452	12.522	3.293	0.572	0.026
KS	0	1111	610	404	168	54	16	131.845	111.398	41.278	11.143	2.198	0.409
LA	0	225	620	268	123	16	2	48.533	44.658	13.828	2.735	0.241	0.038
ME	0	21	44	17	0	0	0	2.292	1.383	0.215	0.000	0.000	0.000
MD	0	49	92	26	5	0	0	6.726	4.140	0.421	0.004	0.000	0.000
MA	0	24	72	31	8	3	0	4.402	3.877	1.510	0.572	0.132	0.000
MI	0	195	308	210	57	30	7	36.263	35.722	13.377	3.546	0.707	0.036
MN	0	372	336	158	53	28	6	50.812	42.833	12.790	2.647	0.461	0.024
MS	0	226	468	369	136	59	10	95.880	95.645	37.275	10.820	2.223	0.029
MO	0	298	577	334	109	48	1	56.884	51.702	16.941	4.077	0.717	0.000
MT	0	174	42	33	4	0	0	6.600	4.498	1.499	0.142	0.000	0.000
NE	0	827	585	255	105	42	4	101.906	103.088	43.378	12.267	1.240	0.057
NV	0	41	8	0	0	0	0	1.091	0.151	0.000	0.000	0.000	0.000
NH	0	24	34	15	2	0	0	1.893	0.986	0.190	0.004	0.000	0.000
NJ	0	43	58	23	4	0	0	5.535	2.200	0.262	0.002	0.000	0.000
NM	0	261	104	31	4	0	0	8.099	2.900	0.444	0.006	0.000	0.000
NY	0	101	106	35	21	5	0	15.840	12.698	4.707	1.834	0.451	0.000
NC	0	153	321	143	44	26	0	34.005	31.481	11.017	3.264	0.563	0.000
ND	0	490	211	91	28	7	3	15.072	10.245	3.571	1.141	0.290	0.036
OH	0	157	321	166	53	27	9	38.964	33.967	10.625	2.432	0.566	0.053
OK	0	845	808	626	209	83	9	130.454	123.048	44.709	11.494	2.197	0.175
OR	0	31	15	3	0	0	0	1.232	0.641	0.133	0.000	0.000	0.000
PA	0	93	220	143	26	22	2	19.367	18.474	6.720	1.912	0.422	0.011
RI	0	3	4	1	0	0	0	0.450	0.302	0.042	0.000	0.000	0.000
SC	0	136	234	100	31	15	0	26.642	25.878	9.423	2.450	0.413	0.000
SD	0	651	259	197	57	7	1	33.868	28.163	10.571	2.696	0.519	0.043
TN	0	107	241	139	76	29	4	41.914	41.180	15.784	3.959	0.380	0.000
TX	0	2632	1837	1067	317	76	5	198.122	152.627	52.269	12.795	2.187	0.046
UT	0	53	19	6	1	0	0	1.789	1.124	0.359	0.098	0.000	0.000
VT	0	7	14	12	0	0	0	1.267	0.751	0.127	0.000	0.000	0.000
VA	0	84	132	68	28	6	0	15.196	12.453	3.608	0.781	0.127	0.000
WA	0	24	17	12	3	0	0	1.340	0.262	0.062	0.010	0.000	0.000
WV	0	27	36	16	8	0	0	2.430	2.566	1.049	0.274	0.000	0.000
WI	0	204	378	276	62	24	5	64.616	60.037	19.695	3.515	0.636	0.083
WY	0	247	145	43	8	1	0	11.150	5.576	1.391	0.317	0.083	0.000
		13776	13251	7834	2553	924	121	1761.911	1598.605	577.3	147.62	25.06	1.397
		38459						4111.892					
								1.16E-03	2.27E-04				

SPC Raw Tornado Data

AL	46	165	364	323	129	36	14	2.9E-05	3.2E-05	1.3E-05	3.7E-06	6.9E-07
AZ	44	90	57	11	2	0	0	6.7E-07	2.9E-07	3.6E-08	1.8E-09	0.0E+00
AR	46	198	298	331	149	31	0	3.2E-05	3.5E-05	1.3E-05	2.4E-06	1.9E-07
CA	45	142	58	21	2	0	0	5.1E-07	2.7E-07	6.0E-08	2.7E-09	0.0E+00
CO	46	616	441	99	15	1	0	4.4E-06	2.0E-06	4.2E-07	3.9E-08	3.3E-11
CT	46	9	29	20	5	2	0	1.1E-05	1.1E-05	3.6E-06	8.5E-07	2.2E-07
DE	42	20	23	11	1	0	0	2.6E-05	1.5E-05	1.5E-06	6.4E-09	0.0E+00
DC	1	1	0	0	0	0	0	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FL	46	1156	665	293	30	4	0	1.5E-05	8.6E-06	2.2E-06	2.8E-07	2.0E-08
GA	46	147	537	266	65	17	0	2.9E-05	3.0E-05	1.2E-05	3.4E-06	4.3E-07
ID	42	63	53	8	0	0	0	4.7E-07	1.9E-07	1.4E-08	0.0E+00	0.0E+00
IL	46	431	440	316	113	39	3	3.0E-05	2.7E-05	9.8E-06	2.5E-06	3.3E-07
IN	46	246	336	263	108	77	8	3.3E-05	3.5E-05	1.5E-05	5.2E-06	1.2E-06
IA	46	478	506	421	119	74	9	3.7E-05	3.7E-05	1.4E-05	3.1E-06	6.1E-07
KS	46	1111	610	404	168	54	16	3.5E-05	3.0E-05	1.1E-05	3.0E-06	5.8E-07
KY	46	79	168	133	65	35	3	1.6E-05	1.7E-05	6.9E-06	1.8E-06	3.1E-07
LA	46	225	620	268	123	16	2	2.4E-05	2.2E-05	6.9E-06	1.4E-06	1.2E-07
ME	42	21	44	17	0	0	0	1.8E-06	1.1E-06	1.7E-07	0.0E+00	0.0E+00
MD	46	49	92	26	5	0	0	1.5E-05	9.2E-06	9.4E-07	8.2E-09	0.0E+00
MA	45	24	72	31	8	3	0	1.2E-05	1.1E-05	4.3E-06	1.6E-06	3.7E-07
MI	45	195	308	210	57	30	7	1.4E-05	1.4E-05	5.2E-06	1.4E-06	2.8E-07
MN	46	372	336	158	53	28	6	1.4E-05	1.2E-05	3.5E-06	7.2E-07	1.3E-07
MS	46	226	468	369	136	59	10	4.4E-05	4.4E-05	1.7E-05	5.0E-06	1.0E-06
MO	46	298	577	334	109	48	1	1.8E-05	1.6E-05	5.3E-06	1.3E-06	2.3E-07
MT	44	174	42	33	4	0	0	1.0E-06	7.0E-07	2.3E-07	2.2E-08	0.0E+00
NE	46	827	585	255	105	42	4	2.9E-05	2.9E-05	1.2E-05	3.5E-06	3.5E-07
NV	34	41	8	0	0	0	0	2.9E-07	4.0E-08	0.0E+00	0.0E+00	0.0E+00
NH	45	24	34	15	2	0	0	4.7E-06	2.4E-06	4.7E-07	1.1E-08	0.0E+00
NJ	45	43	58	23	4	0	0	1.7E-05	6.6E-06	7.9E-07	7.1E-09	0.0E+00
NM	46	261	104	31	4	0	0	1.5E-06	5.2E-07	8.0E-08	1.1E-09	0.0E+00
NY	44	101	106	35	21	5	0	7.6E-06	6.1E-06	2.3E-06	8.8E-07	2.2E-07
NC	46	153	321	143	44	26	0	1.5E-05	1.4E-05	4.9E-06	1.5E-06	2.5E-07
ND	46	490	211	91	28	7	3	4.7E-06	3.2E-06	1.1E-06	3.6E-07	9.1E-08
OH	46	157	321	166	53	27	9	2.1E-05	1.8E-05	5.6E-06	1.3E-06	3.0E-07
OK	46	845	808	626	209	83	9	4.1E-05	3.9E-05	1.4E-05	3.6E-06	7.0E-07
OR	45	31	15	3	0	0	0	2.9E-07	1.5E-07	3.1E-08	0.0E+00	0.0E+00
PA	46	93	220	143	26	22	2	9.4E-06	9.0E-06	3.3E-06	9.3E-07	2.0E-07
RI	23	3	4	1	0	0	0	1.9E-05	1.3E-05	1.7E-06	0.0E+00	0.0E+00
SC	46	136	234	100	31	15	0	1.9E-05	1.9E-05	6.8E-06	1.8E-06	3.0E-07
SD	46	651	259	197	57	7	1	9.7E-06	8.1E-06	3.0E-06	7.7E-07	1.5E-07
TN	46	107	241	139	76	29	4	2.2E-05	2.2E-05	8.3E-06	2.1E-06	2.0E-07
TX	46	2632	1837	1067	317	76	5	1.6E-05	1.3E-05	4.3E-06	1.1E-06	1.8E-07
UT	43	53	19	6	1	0	0	5.1E-07	3.2E-07	1.0E-07	2.8E-08	0.0E+00
VT	41	7	14	12	0	0	0	3.3E-06	2.0E-06	3.4E-07	0.0E+00	0.0E+00
VA	45	84	132	68	28	6	0	8.5E-06	7.0E-06	2.0E-06	4.4E-07	7.1E-08
WA	41	24	17	12	3	0	0	4.9E-07	9.6E-08	2.3E-08	3.6E-09	0.0E+00
WV	45	27	36	16	8	0	0	2.2E-06	2.4E-06	9.7E-07	2.5E-07	0.0E+00
WI	46	204	378	276	62	24	5	2.6E-05	2.4E-05	7.9E-06	1.4E-06	2.5E-07
WY	46	247	145	43	8	1	0	2.5E-06	1.2E-06	3.1E-07	7.1E-08	1.9E-08

SPC Raw Tornado Data

		13777	13251	7834	2553	924	121					
		38460										

SPC Raw Tornado Data

4.3E-08
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
2.1E-08
6.7E-08
2.5E-08
1.1E-07
1.4E-08
1.9E-08
0.0E+00
0.0E+00
0.0E+00
1.4E-08
6.6E-09
1.3E-08
2.6E-11
0.0E+00
1.6E-08
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
1.1E-08
2.8E-08
5.5E-08
0.0E+00
5.4E-09
0.0E+00
0.0E+00
1.2E-08
1.7E-10
3.8E-09
0.0E+00
0.0E+00
0.0E+00
0.0E+00
0.0E+00
3.3E-08
0.0E+00

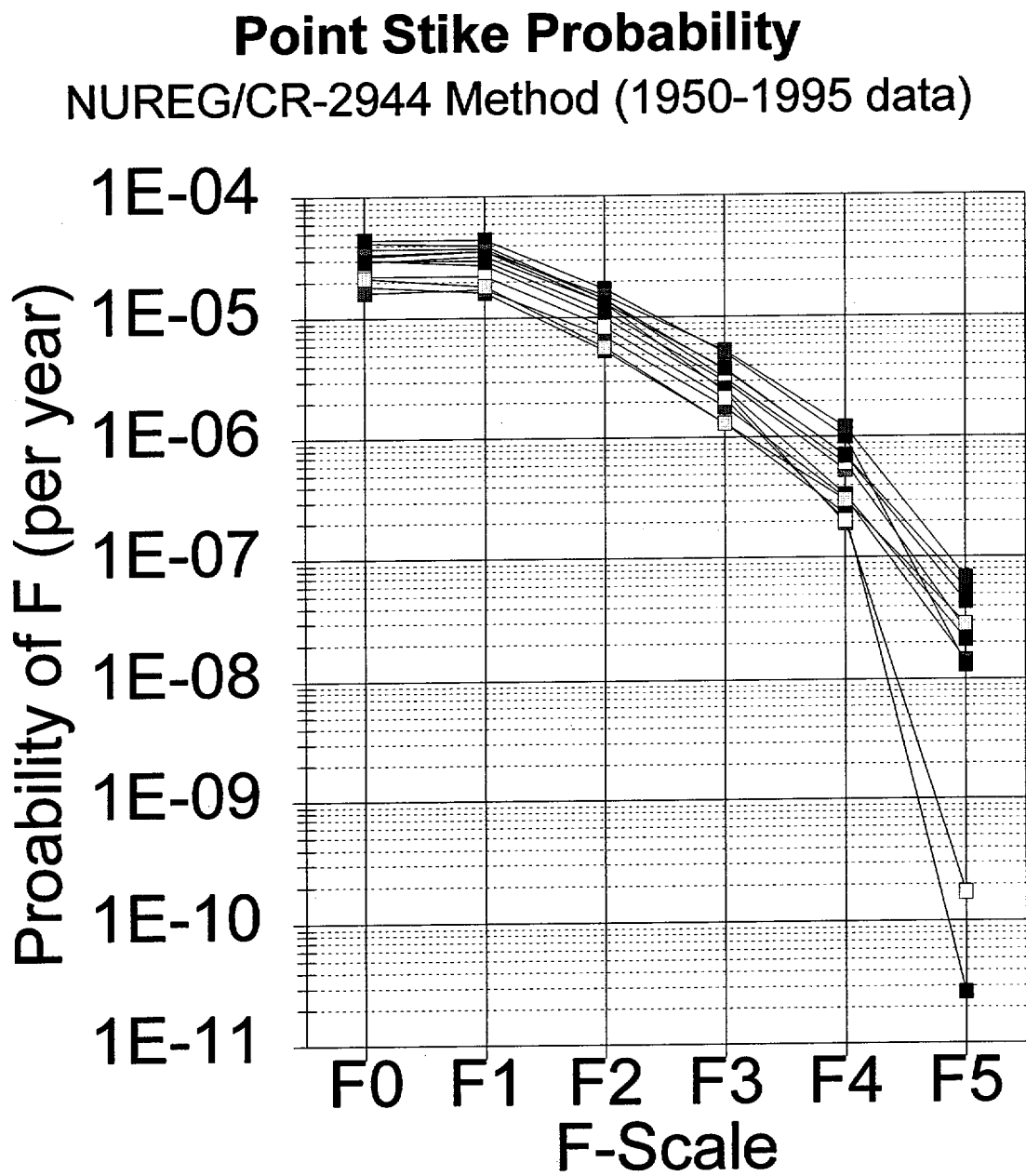
SPC Raw Tornado Data

SPC Raw Tornado Data

WI	888	0	1	3	1	0	1	0.012	0.013	0.004	0.001	0.000	0.000
TX	888	0	0	5	4	3	0	0.141	0.176	0.059	0.003	0.000	0.000
TN	888	0	0	0	0	0	1	0.001	0.002	0.001	0.001	0.000	0.000
PA	888	0	0	4	0	3	1	0.135	0.167	0.055	0.002	0.001	0.000
OK	888	0	1	9	8	8	2	0.047	0.059	0.026	0.008	0.002	0.000
OH	888	0	0	0	0	1	1	0.460	0.553	0.323	0.161	0.048	0.000
NY	888	1	0	0	1	0	0	0.007	0.002	0.001	0.000	0.000	0.000
NE	888	0	1	2	4	2	0	0.016	0.019	0.008	0.002	0.000	0.000
ND	888	0	0	2	0	1	0	0.005	0.007	0.003	0.001	0.000	0.000
NC	888	0	1	0	0	0	0	0.003	0.002	0.000	0.000	0.000	0.000
MS	888	0	0	1	2	1	1	0.032	0.040	0.015	0.002	0.000	0.000
MN	888	0	2	1	4	1	0	0.016	0.017	0.006	0.002	0.000	0.000
MI	888	1	0	0	2	1	1	0.011	0.008	0.004	0.002	0.000	0.000
KY	888	0	0	2	2	0	0	0.007	0.009	0.004	0.001	0.000	0.000
KS	888	1	2	7	8	4	2	0.046	0.049	0.021	0.006	0.001	0.000
IN	888	0	0	0	2	1	0	0.004	0.006	0.003	0.001	0.000	0.000
IL	888	1	3	2	3	0	0	0.663	0.375	0.005	0.001	0.000	0.000
IA	888	2	0	1	1	2	0	0.017	0.008	0.004	0.001	0.000	0.000
GA	888	0	0	2	3	0	0	0.008	0.011	0.005	0.001	0.000	0.000
FL	888	0	2	0	0	0	0	0.007	0.004	0.000	0.000	0.000	0.000
CO	888	0	0	2	0	0	0	0.004	0.005	0.002	0.000	0.000	0.000
AR	888	0	1	7	9	2	0	0.754	0.937	0.300	0.004	0.000	0.000
AL	888	0	0	1	1	1	0	0.462	0.556	0.324	0.160	0.048	0.000
		6	14	51	55	31	10						
		167											

State	Yr	F0	F1	F2	F3	F4	F5	PS-F0	PS-F1	PS-F2	PS-F3	PS-F4	PS-F5	Area
KS	46	1111	610	404	168	54	16	3.5E-05	3.0E-05	1.1E-05	3.0E-06	5.8E-07	1.1E-07	81823.02
OK	46	845	808	626	209	83	9	4.1E-05	3.9E-05	1.4E-05	3.6E-06	7.0E-07	5.5E-08	68678.57
IA	46	478	506	421	119	74	9	3.7E-05	3.7E-05	1.4E-05	3.1E-06	6.1E-07	2.5E-08	55874.9
MO	46	298	577	334	109	48	1	1.8E-05	1.6E-05			2.3E-07	2.6E-11	68898.01
AR	46	198	298	331	149	31	0	3.2E-05	3.5E-05	1.3E-05	2.4E-06		0.0E+00	52075.29
IL	46	431	440	316	113	39	3	3.0E-05	2.7E-05	9.8E-06	2.5E-06	3.3E-07	2.1E-08	55593.29
KY	46	79	168	133	65	35	3	1.6E-05	1.7E-05	6.9E-06	1.8E-06	3.1E-07	1.4E-08	39732.31
TN	46	107	241	139	76	29	4	2.2E-05	2.2E-05	8.3E-06	2.1E-06	2.0E-07	1.7E-10	41219.52
MS	46	226	468	369	136	59	10	4.4E-05	4.4E-05		5.0E-06	1.0E-06	1.3E-08	46913.64
IN	46	246	336	263	108	77	8	3.3E-05	3.5E-05	1.5E-05			6.7E-08	35870.18
OH	46	157	321	166	53	27	9	2.1E-05	1.8E-05	5.6E-06	1.3E-06	3.0E-07	2.8E-08	40952.59
AL	46	165	364	323	129	36	14	2.9E-05	3.2E-05	1.3E-05	3.7E-06	6.9E-07	4.3E-08	50750.23

Ave		4341	5137	3825	1434	592	86	3.0E-05	2.9E-05	1.1E-05	2.9E-06	5.3E-07	3.4E-08	638381.6
-----	--	------	------	------	------	-----	----	---------	---------	---------	---------	---------	---------	----------

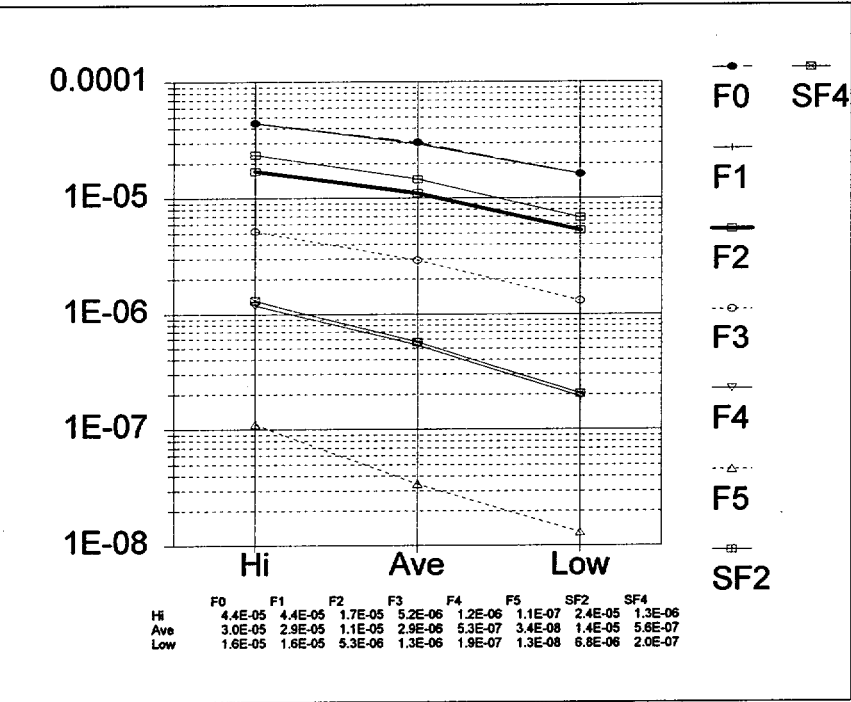


Hi
Ave
Low

1/(yr-mi ²)	1/(yr-mi ²)
6.3E-04	1.7E-04
8.2E-04	2.9E-04
6.3E-04	2.4E-04
4.3E-04	1.6E-04
4.2E-04	2.1E-04
5.2E-04	1.8E-04
2.6E-04	1.3E-04
3.1E-04	1.3E-04
5.9E-04	2.7E-04
6.3E-04	2.8E-04
3.9E-04	1.4E-04
4.4E-04	2.2E-04

5.1E-04	2.0E-04
F0-F5	F2-F5

F0	F1	F2	F3	F4	F5	SF2	SF4
4.4E-05	4.4E-05	1.7E-05	5.2E-06	1.2E-06	1.1E-07	2.4E-05	1.3E-06
3.0E-05	2.9E-05	1.1E-05	2.9E-06	5.3E-07	3.4E-08	1.4E-05	5.6E-07
1.6E-05	1.6E-05	5.3E-06	1.3E-06	1.9E-07	1.3E-08	6.8E-06	2.0E-07



State	Total	F0	F1	F2	F3	F4	F5		
AL	1031	165	364	323	129	36	14	0.048	0.49
AR	1007	198	298	331	149	31	0	0.031	0.51
AZ	160	90	57	11	2	0	0	0.000	0.08
CA	223	142	58	21	2	0	0	0.000	0.10
CO	1172	616	441	99	15	1	0	0.001	0.10
CT	65	9	29	20	5	2	0	0.031	0.42
DC	1	1	0	0	0	0	0	0.000	0.00
DE	55	20	23	11	1	0	0	0.000	0.22
FL	2148	1156	665	293	30	4	0	0.002	0.15
GA	1032	147	537	266	65	17	0	0.016	0.34
IA	1607	478	506	421	119	74	9	0.052	0.39
ID	124	63	53	8	0	0	0	0.000	0.06
IL	1342	431	440	316	113	39	3	0.031	0.35
IN	1038	246	336	263	108	77	8	0.082	0.44
KS	2363	1111	610	404	168	54	16	0.030	0.27
KY	483	79	168	133	65	35	3	0.079	0.49
LA	1254	225	620	268	123	16	2	0.014	0.33
MA	138	24	72	31	8	3	0	0.022	0.30
MD	172	49	92	26	5	0	0	0.000	0.18
ME	82	21	44	17	0	0	0	0.000	0.21
MI	807	195	308	210	57	30	7	0.046	0.38
MN	953	372	336	158	53	28	6	0.036	0.26
MO	1367	298	577	334	109	48	1	0.036	0.36
MS	1268	226	468	369	136	59	10	0.054	0.45
MT	253	174	42	33	4	0	0	0.000	0.15
NC	687	153	321	143	44	26	0	0.038	0.31
ND	830	490	211	91	28	7	3	0.012	0.16
NE	1818	827	585	255	105	42	4	0.025	0.22
NV	49	41	8	0	0	0	0	0.000	0.00
NH	75	24	34	15	2	0	0	0.000	0.23
NJ	127	42	58	23	4	0	0	0.000	0.21
NM	400	261	104	31	4	0	0	0.000	0.09
NY	268	101	106	35	21	5	0	0.019	0.23
OH	733	157	321	166	53	27	9	0.049	0.35
OK	2580	845	808	626	209	83	9	0.036	0.36
OR	49	31	15	3	0	0	0	0.000	0.06
PA	506	93	220	143	26	22	2	0.047	0.38
RI	8	3	4	1	0	0	0	0.000	0.13
SC	516	136	234	100	31	15	0	0.029	0.28
SD	1172	651	259	197	57	7	1	0.007	0.22
TN	596	107	241	139	76	29	4	0.055	0.42
TX	5934	2632	1837	1067	317	76	5	0.014	0.25
UT	79	53	19	6	1	0	0	0.000	0.09
VA	318	84	132	68	28	6	0	0.019	0.32
VT	33	7	14	12	0	0	0	0.000	0.36
WA	56	24	17	12	3	0	0	0.000	0.27
WI	949	204	378	276	62	24	5	0.031	0.39
WV	87	27	36	16	8	0	0	0.000	0.28
WY	444	247	145	43	8	1	0	0.002	0.12
Total	38459	13776	13251	7834	2553	924	121	0.027	0.30
Reg I	2263	551	1017	500	125	59	11	0.031	0.31
Reg II	8166	2280	3166	1850	612	227	31	0.032	0.33
SumRI/II	10429	2831	4183	2350	737	286	42	0.031	0.33
Reg III	8063	2224	2881	1978	621	320	39	0.045	0.37
Reg IV	16958	6979	5228	3239	1156	316	40	0.021	0.28
Sum RIII/IV	25021	9203	8109	5217	1777	636	79	0.029	0.31
Sum RI/IV	35450	12034	12292	7567	2514	922	121	0.029	0.31
Resid	3009	1742	959	267	39	2	0	0.001	0.10
Check	38459	13776	13251	7834	2553	924	121	0.027	0.30

A	A	B	C	D	E	F	G	H	I	J	K	L
1	State	Total	F0	F1	F2	F3	F4	F5	F4-F5s	F2-F5s	F4-5/Ave	F2-5/Ave
2	AL	1029	158	372	323	129	34	13	0.046	0.485	1.822	1.630
3	AR	1002	194	295	335	149	29	0	0.029	0.512	1.155	1.721
4	AZ	162	60	89	11	2	0	0	0.000	0.080	0.000	0.270
5	CA	221	102	96	23	0	0	0	0.000	0.104	0.000	0.350
6	CO	1174	560	500	98	15	1	0	0.001	0.097	0.034	0.326
7	CT	67	8	30	22	5	2	0	0.030	0.433	1.191	1.455
8	DC	1	1	0	0	0	0	0	0.000	0.000	0.000	0.000
9	DE	55	18	30	7	0	0	0	0.000	0.127	0.000	0.428
10	FL	2167	1008	817	305	33	4	0	0.002	0.158	0.074	0.531
11	GA	1025	146	537	264	61	17	0	0.017	0.334	0.662	1.122
12	IA	1602	383	598	422	119	72	8	0.050	0.388	1.992	1.303
13	ID	124	53	63	8	0	0	0	0.000	0.065	0.000	0.217
14	IL	1446	391	520	360	135	37	3	0.028	0.370	1.104	1.244
15	IN	1070	204	386	280	108	84	8	0.086	0.449	3.430	1.508
16	KS	2358	841	886	399	169	50	13	0.027	0.268	1.066	0.900
17	KY	479	77	169	135	63	32	3	0.073	0.486	2.915	1.635
18	LA	1255	225	620	274	121	14	1	0.012	0.327	0.477	1.098
19	MA	147	24	79	32	10	2	0	0.014	0.299	0.543	1.006
20	MD	172	46	96	26	4	0	0	0.000	0.174	0.000	0.586
21	ME	83	9	56	18	0	0	0	0.000	0.217	0.000	0.729
22	MI	800	183	318	210	59	27	3	0.038	0.374	1.496	1.256
23	MN	945	364	341	159	49	28	4	0.034	0.254	1.351	0.854
24	MO	1314	288	581	312	96	36	1	0.028	0.339	1.123	1.138
25	MS	1287	160	538	389	132	63	5	0.053	0.458	2.108	1.538
26	MT	254	122	93	35	4	0	0	0.000	0.154	0.000	0.516
27	NC	686	152	322	143	43	26	0	0.038	0.309	1.512	1.039
28	ND	833	392	310	93	29	6	3	0.011	0.157	0.431	0.529
29	NE	1831	594	822	258	111	42	4	0.025	0.227	1.002	0.762
30	NV	49	31	18	0	0	0	0	0.000	0.000	0.000	0.000
31	NH	77	15	44	16	2	0	0	0.000	0.234	0.000	0.786
32	NJ	128	37	63	24	4	0	0	0.000	0.219	0.000	0.735
33	NM	400	253	112	31	4	0	0	0.000	0.088	0.000	0.294
34	NY	272	88	120	39	23	2	0	0.007	0.235	0.293	0.791
35	OH	751	143	343	175	61	24	5	0.039	0.353	1.540	1.186
36	OK	2563	775	880	623	207	71	7	0.030	0.354	1.214	1.191
37	OR	50	30	17	3	0	0	0	0.000	0.060	0.000	0.202
38	PA	510	79	235	149	27	19	1	0.039	0.384	1.564	1.292
39	RI	8	3	4	1	0	0	0	0.000	0.125	0.000	0.420
40	SC	515	126	243	100	31	15	0	0.029	0.283	1.162	0.953
41	SD	1171	514	397	196	56	7	1	0.007	0.222	0.273	0.746
42	TN	592	106	241	141	76	26	2	0.047	0.414	1.887	1.391
43	TX	5912	2410	2049	1064	314	70	5	0.013	0.246	0.506	0.826
44	UT	79	33	39	6	1	0	0	0.000	0.089	0.000	0.298
45	VA	325	57	163	72	27	6	0	0.018	0.323	0.736	1.086
46	VT	34	6	25	3	0	0	0	0.000	0.088	0.000	0.297
47	WA	56	20	21	12	3	0	0	0.000	0.268	0.000	0.900
48	WI	1000	164	441	298	66	27	4	0.031	0.395	1.237	1.328
49	WV	88	23	41	17	7	0	0	0.000	0.273	0.000	0.917
50	WY	447	210	183	45	8	1	0	0.002	0.121	0.089	0.406
51	TPCOM	38616	11886	15243	7956	2563	874	94	0.025	0.297		
52												
53	Reg I	1554	334	782	337	75	25	1	0.017	0.282		
54	Reg II*	8944	2156	3786	2064	663	247	28	0.031	0.336		
55	Sum RI/II	10498	2490	4568	2401	738	272	29	0.029	0.328		
56												
57	Reg III**	8177	1977	3185	2041	632	311	31	0.042	0.369		
58	Reg IV	16925	5945	6259	3242	1156	289	34	0.019	0.279		
59	Sum RIII/IV	25102	7922	9444	5283	1788	600	65	0.026	0.308		
60												
61	Resid	3016	1474	1231	272	37	2	0	0.001	0.103		
62	Check	38616	11886	15243	7956	2563	874	94				

B	A	B	C	D	E	F	G	H	I	J	K	L
1	State	Total	F0	F1	F2	F3	F4	F5	F4-F5s	F2-F5s	F4-5/Ave	F2-5/Ave
2	AL	1031	165	364	323	129	36	14	0.048	0.487	1.785	1.638
3	AR	1007	198	298	331	149	31	0	0.031	0.507	1.133	1.707
4	AZ	160	90	57	11	2	0	0	0.000	0.081	0.000	0.273
5	CA	223	142	58	21	2	0	0	0.000	0.103	0.000	0.347
6	CO	1172	616	441	99	15	1	0	0.001	0.098	0.031	0.330
7	CT	65	9	29	20	5	2	0	0.031	0.415	1.132	1.397
8	DC	1	1	0	0	0	0	0	0.000	0.000	0.000	0.000
9	DE	55	20	23	11	1	0	0	0.000	0.218	0.000	0.734
10	FL	2148	1156	665	293	30	4	0	0.002	0.152	0.069	0.512
11	GA	1032	147	537	266	65	17	0	0.016	0.337	0.606	1.134
12	IA	1607	478	506	421	119	74	9	0.052	0.388	1.901	1.304
13	ID	124	63	53	8	0	0	0	0.000	0.065	0.000	0.217
14	IL	1342	431	440	316	113	39	3	0.031	0.351	1.152	1.181
15	IN	1038	246	336	263	108	77	8	0.082	0.439	3.014	1.478
16	KS	2363	1111	610	404	168	54	16	0.030	0.272	1.090	0.914
17	KY	483	79	168	133	65	35	3	0.079	0.489	2.895	1.644
18	LA	1254	225	620	268	123	16	2	0.014	0.326	0.528	1.097
19	MA	138	24	72	31	8	3	0	0.022	0.304	0.800	1.024
20	MD	172	49	92	26	5	0	0	0.000	0.180	0.000	0.606
21	ME	82	21	44	17	0	0	0	0.000	0.207	0.000	0.697
22	MI	807	195	308	210	57	30	7	0.046	0.377	1.687	1.267
23	MN	953	372	336	158	53	28	6	0.036	0.257	1.313	0.865
24	MO	1367	298	577	334	109	48	1	0.036	0.360	1.319	1.211
25	MS	1268	226	468	369	136	59	10	0.054	0.453	2.003	1.523
26	MT	253	174	42	33	4	0	0	0.000	0.146	0.000	0.492
27	NC	687	153	321	143	44	26	0	0.038	0.310	1.393	1.043
28	ND	830	490	211	91	28	7	3	0.012	0.155	0.443	0.523
29	NE	1818	827	585	255	105	42	4	0.025	0.223	0.931	0.751
30	NV	49	41	8	0	0	0	0	0.000	0.000	0.000	0.000
31	NH	75	24	34	15	2	0	0	0.000	0.227	0.000	0.763
32	NJ	127	42	58	23	4	0	0	0.000	0.213	0.000	0.715
33	NM	400	261	104	31	4	0	0	0.000	0.088	0.000	0.294
34	NY	268	101	106	35	21	5	0	0.019	0.228	0.687	0.766
35	OH	733	157	321	166	53	27	9	0.049	0.348	1.808	1.170
36	OK	2580	845	808	626	209	83	9	0.036	0.359	1.312	1.209
37	OR	49	31	15	3	0	0	0	0.000	0.061	0.000	0.206
38	PA	506	93	220	143	26	22	2	0.047	0.381	1.746	1.283
39	RI	8	3	4	1	0	0	0	0.000	0.125	0.000	0.421
40	SC	516	136	234	100	31	15	0	0.029	0.283	1.070	0.952
41	SD	1172	651	259	197	57	7	1	0.007	0.224	0.251	0.752
42	TN	596	107	241	139	76	29	4	0.055	0.416	2.038	1.400
43	TX	5934	2632	1837	1067	317	76	5	0.014	0.247	0.502	0.831
44	UT	79	53	19	6	1	0	0	0.000	0.089	0.000	0.298
45	VA	318	84	132	68	28	6	0	0.019	0.321	0.694	1.079
46	VT	33	7	14	12	0	0	0	0.000	0.364	0.000	1.223
47	WA	56	24	17	12	3	0	0	0.000	0.268	0.000	0.901
48	WI	949	204	378	276	62	24	5	0.031	0.387	1.125	1.301
49	WV	87	27	36	16	8	0	0	0.000	0.276	0.000	0.928
50	WY	444	247	145	43	8	1	0	0.002	0.117	0.083	0.394
51	Total SPC	38459	13776	13251	7834	2553	924	121	0.027	0.297		
52												
53	Reg I	4199	1458	1767	704	216	50	4	0.013	0.232		
54	Reg II*	8662	3771	2683	1590	453	142	23	0.019	0.255		
55	SumRI/II	12861	5229	4450	2294	669	192	27	0.017	0.247		
56												
57	Reg III**	4396	1253	1735	987	291	114	16	0.030	0.320		
58	Reg IV	5914	1533	2196	1358	534	252	41	0.050	0.369		
59	Sum RIII/IV	10310	2786	3931	2345	825	366	57	0.041	0.348		
60												
61	Resid	15288	5514	4725	3152	1051	365	37	0.026	0.301		
62	Check	38459	13529	13106	7791	2545	923	121				

C	A	B	C	D	E	F	G	H
1	State	Total	F0	F1	F2	F3	F4	F5
2	AL	-2	-7	8	0	0	-2	-1
3	AR	-5	-4	-3	4	0	-2	0
4	AZ	2	-30	32	0	0	0	0
5	CA	-2	-40	38	2	-2	0	0
6	CO	2	-56	59	-1	0	0	0
7	CT	2	-1	1	2	0	0	0
8	DC	0	0	0	0	0	0	0
9	DE	0	-2	7	-4	-1	0	0
10	FL	19	-148	152	12	3	0	0
11	GA	-7	-1	0	-2	-4	0	0
12	IA	-5	-95	92	1	0	-2	-1
13	ID	0	-10	10	0	0	0	0
14	IL	104	-40	80	44	22	-2	0
15	IN	32	-42	50	17	0	7	0
16	KS	-5	-270	276	-5	1	-4	-3
17	KY	-4	-2	1	2	-2	-3	0
18	LA	1	0	0	6	-2	-2	-1
19	MA	9	0	7	1	2	-1	0
20	MD	0	-3	4	0	-1	0	0
21	ME	1	-12	12	1	0	0	0
22	MI	-7	-12	10	0	2	-3	-4
23	MN	-8	-8	5	1	-4	0	-2
24	MO	-53	-10	4	-22	-13	-12	0
25	MS	19	-66	70	20	-4	4	-5
26	MT	1	-52	51	2	0	0	0
27	NC	-1	-1	1	0	-1	0	0
28	ND	3	-98	99	2	1	-1	0
29	NE	13	-233	237	3	6	0	0
30	NV	0	-10	10	0	0	0	0
31	NH	2	-9	10	1	0	0	0
32	NJ	1	-5	5	1	0	0	0
33	NM	0	-8	8	0	0	0	0
34	NY	4	-13	14	4	2	-3	0
35	OH	18	-14	22	9	8	-3	-4
36	OK	-17	-70	72	-3	-2	-12	-2
37	OR	1	-1	2	0	0	0	0
38	PA	4	-14	15	6	1	-3	-1
39	RI	0	0	0	0	0	0	0
40	SC	-1	-10	9	0	0	0	0
41	SD	-1	-137	138	-1	-1	0	0
42	TN	-4	-1	0	2	0	-3	-2
43	TX	-22	-222	212	-3	-3	-6	0
44	UT	0	-20	20	0	0	0	0
45	VA	7	-27	31	4	-1	0	0
46	VT	1	-1	11	-9	0	0	0
47	WA	0	-4	4	0	0	0	0
48	WI	51	-40	63	22	4	3	-1
49	WV	1	-4	5	1	-1	0	0
50	WY	3	-37	38	2	0	0	0
51								
52		157	-1890	1992	122	10	-50	-27
53				102				55

A	A	B	C	D	E	F	G	H	I	J	K	L
1	State	Total	F0	F1	F2	F3	F4	F5	F4-F5s	F2-F5s	F4-5/Ave	F2-5/Ave
2	AL	1029	158	372	323	129	34	13	0.046	0.485	1.822	1.630
3	AR	1002	194	295	335	149	29	0	0.029	0.512	1.155	1.721
4	AZ	162	60	89	11	2	0	0	0.000	0.080	0.000	0.270
5	CA	221	102	96	23	0	0	0	0.000	0.104	0.000	0.350
6	CO	1174	560	500	98	15	1	0	0.001	0.097	0.034	0.326
7	CT	67	8	30	22	5	2	0	0.030	0.433	1.191	1.455
8	DC	1	1	0	0	0	0	0	0.000	0.000	0.000	0.000
9	DE	55	18	30	7	0	0	0	0.000	0.127	0.000	0.428
10	FL	2167	1008	817	305	33	4	0	0.002	0.158	0.074	0.531
11	GA	1025	146	537	264	61	17	0	0.017	0.334	0.662	1.122
12	IA	1602	383	598	422	119	72	8	0.050	0.388	1.992	1.303
13	ID	124	53	63	8	0	0	0	0.000	0.065	0.000	0.217
14	IL	1446	391	520	360	135	37	3	0.028	0.370	1.104	1.244
15	IN	1070	204	386	280	108	84	8	0.086	0.449	3.430	1.508
16	KS	2358	841	886	399	169	50	13	0.027	0.268	1.066	0.900
17	KY	479	77	169	135	63	32	3	0.073	0.486	2.915	1.635
18	LA	1255	225	620	274	121	14	1	0.012	0.327	0.477	1.098
19	MA	147	24	79	32	10	2	0	0.014	0.299	0.543	1.006
20	MD	172	46	96	26	4	0	0	0.000	0.174	0.000	0.586
21	ME	83	9	56	18	0	0	0	0.000	0.217	0.000	0.729
22	MI	800	183	318	210	59	27	3	0.038	0.374	1.496	1.256
23	MN	945	364	341	159	49	28	4	0.034	0.254	1.351	0.854
24	MO	1314	288	581	312	96	36	1	0.028	0.339	1.123	1.138
25	MS	1287	160	538	389	132	63	5	0.053	0.458	2.108	1.538
26	MT	254	122	93	35	4	0	0	0.000	0.154	0.000	0.516
27	NC	686	152	322	143	43	26	0	0.038	0.309	1.512	1.039
28	ND	833	392	310	93	29	6	3	0.011	0.157	0.431	0.529
29	NE	1831	594	822	258	111	42	4	0.025	0.227	1.002	0.762
30	NV	49	31	18	0	0	0	0	0.000	0.000	0.000	0.000
31	NH	77	15	44	16	2	0	0	0.000	0.234	0.000	0.786
32	NJ	128	37	63	24	4	0	0	0.000	0.219	0.000	0.735
33	NM	400	253	112	31	4	0	0	0.000	0.088	0.000	0.294
34	NY	272	88	120	39	23	2	0	0.007	0.235	0.293	0.791
35	OH	751	143	343	175	61	24	5	0.039	0.353	1.540	1.186
36	OK	2563	775	880	623	207	71	7	0.030	0.354	1.214	1.191
37	OR	50	30	17	3	0	0	0	0.000	0.060	0.000	0.202
38	PA	510	79	235	149	27	19	1	0.039	0.384	1.564	1.292
39	RI	8	3	4	1	0	0	0	0.000	0.125	0.000	0.420
40	SC	515	126	243	100	31	15	0	0.029	0.283	1.162	0.953
41	SD	1171	514	397	196	56	7	1	0.007	0.222	0.273	0.746
42	TN	592	106	241	141	76	26	2	0.047	0.414	1.887	1.391
43	TX	5912	2410	2049	1064	314	70	5	0.013	0.246	0.506	0.826
44	UT	79	33	39	6	1	0	0	0.000	0.089	0.000	0.298
45	VA	325	57	163	72	27	6	0	0.018	0.323	0.736	1.086
46	VT	34	6	25	3	0	0	0	0.000	0.088	0.000	0.297
47	WA	56	20	21	12	3	0	0	0.000	0.268	0.000	0.900
48	WI	1000	164	441	298	66	27	4	0.031	0.395	1.237	1.328
49	WV	88	23	41	17	7	0	0	0.000	0.273	0.000	0.917
50	WY	447	210	183	45	8	1	0	0.002	0.121	0.089	0.406
51	TPCOM	38616	11886	15243	7956	2563	874	94	0.025	0.297		
52												
53	Reg I	1554	334	782	337	75	25	1	0.017	0.282		
54	Reg II*	8944	2156	3786	2064	663	247	28	0.031	0.336		
55	Sum RI/II	10498	2490	4568	2401	738	272	29	0.029	0.328		
56	Reg III**	8177	1977	3185	2041	632	311	31	0.042	0.369		
57	Reg IV	16925	5945	6259	3242	1156	289	34	0.019	0.279		
58	Sum RIII/IV	25102	7922	9444	5283	1788	600	65	0.026	0.308		
59	SumRI/IV	35600	10412	14012	7684	2526	872	94	0.027	0.314		
60	Resid	3016	1474	1231	272	37	2	0	0.001	0.103		
61	Check	38616	11886	15243	7956	2563	874	94				

B	A	B	C	D	E	F	G	H	I	J	K	L	M
1	State	Total	F0	F1	F2	F3	F4	F5	F4-F5s	F2-F5s	F4-5/Ave	F2-5/Ave	
2	AL	1031	165	364	323	129	36	14	0.048	0.487	1.785	1.638	
3	AR	1007	198	298	331	149	31	0	0.031	0.507	1.133	1.707	
4	AZ	160	90	57	11	2	0	0	0.000	0.081	0.000	0.273	
5	CA	223	142	58	21	2	0	0	0.000	0.103	0.000	0.347	
6	CO	1172	616	441	99	15	1	0	0.001	0.098	0.031	0.330	
7	CT	65	9	29	20	5	2	0	0.031	0.415	1.132	1.397	
8	DC	1	1	0	0	0	0	0	0.000	0.000	0.000	0.000	
9	DE	55	20	23	11	1	0	0	0.000	0.218	0.000	0.734	
10	FL	2148	1156	665	293	30	4	0	0.002	0.152	0.069	0.512	
11	GA	1032	147	537	266	65	17	0	0.016	0.337	0.606	1.134	
12	IA	1607	478	506	421	119	74	9	0.052	0.388	1.901	1.304	
13	ID	124	63	53	8	0	0	0	0.000	0.065	0.000	0.217	
14	IL	1342	431	440	316	113	39	3	0.031	0.351	1.152	1.181	
15	IN	1038	246	336	263	108	77	8	0.082	0.439	3.014	1.478	
16	KS	2363	1111	610	404	168	54	16	0.030	0.272	1.090	0.914	
17	KY	483	79	168	133	65	35	3	0.079	0.489	2.895	1.644	
18	LA	1254	225	620	268	123	16	2	0.014	0.326	0.528	1.097	
19	MA	138	24	72	31	8	3	0	0.022	0.304	0.800	1.024	
20	MD	172	49	92	26	5	0	0	0.000	0.180	0.000	0.606	
21	ME	82	21	44	17	0	0	0	0.000	0.207	0.000	0.697	
22	MI	807	195	308	210	57	30	7	0.046	0.377	1.687	1.267	
23	MN	953	372	336	158	53	28	6	0.036	0.257	1.313	0.865	
24	MO	1367	298	577	334	109	48	1	0.036	0.360	1.319	1.211	
25	MS	1268	226	468	369	136	59	10	0.054	0.453	2.003	1.523	
26	MT	253	174	42	33	4	0	0	0.000	0.146	0.000	0.492	
27	NC	687	153	321	143	44	26	0	0.038	0.310	1.393	1.043	
28	ND	830	490	211	91	28	7	3	0.012	0.155	0.443	0.523	
29	NE	1818	827	585	255	105	42	4	0.025	0.223	0.931	0.751	
30	NV	49	41	8	0	0	0	0	0.000	0.000	0.000	0.000	
31	NH	75	24	34	15	2	0	0	0.000	0.227	0.000	0.763	
32	NJ	127	42	58	23	4	0	0	0.000	0.213	0.000	0.715	
33	NM	400	261	104	31	4	0	0	0.000	0.088	0.000	0.294	
34	NY	268	101	106	35	21	5	0	0.019	0.228	0.687	0.766	
35	OH	733	157	321	166	53	27	9	0.049	0.348	1.808	1.170	
36	OK	2580	845	808	626	209	83	9	0.036	0.359	1.312	1.209	
37	OR	49	31	15	3	0	0	0	0.000	0.061	0.000	0.206	
38	PA	506	93	220	143	26	22	2	0.047	0.381	1.746	1.283	
39	RI	8	3	4	1	0	0	0	0.000	0.125	0.000	0.421	
40	SC	516	136	234	100	31	15	0	0.029	0.283	1.070	0.952	
41	SD	1172	651	259	197	57	7	1	0.007	0.224	0.251	0.752	
42	TN	596	107	241	139	76	29	4	0.055	0.416	2.038	1.400	
43	TX	5934	2632	1837	1067	317	76	5	0.014	0.247	0.502	0.831	
44	UT	79	53	19	6	1	0	0	0.000	0.089	0.000	0.298	
45	VA	318	84	132	68	28	6	0	0.019	0.321	0.694	1.079	
46	VT	33	7	14	12	0	0	0	0.000	0.364	0.000	1.223	
47	WA	56	24	17	12	3	0	0	0.000	0.268	0.000	0.901	
48	WI	949	204	378	276	62	24	5	0.031	0.387	1.125	1.301	
49	WV	87	27	36	16	8	0	0	0.000	0.276	0.000	0.928	
50	WY	444	247	145	43	8	1	0	0.002	0.117	0.083	0.394	
51	Total SPC	38459	13776	13251	7834	2553	924	121	0.027	0.297			
52													
53	Reg I	2263	551	1017	500	125	59	11	0.031	0.307			
54	Reg II	8166	2280	3166	1850	612	227	31	0.032	0.333			
55	SumRI/II	10429	2831	4183	2350	737	286	42	0.031	0.327	0.271455	0.401093	0.225333
56	Reg III	8063	2224	2881	1978	621	320	39	0.045	0.367			
57	Reg IV	16958	6979	5228	3239	1156	316	40	0.021	0.280			
58	Sum RIII/IV	25021	9203	8109	5217	1777	636	79	0.029	0.308	0.339464	0.346742	0.213456
59	Sum RI/IV	35450	12034	12292	7567	2514	922	121	0.029	0.314			
60	Resid	3009	1742	959	267	39	2	0	0.001	0.102			
61	Check	38459	13776	13251	7834	2553	924	121					
62													

B	A	B	C	D	E	F	G	H	I	J	K	L	M
63													
64		15415	4341	5137	3825	1434	592	86			0.281609	0.333247	0.248135

B	N	O	P
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			
55	0.070668	0.027424	0.004027
56			
57			
58	0.070917	0.026008	0.003413
59			
60			
61			
62			

B	N	O	P
63			
64	0.093026	0.038404	0.005579

C	A	B	C	D	E	F	G	H
1	State	Total	F0	F1	F2	F3	F4	F5
2	AL	-2	-7	8	0	0	-2	-1
3	AR	-5	-4	-3	4	0	-2	0
4	AZ	2	-30	32	0	0	0	0
5	CA	-2	-40	38	2	-2	0	0
6	CO	2	-56	59	-1	0	0	0
7	CT	2	-1	1	2	0	0	0
8	DC	0	0	0	0	0	0	0
9	DE	0	-2	7	-4	-1	0	0
10	FL	19	-148	152	12	3	0	0
11	GA	-7	-1	0	-2	-4	0	0
12	IA	-5	-95	92	1	0	-2	-1
13	ID	0	-10	10	0	0	0	0
14	IL	104	-40	80	44	22	-2	0
15	IN	32	-42	50	17	0	7	0
16	KS	-5	-270	276	-5	1	-4	-3
17	KY	-4	-2	1	2	-2	-3	0
18	LA	1	0	0	6	-2	-2	-1
19	MA	9	0	7	1	2	-1	0
20	MD	0	-3	4	0	-1	0	0
21	ME	1	-12	12	1	0	0	0
22	MI	-7	-12	10	0	2	-3	-4
23	MN	-8	-8	5	1	-4	0	-2
24	MO	-53	-10	4	-22	-13	-12	0
25	MS	19	-66	70	20	-4	4	-5
26	MT	1	-52	51	2	0	0	0
27	NC	-1	-1	1	0	-1	0	0
28	ND	3	-98	99	2	1	-1	0
29	NE	13	-233	237	3	6	0	0
30	NV	0	-10	10	0	0	0	0
31	NH	2	-9	10	1	0	0	0
32	NJ	1	-5	5	1	0	0	0
33	NM	0	-8	8	0	0	0	0
34	NY	4	-13	14	4	2	-3	0
35	OH	18	-14	22	9	8	-3	-4
36	OK	-17	-70	72	-3	-2	-12	-2
37	OR	1	-1	2	0	0	0	0
38	PA	4	-14	15	6	1	-3	-1
39	RI	0	0	0	0	0	0	0
40	SC	-1	-10	9	0	0	0	0
41	SD	-1	-137	138	-1	-1	0	0
42	TN	-4	-1	0	2	0	-3	-2
43	TX	-22	-222	212	-3	-3	-6	0
44	UT	0	-20	20	0	0	0	0
45	VA	7	-27	31	4	-1	0	0
46	VT	1	-1	11	-9	0	0	0
47	WA	0	-4	4	0	0	0	0
48	WI	51	-40	63	22	4	3	-1
49	WV	1	-4	5	1	-1	0	0
50	WY	3	-37	38	2	0	0	0
51								
52		157	-1890	1992	122	10	-50	-27
53				102				55

A	A	B	C	D	E	F	G	H	I	J	K	L
1	Report#	Date	Crane	AType	ACause	Charge	Function	OpMode	Total		66	No.
2	99013	05/08/99	BS	CC	COMM	ISP	TROL	ISP	Crane Collision		11	
3	96002	09/09/96	BNS	CC	II	CONT	T	OP	16.67	IO	45.45	5
4	98004	05/05/98	GNS	CC	IO	O	T	OP		PROC	18.18	2
5	97008	10/01/97	BNS	CC	IO	O	T	OP		Others	27.27	4
6	97001	11/04/97	BNS	CC	IO	O	B	OP				
7	97010	10/01/97	BNS	CC	IO	UNK	B	OP				
8	98009	07/21/98	BS	CC	IO	O	B	OP				
9	98029	12/14/98	BS	CC	PROC	O	T	OP				
10	97008	02/26/97	BS	CC	PROC	EC	T	OP				
11	95002	08/30/95	BNS	CC	TC	M	T	MAIN				
12	98006	12/09/98	GNS	CC	VISI	R	T	OP				
13	96028	08/09/96	BS	DC	IO	O	HT	OP	Damage Crane		18	
14	96001	02/08/96	ONS	DC	IO	UNK	H	OP	27.27	IO	50.00	9
15	97013	12/01/97	BS	DC	IO	O	UNK	OP		IR	27.78	5
16	98001	04/28/98	BNS	DC	IO	O	TROL	OP		PROC	22.22	4
17	98004	02/02/98	BNS	DC	IO	O	B	MAIN				
18	98001	01/13/98	BNS	DC	IO	O	H	OP				
19	98002	03/13/98	GNS	DC	IO	MG	N/A	OP				
20	99004	10/15/98	BNS	DC	IO	O	H	OP	Summary	IO	37.88	25
21	99003	10/15/98	BNS	DC	IO	O	T	OP	by	IR	30.30	20
22	99002	04/12/99	BNS	DC	IR	IR	H	OP	Cause	PROC	19.70	13
23	98004	11/18/98	BNS	DC	IR	R	H	OP		EQ	4.55	3
24	95001	05/09/95	BNS	DC	IR	R	H	OP		Others	7.58	5
25	98006	04/10/98	BNS	DC	IR	R	L	OP		Total		66
26	96013	07/09/96	BS	DC	IR	R	H	OP				
27	98001	02/26/98	BNS	DC	PROC	MECH	L	MAIN				
28	99007	01/29/99	BNS	DC	PROC	M	T	MAIN				
29	99008	03/20/99	BNS	DC	PROC	MG	T	OP				
30	98004	08/04/98	GNS	DC	PROC	ISP	H	OP				
31	96017	09/06/96	BS	DL	EQ	EC	H	OP	Damage Load		3	
32	96010	09/25/96	BS	DL	IR	R	H	OP	4.55	EQ	33.33	1
33	96005	07/13/96	BS	DL	IR	R	H	OP		IR	66.67	2
34	98001	11/04/98	BNS	DROP	EQ	R	H	OP	Dropped Load		6	1
35	97016	04/30/97	BS	DROP	EQ	R	ROT	OP	9.09	EQ	33.33	2
36	98002	02/18/98	BS	DROP	IR	R	H	OP		IR	66.67	4
37	98001	01/06/98	BS	DROP	IR	R	L	OP				
38	95001	12/05/95	BNS	DROP	IR	R	H	OP				
39	97001	04/29/97	BNS	DROP	IR	R	H	OP				
40	99001	03/30/99	BNS	LC	IO	R	H	OP	Load Collision		9	
41	98010	07/02/98	BS	LC	IO	O	L	OP	13.64	IO	55.56	5
42	98007	05/15/98	BS	LC	IO	P	B	OP		IR	22.22	2
43	98004	02/11/98	BNS	LC	IO	O	L	OP		PROC	11.11	1
44	99001	10/30/98	BNS	LC	IO	O	H	OP		VISI	11.11	1
45	96041	11/08/96	BS	LC	IR	R	H	OP				
46	99008	03/30/99	BS	LC	IR	R	T	OP				
47	99005	03/03/99	BS	LC	PROC	R	HOLD	TEST				
48	97004	02/27/97	BS	LC	VISI	R	H	OP				
49	98017	11/06/98	BS	OTHER	PROC	P	T	OP	1.52	PROC	1	1
50	97001	02/05/97	BNS	OVER	IO	O	H	OP	Overload		8	
51	98010	12/22/98	BS	OVER	IO	R	H	OP	12.12	IO	25.00	2
52	99003	04/13/99	BS	OVER	IR	R	H	OP		IR	37.50	3
53	98013	08/28/98	BS	OVER	IR	R	H	OP		PROC	37.50	3
54	98018	12/11/98	BS	OVER	IR	R	H	OP				
55	98008	07/29/98	BNS	OVER	PROC	MG	H	OP				
56	97009	11/19/97	BNS	OVER	PROC	MG	H	OP				
57	97014	06/02/97	BS	OVER	PROC	MG	H	OP				
58	97001	02/10/97	BNS	PI	IO	O	H	OP	Personnel Injury		5	
59	97001	01/08/97	BS	PI	IR	R	IDLE	OP	7.58	IO	20.00	1
60	96004	04/25/96	BS	PI	IR	R	NA	OP		IR	60.00	3
61	96002	07/01/96	ONS	PI	IR	SHOP	H	OP		PROC	20.00	1
62	97002	04/18/97	BNS	PI	PROC	WELD	H	OP				
63	97003	10/30/97	BNS	SHOCK	IR	FWORK	H	OP	1.52	IR	1	1
64	99003	02/22/99	MONO	TB	IO	O	H	OP	Two-Blocking		3	
65	98005	01/08/98	BNS	TB	IO	CONT	H	UNK	4.55	IO	66.67	2
66	98008	06/26/98	BS	TB	PROC	M	H	MAIN		PROC	33.33	1
67	96014	12/03/96	BS	UL	IO	O	L	ODCL	1.52	IO	1	1
68												
69												

State	A	B	C	D	Years	F0	F1	F2	F3	F4	F5	Total	F0	F1	F2	F3	F4	F5	1.2E+06	
LA		1				46	225	620	268	123	16	2	1254	2.4E-05	2.2E-05	6.9E-06	1.4E-06	1.2E-07	1.9E-08	5.4E-05
						28	98	259	170	64	12	2	605	2.5E-05	3.5E-05	2.5E-05	1.3E-05	2.2E-06	2.0E-06	1.0E-04

A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Heavy Loads	NUREG-0612 Evaluation															
2	Data Sheet 2(B-1)	As presented in NUREG-0612															
3																	
4	Event	Description	Units	High	Low	Mean	LogMean	GeoMean	High	Low	Mean	LogMean	GeoMean	MeanHL	MeanM	MeanL	MeanG
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	8.0E-05	8.0E-05	5.2E-05	3.9E-05
6	Crane Failure																
7	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05				0.05	0.05							
8	CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07	3.7E-06	2.4E-06	1.8E-06	7.0E-06	4.7E-07	3.7E-06	2.4E-06	1.8E-06	3.7E-06	3.7E-06	2.4E-06	1.8E-06
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
10	CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	3.5E-08	1.4E-08	5.7E-09	7.0E-09	4.7E-09	5.8E-09	5.7E-09					
11																	
12	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53				0.53	0.53							
13	CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06	4.3E-05	2.8E-05	2.1E-05	8.0E-05	5.3E-06	4.3E-05	2.8E-05	2.1E-05	4.3E-05	4.3E-05	2.8E-05	2.1E-05
14	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
15	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	4.0E-06	1.6E-06	6.6E-07	8.0E-07	5.3E-07	6.7E-07	6.6E-07	6.6E-07	2.4E-06	2.4E-06	1.1E-06	6.6E-07
16																	
17	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35				0.35	0.35							
18	CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06	2.8E-05	1.8E-05	1.4E-05	5.2E-05	3.5E-06	2.8E-05	1.8E-05	1.4E-05	2.8E-05	2.8E-05	1.8E-05	1.4E-05
19	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
20	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
21	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	2.6E-08	7.2E-09	1.4E-09	5.2E-10	3.5E-09	2.0E-09	1.6E-09	1.4E-09	1.4E-08	1.4E-08	4.4E-09	1.4E-09
22																	
23	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02				0.02	0.02							
24	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01				1.0E-01	1.0E-01							
25	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	1.8E-07	1.8E-07	1.2E-07	8.8E-08
26																	
27	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	4.3E-06	1.8E-06	8.1E-07	1.2E-06	5.7E-07	8.6E-07	8.2E-07	8.1E-07	2.6E-06	2.6E-06	1.3E-06	8.1E-07
28	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
29	CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	4.3E-05	1.6E-05	5.1E-06	4.6E-06	5.7E-06	5.1E-06	5.1E-06	5.1E-06	2.4E-05	2.4E-05	1.0E-05	5.1E-06
30																	
31	Rigging failure	Based on NUREG-0612 method															
32	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07				0.07	0.07							
33	CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07	5.6E-06	3.6E-06	2.7E-06	1.0E-05	7.0E-07	5.6E-06	3.6E-06	2.7E-06	5.6E-06	5.6E-06	3.6E-06	2.7E-06
34	CR12	Failure of redundant/alternate rigging	/demand	2.5E-01	5.0E-02				5.0E-02	2.5E-01							
35	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07	5.2E-07	1.7E-07	3.5E-07	3.2E-07	3.0E-07	8.4E-07	8.4E-07	4.6E-07	3.0E-07
36	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
37	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06	2.1E-06	1.7E-06	1.9E-06	1.9E-06	1.9E-06	7.5E-06	7.5E-06	3.4E-06	1.9E-06
38																	
39	FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	5.6E-06	2.4E-06	1.1E-06	1.7E-06	7.4E-07	1.2E-06	1.1E-06	1.1E-06	3.4E-06	3.4E-06	1.8E-06	1.1E-06
40																	
41	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	5.6E-05	2.0E-05	7.0E-06	8.7E-06	7.4E-06	7.0E-06	7.0E-06	7.0E-06	3.1E-05	3.1E-05	1.4E-05	7.0E-06
42																	
43		Loss-of-inventory for a single-failure proof crane															
44	RF	Fraction of year over which a release may occur	---	0.20	0.10				0.10	0.20							
45	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
46	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
47	LOI-S	(CFCR) * P * P' * RF	/year	1.4E-06	2.2E-10	6.9E-07	1.6E-07	1.8E-08	3.3E-09	9.3E-08	4.8E-08	2.7E-08	1.8E-08	3.7E-07	3.7E-07	9.3E-08	1.8E-08
48																	
49		Loss-of-inventory for a non single-failure proof crane															
50	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-03	4.1E-05	7.9E-04	4.1E-04	2.5E-04	6.1E-04	1.0E-04	3.6E-04	2.9E-04	2.5E-04	5.7E-04	5.7E-04	3.5E-04	2.5E-04
51	RF	Fraction of year over which a release may occur	---	0.20	0.10				0.10	0.20							
52	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
53	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
54	LOI-N	(CFCRNON) * P * P' * RF	/year	1.9E-05	2.0E-08	9.6E-06	2.8E-06	6.3E-07	3.1E-07	1.3E-06	7.9E-07	6.8E-07	6.3E-07	5.2E-06	5.2E-06	1.7E-06	6.3E-07
55																	
56		Risk reduction for a single-failure proof crane (LOI-N / LOI-S)	---	14	92				92	14							

A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
57	Heavy Loads	NUREG-0612 Evaluation															
58	Data Sheet 2(B-1)	Based on release fraction of 1 for current storage configuration															
59																	
60	Event	Description	Units	High	Low	Mean	LogMean	GeoMean	High	Low	Mean	LogMean	GeoMean	MeanHL	MeanM	MeanL	MeanG
61	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	8.0E-05	8.0E-05	5.2E-05	3.9E-05
62	Crane Failure																
63	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05				0.05	0.05							
64	CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07	3.7E-06	2.4E-06	1.8E-06	7.0E-06	4.7E-07	3.7E-06	2.4E-06	1.8E-06	3.7E-06	3.7E-06	2.4E-06	1.8E-06
65	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
66	CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	3.5E-08	1.4E-08	5.7E-09	7.0E-09	4.7E-09	5.8E-09	5.7E-09	5.7E-09	2.0E-08	2.0E-08	9.8E-09	5.7E-09
67																	
68	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53				0.53	0.53							
69	CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06	4.3E-05	2.8E-05	2.1E-05	8.0E-05	5.3E-06	4.3E-05	2.8E-05	2.1E-05	4.3E-05	4.3E-05	2.8E-05	2.1E-05
70	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
71	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	4.0E-06	1.6E-06	6.6E-07	8.0E-07	5.3E-07	6.7E-07	6.6E-07	6.6E-07	2.4E-06	2.4E-06	1.1E-06	6.6E-07
72																	
73	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35				0.35	0.35							
74	CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06	2.8E-05	1.8E-05	1.4E-05	5.2E-05	3.5E-06	2.8E-05	1.8E-05	1.4E-05	2.8E-05	2.8E-05	1.8E-05	1.4E-05
75	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
76	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
77	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	2.6E-08	7.2E-09	1.4E-09	5.2E-10	3.5E-09	2.0E-09	1.6E-09	1.4E-09	1.4E-08	1.4E-08	4.4E-09	1.4E-09
78																	
79	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02				0.02	0.02							
80	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01				1.0E-01	1.0E-01							
81	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	1.8E-07	1.8E-07	1.2E-07	8.8E-08
82																	
83	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	4.3E-06	1.8E-06	8.1E-07	1.2E-06	5.7E-07	8.6E-07	8.2E-07	8.1E-07	2.6E-06	2.6E-06	1.3E-06	8.1E-07
84	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4.0E+00	1.0E+01							
85	CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	4.3E-05	1.5E-05	5.1E-06	4.6E-06	5.7E-06	5.1E-06	5.1E-06	5.1E-06	2.4E-05	2.4E-05	1.0E-05	5.1E-06
86																	
87	Rigging failure	Based on NUREG-0612 method															
88	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07				0.07	0.07							
89	CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07	5.6E-06	3.6E-06	2.7E-06	1.0E-05	7.0E-07	5.6E-06	3.6E-06	2.7E-06	5.6E-06	5.6E-06	3.6E-06	2.7E-06
90	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05				0.05	0.25							
91	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07	5.2E-07	1.7E-07	3.5E-07	3.2E-07	3.0E-07	8.4E-07	8.4E-07	4.6E-07	3.0E-07
92	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
93	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06	2.1E-06	1.7E-06	1.9E-06	1.9E-06	1.9E-06	7.5E-06	7.5E-06	3.4E-06	1.9E-06
94																	
95	FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	5.6E-06	2.4E-06	1.1E-06	1.7E-06	7.4E-07	1.2E-06	1.1E-06	1.1E-06	3.4E-06	3.4E-06	1.8E-06	1.1E-06
96																	
97	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	5.6E-05	2.0E-05	7.0E-06	6.7E-06	7.4E-06	7.0E-06	7.0E-06	7.0E-06	3.1E-05	3.1E-05	1.4E-05	7.0E-06
98																	
99		Loss-of-inventory for a single-failure proof crane															
100	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
101	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
102	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
103	LOI-S	(CFCR) * P * P' * RF	/year	6.9E-06	2.2E-09	3.5E-06	8.6E-07	1.2E-07	3.3E-08	4.6E-07	2.5E-07	1.6E-07	1.2E-07	1.9E-06	1.9E-06	5.1E-07	1.2E-07
104																	
105		Loss-of-inventory for a non single-failure proof crane															
106	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR	No.	1.5E-03	4.1E-05	7.9E-04	4.1E-04	2.5E-04	6.1E-04	1.0E-04	3.6E-04	2.9E-04	2.5E-04	5.7E-04	5.7E-04	3.5E-04	2.5E-04
107	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
108	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
109	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
110	LOI-N	(CFCRNON) * P * P' * RF	/year	9.6E-05	2.0E-07	4.8E-05	1.6E-05	4.4E-06	3.1E-06	6.4E-06	4.7E-06	4.5E-06	4.4E-06	2.6E-05	2.6E-05	1.0E-05	4.4E-06
111																	
112		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	14	92				92	14							

A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
113	Heavy Loads	NUREG-0612 Evaluation															
114	Data Sheet 2(B-1)	(Based on new Navy Data)															
115																	
116	Event	Description	Units	High	Low	Mean	LogMean	GeoMean	High	Low	Mean	LogMean	GeoMean	MeanHL	MeanM	MeanL	MeanG
117	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	8.0E-05	8.0E-05	5.2E-05	3.9E-05
118	Crane Failure																
119	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14				0.14	0.14							
120	CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06	1.1E-05	7.0E-06	5.3E-06	2.0E-05	1.4E-06	1.1E-05	7.0E-06	5.3E-06	1.1E-05	1.1E-05	7.0E-06	5.3E-06
121	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
122	CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	1.0E-07	4.1E-08	1.7E-08	2.0E-08	1.4E-08	1.7E-08	1.7E-08	1.7E-08	6.0E-08	6.0E-08	2.9E-08	1.7E-08
123																	
124	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61				0.61	0.61							
125	CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06	4.8E-05	3.1E-05	2.3E-05	9.1E-05	6.1E-06	4.8E-05	3.1E-05	2.3E-05	4.8E-05	4.8E-05	3.1E-05	2.3E-05
126	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
127	CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	4.6E-06	1.8E-06	7.4E-07	9.1E-07	6.1E-07	7.6E-07	7.5E-07	7.4E-07	2.7E-06	2.7E-06	1.3E-06	7.4E-07
128																	
129	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05				0.05	0.05							
130	CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07	3.6E-06	2.3E-06	1.8E-06	6.8E-06	4.5E-07	3.6E-06	2.3E-06	1.8E-06	3.6E-06	3.6E-06	2.3E-06	1.8E-06
131	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
132	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
133	CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	3.4E-09	9.3E-10	1.8E-10	6.8E-11	4.5E-10	2.6E-10	2.0E-10	1.8E-10	1.8E-09	1.8E-09	5.7E-10	1.8E-10
134																	
135	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01				0.01	0.01							
136	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01				1.0E-01	1.0E-01							
137	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	1.2E-07	1.2E-07	7.7E-08	5.8E-08
138																	
139	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	4.8E-06	2.0E-06	8.6E-07	1.2E-06	6.4E-07	8.9E-07	8.7E-07	8.6E-07	2.8E-06	2.8E-06	1.4E-06	8.6E-07
140	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3				3	3							
141	CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	1.5E-05	5.9E-06	2.6E-06	3.5E-06	1.9E-06	2.7E-06	2.6E-06	2.6E-06	8.6E-06	8.6E-06	4.3E-06	2.6E-06
142																	
143	Rigging failure	Based on NUREG-0612 method															
144	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21				0.21	0.21							
145	CR11	Failure due to improper rigging (N0*F5)	/year	3.2E-05	2.1E-06	1.7E-05	1.1E-05	8.2E-06	3.2E-05	2.1E-06	1.7E-05	1.1E-05	8.2E-06	1.7E-05	1.7E-05	1.1E-05	8.2E-06
146	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05				0.05	0.25							
147	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.0E-06	1.1E-07	4.0E-06	1.8E-06	9.2E-07	1.6E-06	5.3E-07	1.1E-06	9.7E-07	9.2E-07	2.5E-06	2.5E-06	1.4E-06	9.2E-07
148	D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6				6	6							
149	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	4.8E-05	6.4E-07	2.4E-05	1.1E-05	5.6E-06	9.6E-06	3.2E-06	6.4E-06	5.9E-06	5.6E-06	1.5E-05	1.5E-05	8.4E-06	5.6E-06
150																	
151	FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.7E-05	1.8E-07	8.8E-06	3.8E-06	1.8E-06	2.7E-06	1.2E-06	2.0E-06	1.8E-06	1.8E-06	5.4E-06	5.4E-06	2.8E-06	1.8E-06
152																	
153	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	7.7E-05	8.8E-07	3.9E-05	1.7E-05	8.2E-06	1.3E-05	5.1E-06	9.1E-06	8.5E-06	8.2E-06	2.4E-05	2.4E-05	1.3E-05	8.2E-06
154																	
155		Loss-of-inventory for a single-failure proof crane															
156	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
157	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
158	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
159	LOI-S	(CFCR) * P * P' * RF	/year	4.8E-06	4.4E-09	2.4E-06	6.9E-07	1.5E-07	6.6E-08	3.2E-07	1.9E-07	1.6E-07	1.5E-07	1.3E-06	1.3E-06	4.2E-07	1.5E-07
160																	
161		Loss-of-inventory for a non single-failure proof crane															
162	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	5.6E-04	3.7E-05	3.0E-04	1.9E-04	1.4E-04	5.6E-04	3.7E-05	3.0E-04	1.9E-04	1.4E-04	3.0E-04	3.0E-04	1.9E-04	1.4E-04
163	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
164	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
165	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
166	LOI-N	(CFCRNON) * P * P' * RF	/year	3.5E-05	1.9E-07	1.8E-05	6.6E-06	2.5E-06	2.8E-06	2.3E-06	2.8E-06	2.5E-06	2.5E-06	1.0E-05	1.0E-05	4.8E-06	2.5E-06
167																	
168		Risk reduction for a single-failure proof crane (LOI-N / LOI-S)	---	7	42				42	7							

A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
169	Heavy Loads	NUREG-0612 Evaluation															
170	Data Sheet 2(B-1)	(Based on new Navy Data AND WIPP Rigging Evaluation)															
171																	
172	Event	Description	Units	High	Low	Mean	LogMean	GeoMean	High	Low	Mean	LogMean	GeoMean	MeanHL	MeanM	MeanL	MeanG
173	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	8.0E-05	8.0E-05	5.2E-05	3.9E-05
174	Crane Failure																
175	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14				0.14	0.14							
176	CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06	1.1E-05	7.0E-06	5.3E-06	2.0E-05	1.4E-06	1.1E-05	7.0E-06	5.3E-06	1.1E-05	1.1E-05	7.0E-06	5.3E-06
177	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
178	CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	1.0E-07	4.1E-08	1.7E-08	2.0E-08	1.4E-08	1.7E-08	1.7E-08	1.7E-08	6.0E-08	6.0E-08	2.9E-08	1.7E-08
179																	
180	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61				0.61	0.61							
181	CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06	4.8E-05	3.1E-05	2.3E-05	9.1E-05	6.1E-06	4.8E-05	3.1E-05	2.3E-05	4.8E-05	4.8E-05	3.1E-05	2.3E-05
182	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
183	CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	4.6E-06	1.8E-06	7.4E-07	9.1E-07	6.1E-07	7.6E-07	7.5E-07	7.4E-07	2.7E-06	2.7E-06	1.3E-06	7.4E-07
184																	
185	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05				0.05	0.05							
186	CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07	3.6E-06	2.3E-06	1.8E-06	6.8E-06	4.5E-07	3.6E-06	2.3E-06	1.8E-06	3.6E-06	3.6E-06	2.3E-06	1.8E-06
187	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
188	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
189	CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	3.4E-09	9.3E-10	1.8E-10	6.8E-11	4.5E-10	2.6E-10	2.0E-10	1.8E-10	1.8E-09	1.8E-09	5.7E-10	1.8E-10
190																	
191	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01				0.01	0.01							
192	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01				1.0E-01	1.0E-01							
193	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	1.2E-07	1.2E-07	7.7E-08	5.8E-08
194																	
195	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	4.8E-06	2.0E-06	8.6E-07	1.2E-06	6.4E-07	8.9E-07	8.7E-07	8.6E-07	2.8E-06	2.8E-06	1.4E-06	8.6E-07
196	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3				3	3							
197	CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	1.5E-05	5.9E-06	2.6E-06	3.5E-06	1.9E-06	2.7E-06	2.6E-06	2.6E-06	8.6E-06	8.6E-06	4.3E-06	2.6E-06
198																	
199	Rigging failure	Based on NUREG-0612 method															
200	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21				0.21	0.21							
201	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07
202	CR12	Failure of redundant/alternate rigging	N/A														
203	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07
204	D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6				6	6							
205	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06
206																	
207	FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.0E-05	9.5E-07	5.7E-06	3.9E-06	3.1E-06	2.0E-06	1.5E-06	1.8E-06	1.8E-06	1.7E-06	3.7E-06	3.7E-06	2.8E-06	2.3E-06
208																	
209	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	3.4E-05	5.5E-06	2.0E-05	1.6E-05	1.4E-05	8.8E-06	7.2E-06	8.0E-06	8.0E-06	7.9E-06	1.4E-05	1.4E-05	1.2E-05	1.0E-05
210																	
211		Loss-of-inventory for a single-failure proof crane															
212	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
213	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
214	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
215	LOI-S	(CFCR) * P * P' * RF	/year	2.1E-06	2.8E-08	1.1E-06	4.8E-07	2.4E-07	4.4E-08	4.5E-07	2.5E-07	1.7E-07	1.4E-07	6.6E-07	6.6E-07	3.3E-07	1.8E-07
216																	
217		Loss-of-inventory for a non single-failure proof crane															
218	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	3.7E-04	3.0E-05	2.0E-04	1.3E-04	1.0E-04	3.7E-04	3.0E-05	2.0E-04	1.3E-04	1.0E-04	2.0E-04	2.0E-04	1.3E-04	1.0E-04
219	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
220	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
221	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
222	LOI-N	(CFCRNON) * P * P' * RF	/year	2.3E-05	1.5E-07	1.2E-05	4.6E-06	1.9E-06	1.9E-06	1.9E-06	1.9E-06	1.9E-06	1.9E-06	6.7E-06	6.7E-06	3.2E-06	1.9E-06
223																	
224		Risk reduction for a single-failure proof crane (LOI-N / LOI-S)	---	11	5				42	4							

A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
225		Summary of 1990s Navy Data															
226			ID	Non-rig	Rig	Total											
227		Data summary by count															
228		Crane collision	CC	1.1E+01	0.0E+00	11											
229		Damaged crane	DC	1.3E+01	5.0E+00	18											
230		Damaged load	DL	1.0E+00	2.0E+00	3											
231		Dropped load	DD	2.0E+00	4.0E+00	6											
232		Load collision	LC	7.0E+00	2.0E+00	9											
233		Other	OO	1.0E+00	0.0E+00	1											
234		Overload	OL	5.0E+00	3.0E+00	8											
235		Personnel injury	PI	2.0E+00	3.0E+00	5											
236		Shock	SK	0.0E+00	1.0E+00	1											
237		Two-blocking	TB	3.0E+00	0.0E+00	3											
238		Unidentified	UD	1.0E+00	0.0E+00	1											
239		Totals		4.6E+01	2.0E+01	66											
240			Fraction														
241	F1	OL + 0.5*(DL+LC)	0.14	9.0E+00													
242	F2	CC + DC + 0.5(DL+LC) + DD + OO + PI + SK +UD	0.52	3.4E+01													
243	F3	TB	0.05	3.0E+00													
244	F4	1/67 events (assume none in 66)															
245	F5	Rigging	0.30		2.0E+01												
246																	
247		Totals	1.00	4.6E+01	2.0E+01	66											
248																	
249		Summary of 1990s Navy Data															
250			ID	Non-rig	Rigging	Total											
251		Summary by Accident Type (fraction of events)															
252		Crane collision	CC	1.7E-01	0.0E+00	0.17											
253		Damaged crane	DC	2.0E-01	7.6E-02	0.27											
254		Damaged load	DL	1.5E-02	3.0E-02	0.05											
255		Dropped load	DD	3.0E-02	6.1E-02	0.09											
256		Load collision	LC	1.1E-01	3.0E-02	0.14											
257		Other	OO	1.5E-02	0.0E+00	0.02											
258		Overload	OL	7.6E-02	4.5E-02	0.12											
259		Personnel injury	PI	3.0E-02	4.5E-02	0.08											
260		Shock	SK	0.0E+00	1.5E-02	0.02											
261		Two-blocking	TB	4.5E-02	0.0E+00	0.05											
262		Unidentified	UD	1.5E-02	0.0E+00	0.02											
263		Totals		7.0E-01	3.0E-01	1.00											
264																	
265		Summary by Accident Cause (fraction of total events)															
266		Improper operation	IO	3.8E-01													
267		Procedures	PROC	2.0E-01													
268		Equipment failure	EQ	4.5E-02													
269		Improper rigging	IR	3.0E-01													
270		Others	OTHER	7.6E-02													
271		Totals		1.0E+00													
272																	
273		Application of new Navy data to heavy load drop evaluation			-6.1E+02												
274	F1	OL + 0.5*(DL+LC)	0.14		5.0E-02												
275	F2	CC + DC + 0.5(DL+LC) + DD + OO + PI + SK + UD + 0.3*IR	0.61		5.3E-01												
276	F3	TB	0.05		3.5E-01												
277	F4	1/67 events (assume none in 66)	(.01)		(1/44)												
278																	
279	F5	Rigging 0.7*IR	0.21		7.0E-02												
280																	
281		Totals	1.00		1.0E+00												

A	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation				
2	Data Sheet 2(B-1)	(As presented)				
3						
4	Event	Description	Units	High	Low	Mean
5	Crane Failure					
6	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05
7						
8	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05	
9	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
10	CF11	Operator error leading to load hangup (N0*F1*D1)	/year	7.0E-05	1.9E-06	3.6E-05
11	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
12	CF1	Load hangup event (CF11*CF12)	/year	7.0E-07	1.9E-09	3.5E-07
13						
14	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53	
15	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
16	CF21	Failure of single component with a backup (N0*F2*D2)	/year	8.0E-04	2.1E-05	4.1E-04
17	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
18	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-05	2.1E-07	4.0E-05
19						
20	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35	
21	D3	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
22	CF31	Operator error leading to Two-blocking (N0*F3*D3)	/year	5.2E-04	1.4E-05	2.7E-04
23	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
24	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
25	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-07	1.4E-10	2.6E-07
26						
27	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02	
28	D4	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
29	F4'	Credit for NUREG-0554	/demand	0.10	0.10	
30	CF4	Failure of component that doesn't have backup (N0*F4*F4'D4)	/year	3.4E-06	9.1E-08	1.7E-06
31						
32	CF	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-05	3.1E-07	4.3E-05
33						
34	Rigging failure	Based on NUREG-0612 method				
35	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07	
36	D5	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
37	CR11	Failure due to improper rigging (N0*F5*D5)	/year	1.0E-04	2.8E-06	5.4E-05
38	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05	
39	CR	Failure due to improper rigging (CR11*CR12)	/year	2.6E-05	1.4E-07	1.3E-05
40						
41	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	5.6E-05
42						
43		Single-failure proof crane				
44	P	Fraction of path near/over pool	---	0.25	0.05	
45	P'	Fraction of path critical for load drop	---	0.25	0.10	
46	Loss-of-inventory	(CFCR) * P * P'	/year	6.9E-06	2.2E-09	3.5E-06
47		Non Single-failure proof crane				
48	CF + CR	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-03	4.1E-05	7.9E-04
49	P	Fraction of path near/over pool	---	0.25	0.05	
50	P'	Fraction of path critical for load drop	---	0.25	0.10	
51	Loss-of-inventory	(CF + CR) * P * P'	/year	9.6E-05	6.2E-06	5.1E-05

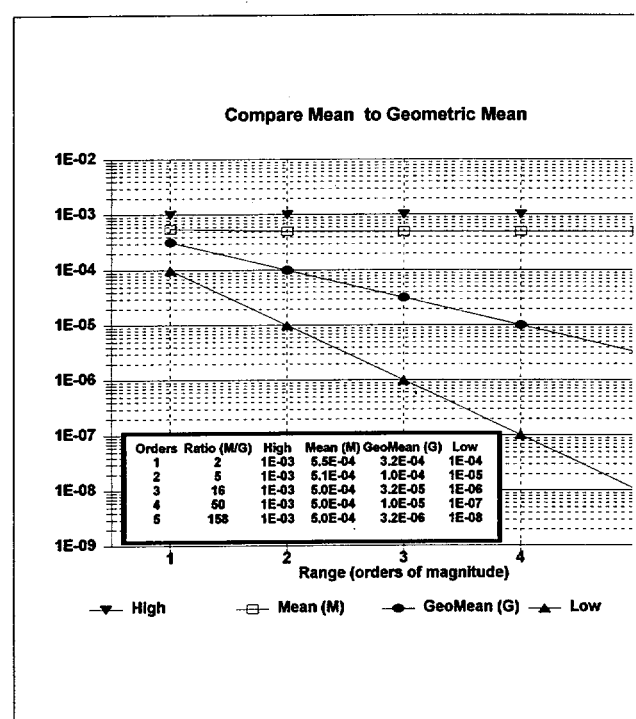
A	A	B	C	D	E	F
52	Heavy Loads	NUREG-0612 Evaluation				
53	Data Sheet 2(B-1)	(Based on new Navy Data)				
54						
55	Event	Description	Units	High	Low	Mean
56	Crane Failure					
57	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05
58						
59	F1	Fraction of load hangup events (1990s Navy data)	---	0.14	0.14	
60	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
61	CF11	Operator error leading to load hangup (N0*F1*D1)	/year	6.2E-05	4.1E-06	3.3E-05
62	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
63	CF1	Load hangup event (CF11*CF12)	/year	6.2E-07	4.1E-09	3.1E-07
64						
65	F2	Fraction of component failure events (1990s Navy data)	---	0.61	0.61	
66	D2	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
67	CF21	Failure of single component with a backup (N0*F2*D2)	/year	2.8E-04	1.8E-05	1.5E-04
68	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
69	CF2	Failure due to random component failure (CF21*CF22)	/year	2.8E-05	1.8E-07	1.4E-05
70						
71	F3	Fraction of two-blocking events (1990s Navy data)	---	0.05	0.05	
72	D3	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
73	CF31	Operator error leading to Two-blocking (N0*F3*D3)	/year	2.1E-05	1.4E-06	1.1E-05
74	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
75	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
76	CF3	Two-blocking event (CF31*CF32*CF33)	/year	2.1E-08	1.4E-11	1.0E-08
77						
78	F4	Fraction of single component failure (1990s Navy data)	---	0.01	0.01	
79	D4	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
80	F4'	Credit for NUREG-0554	/demand	0.10	0.10	
81	CF4	Failure of component that doesn't have backup (N0*F4*F4'D4)	/year	6.8E-07	4.5E-08	3.6E-07
82						
83	CF	Failure of crane (CF1+CF2+CF3+CF4)	/year	2.9E-05	2.3E-07	1.5E-05
84						
85	Rigging failure	Based on NUREG-0612 method				
86	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.21	0.21	
87	D5	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	6	6	
88	CR11	Failure due to improper rigging (N0*F5*D5)	/year	1.9E-04	1.3E-05	1.0E-04
89	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05	
90	CR	Failure due to improper rigging (CR11*CR12)	/year	4.7E-05	6.3E-07	2.4E-05
91						
92	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)		7.6E-05	8.6E-07	3.8E-05
93						
94		Single-failure proof crane				
95	P	Fraction of path near/over pool	---	0.25	0.05	
96	P'	Fraction of path critical for load drop	---	0.25	0.10	
97	Loss-of-inventory	(CFCR) * P * P'	/year	4.8E-06	4.3E-09	2.4E-06
98		Non Single-failure proof crane				
99	CF + CR	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	/year	5.5E-04	3.7E-05	3.0E-04
100	P	Fraction of path near/over pool	---	0.25	0.05	
101	P'	Fraction of path critical for load drop	---	0.25	0.10	
102	Loss-of-inventory	(CF + CR) * P * P'	/year	3.5E-05	1.8E-07	1.7E-05

A	A	B	C	D	E	F
103	Heavy Loads	NUREG-0612 Evaluation				
104	Data Sheet 2(B-1)	(Based on new Navy Data AND WIPP Rigging Evaluation)				
105						
106	Event	Description	Units	High	Low	Mean
107	Crane Failure					
108	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05
109						
110	F1	Fraction of load hangup events (1990s Navy data)	---	0.14	0.14	
111	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
112	CF11	Operator error leading to load hangup (N0*F1*D1)	/year	6.2E-05	4.1E-06	3.3E-05
113	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
114	CF1	Load hangup event (CF11*CF12)	/year	6.2E-07	4.1E-09	3.1E-07
115						
116	F2	Fraction of component failure events (1990s Navy data)	---	0.61	0.61	
117	D2	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
118	CF21	Failure of single component with a backup (N0*F2*D2)	/year	2.8E-04	1.8E-05	1.5E-04
119	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
120	CF2	Failure due to random component failure (CF21*CF22)	/year	2.8E-05	1.8E-07	1.4E-05
121						
122	F3	Fraction of two-blocking events (3/66 1990s Navy data)	---	0.05	0.05	
123	D3	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
124	CF31	Operator error leading to Two-blocking (N0*F3*D3)	/year	2.1E-05	1.4E-06	1.1E-05
125	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
126	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
127	CF3	Two-blocking event (CF31*CF32*CF33)	/year	2.1E-08	1.4E-11	1.0E-08
128						
129	F4	Fraction of single component failure (1990s Navy data)	---	0.01	0.01	
130	D4	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
131	F4'	Credit for NUREG-0554	/demand	0.10	0.10	
132	CF4	Failure of component that doesn't have backup (N0*F4*F4'D4)	/year	6.8E-07	4.5E-08	3.6E-07
133						
134	CF	Failure of crane (CF1+CF2+CF3+CF4)	/year	2.9E-05	2.3E-07	1.5E-05
135						
136	Rigging failure	Based on WIPP "Trudock" crane evaluation				
137	F5	Fraction of improper rigging events (1990s Navy data)	---	0.21	0.21	
138	D5	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6	
139	CR11	WIPP mean human error probability	/demand	8.7E-07	8.7E-07	8.7E-07
140	CR	Failure due to improper rigging (CR11*D5)	/year	5.3E-06	5.3E-06	5.3E-06
141						
142	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	3.4E-05	5.5E-06	2.0E-05
143						
144		Single-failure proof crane				
145	P	Fraction of path near/over pool	---	0.25	0.05	
146	P'	Fraction of path critical for load drop	---	0.25	0.10	
147	Loss-of-inventory	(CFCR) * P * P'	/year	2.1E-06	2.8E-08	1.1E-06
148		Non Single-failure proof crane				
149	CF + CR	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	/year	3.7E-04	3.0E-05	2.0E-04
150	P	Fraction of path near/over pool	---	0.25	0.05	
151	P'	Fraction of path critical for load drop	---	0.25	0.10	
152	Loss-of-inventory	(CF + CR) * P * P'	/year	2.3E-05	1.5E-07	1.2E-05

A	A	B	C	D	E	F
153		Summary of 1990s Navy Data				
154			ID	Non-rig	Rig	Total
155		Data summary by count				
156		Crane collision	CC	11	0	11
157		Damaged crane	DC	13	5	18
158		Damaged load	DL	1	2	3
159		Dropped load	DD	2	4	6
160		Load collision	LC	7	2	9
161		Other	OO	1	0	1
162		Overload	OL	5	3	8
163		Personnel injury	PI	2	3	5
164		Shock	SK	0	1	1
165		Two-blocking	TB	3	0	3
166		Unidentified	UD	1	0	1
167		Totals		46	20	66
168			Fraction			
169	F1	$OL + 0.5*(DL+LC)$	0.14	9		
170	F2	$CC + DC + 0.5(DL+LC) + DD + OO + PI + SK + UD$	0.52	34		
171	F3	TB	0.05	3		
172	F4	1/67 events (assume none in 66)				
173	F5	Rigging	0.30		20	
174						
175		Totals	1.00	46	20	66
176						
177		Summary of 1990s Navy Data				
178			ID	Non-rig	Rigging	Total
179		Summary by Accident Type (fraction of events)				
180		Crane collision	CC	0.17	0.00	0.17
181		Damaged crane	DC	0.20	0.08	0.27
182		Damaged load	DL	0.02	0.03	0.05
183		Dropped load	DD	0.03	0.06	0.09
184		Load collision	LC	0.11	0.03	0.14
185		Other	OO	0.02	0.00	0.02
186		Overload	OL	0.08	0.05	0.12
187		Personnel injury	PI	0.03	0.05	0.08
188		Shock	SK	0.00	0.02	0.02
189		Two-blocking	TB	0.05	0.00	0.05
190		Unidentified	UD	0.02	0.00	0.02
191		Totals		0.70	0.30	1.00
192						
193		Summary by Accident Cause (fraction of total events)				
194		Improper operation	IO	0.38		
195		Procedures	PROC	0.20		
196		Equipment failure	EQ	0.05		
197		Improper rigging	IR	0.30		
198		Others	OTHER	0.08		
199		Totals		1.00		
200						
201		Application of new Navy data to heavy load drop evaluation				
202	F1	$OL + 0.5*(DL+LC)$	0.14			
203	F2	$CC + DC + 0.5(DL+LC) + DD + OO + PI + SK + UD + 0.3*IR$	0.61			
204	F3	TB	0.05			
205	F4	1/67 events (assume none in 66)				
206						
207	F5	Rigging $0.7*IR$	0.21			
208						
209		Totals	1.00			

	High	Median	GeoMean	Low	
1	2.1E-06	1.1E-06	2.4E-07	2.8E-08	4.4
2	1.0E-04	5.8E-05	3.9E-05	1.5E-05	1.5
3	0.01	5.5E-03	3.2E-03	0.001	1.7
4	0.1	5.5E-02	3.2E-02	0.01	1.7
5	1E-05	5.0E-06	1.7E-07	3E-09	28.9

Orders	Ratio (M/G)	High	Mean (M)	GeoMean (G)	Low
1	2	1E-03	5.5E-04	3.2E-04	1E-04
2	5	1E-03	5.1E-04	1.0E-04	1E-05
3	16	1E-03	5.0E-04	3.2E-05	1E-06
4	50	1E-03	5.0E-04	1.0E-05	1E-07
5	158	1E-03	5.0E-04	3.2E-06	1E-08

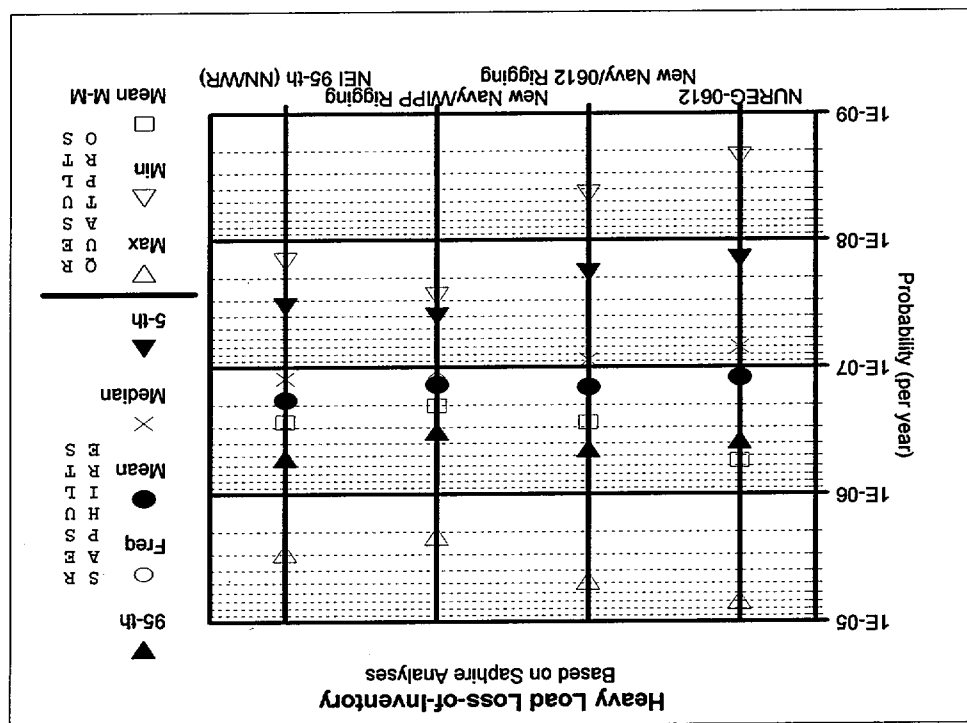


DATE	DESCRIPTION	AMOUNT	BALANCE
1/1/19	OPENING BALANCE	100.00	100.00
1/15/19	PAYROLL	50.00	50.00
1/30/19	RENT	25.00	25.00
2/15/19	UTILITIES	15.00	10.00
2/28/19	SALES	75.00	85.00
3/15/19	PAYROLL	50.00	35.00
3/30/19	RENT	25.00	10.00
4/15/19	UTILITIES	15.00	(5.00)
4/30/19	SALES	80.00	75.00
5/15/19	PAYROLL	50.00	25.00
5/30/19	RENT	25.00	0.00
6/15/19	UTILITIES	15.00	(15.00)
6/30/19	SALES	90.00	75.00
7/15/19	PAYROLL	50.00	25.00
7/30/19	RENT	25.00	0.00
8/15/19	UTILITIES	15.00	(15.00)
8/30/19	SALES	85.00	70.00
9/15/19	PAYROLL	50.00	20.00
9/30/19	RENT	25.00	(5.00)
10/15/19	UTILITIES	15.00	(20.00)
10/30/19	SALES	95.00	(5.00)
11/15/19	PAYROLL	50.00	(55.00)
11/30/19	RENT	25.00	(80.00)
12/15/19	UTILITIES	15.00	(95.00)
12/30/19	SALES	100.00	(5.00)
1/1/20	CLOSING BALANCE		(5.00)

A	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1		High	Low	Ave	Median	GeoM	H/A	A/L	H/M	M/L	H/G	G/L	InvG	M/G
2		1.0E-04	1.5E-05	5.8E-05	5.8E-05	3.9E-05	1.739	0.261	1.739	0.261	2.582	2.582	0.387	1.485
3		2.1E-06	2.8E-08	1.1E-06	1.1E-06	2.4E-07	1.974	0.026	1.974	0.026	8.660	8.660	0.115	4.388
4		7.1E-04	2.7E-04	4.9E-04	4.9E-04	4.4E-04	1.449	0.551	1.449	0.551	1.622	1.622	0.617	1.119
5		0.100	0.010	0.055	0.055	0.032	1.818	0.182	1.818	0.182	3.162	3.162	0.316	1.739
6		0.010	0.001	0.006	0.006	0.003	1.818	0.182	1.818	0.182	3.162	3.162	0.316	1.739
7		10	4	7	7	6	1.429	0.571	1.429	0.571	1.581	1.581	0.632	1.107
8														
9		4.0E-06	2.0E-10	2.0E-06	2.0E-06	2.8E-08	2.000	0.000	2.000	0.000	141.421	141.421	0.007	70.714
10		3.0E-05	2.0E-08	1.5E-05	1.5E-05	7.7E-07	1.999	0.001	1.999	0.001	38.730	38.730	0.026	19.378
11		1.0E-05	3.0E-09	5.0E-06	5.0E-06	1.7E-07	1.999	0.001	1.999	0.001	57.735	57.735	0.017	28.876
12														
13	-0612	6.9E-06	2.2E-09	3.5E-06	3.5E-06	1.2E-07	1.999	0.001	1.999	0.001	55.758	55.758	0.018	27.888
14	NN/N	4.8E-06	4.4E-09	2.4E-06	2.4E-06	1.5E-07	1.998	0.002	1.998	0.002	33.167	33.167	0.030	16.599
15	NN/W	2.1E-06	2.8E-08	1.1E-06	1.1E-06	2.4E-07	1.975	0.025	1.975	0.025	8.804	8.804	0.114	4.459
16	NEI	2.9E-06	1.5E-08	1.4E-06	1.4E-06	2.1E-07	1.990	0.010	1.990	0.010	13.964	13.964	0.072	7.018
17														
18		EF	M-MED	MED-M										
19		1	1.00	1.00	1.00									
20		2	0.92	1.09	1.18									
21		3	0.80	1.25	1.56									
22		5	0.62	1.61	2.60									
23		10	0.38	2.63	6.93									

N0612
NN/NR
NN/NR
NN/NR
NEI

FREQ	MEAN	5TH	MEDIAN	95TH
1.18E-07	1.20E-07	1.43E-08	6.97E-08	3.79E-07
1.41E-07	1.43E-07	1.83E-08	8.85E-08	4.41E-07
1.36E-07	1.37E-07	3.98E-08	1.08E-07	3.19E-07
1.79E-07	1.80E-07	3.33E-08	1.24E-07	5.19E-07
2.2E-09	2.2E-09	2.2E-09	2.2E-09	2.2E-09
4.4E-09	4.4E-09	4.4E-09	4.4E-09	4.4E-09
2.8E-08	2.8E-08	2.8E-08	2.8E-08	2.8E-08
1.5E-08	1.5E-08	1.5E-08	1.5E-08	1.5E-08



NUREG-06
New Navy/
New Navy/
NEI 95-th (

95-th
Freq
Mean
Median
5-th
Max
Min
Mean M-M

12
/0612 Rigg
/WIPP Rigg
NN/WR)

HLOADQP8.WB3 09/01/99

NUREG	0612	Original	Two-blocking			Mean	LogMean	GeoMean	QP funs
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	5.2E-08	3.5E-11	2.6E-08	7.2E-09	1.4E-09	
0.348837	0.348837								
1	1		a1*b2*a3*a4*a5	5.2E-08	3.5E-09				
0.01	0.001		a1*b2*a3*b4*a5	5.2E-09	3.5E-10				
0.1	0.01		a1*b2*a3*a4*b5	5.2E-09	3.5E-10				
			a1*b2*a3*b4*b5	5.2E-10	3.5E-11				
			a1*b2*b3*a4*a5	5.2E-08	3.5E-09				
			a1*b2*b3*b4*a5	5.2E-09	3.5E-10				
			a1*b2*b3*a4*b5	5.2E-09	3.5E-11				
			a1*b2*b3*b4*b5	5.2E-10	3.5E-11				
			a1*a2*b3*a4*a5	5.2E-08	3.5E-09				
			a1*a2*b3*a4*b5	5.2E-09	3.5E-10				
			a1*a2*b3*b4*b5	5.2E-10	3.5E-11				
			a1*a2*b3*b4*a5	5.2E-09	3.5E-10				
			a1*a2*a3*b4*a5	5.2E-09	3.5E-10				
			a1*a2*a3*b4*b5	5.2E-10	3.5E-11				
			a1*a2*a3*a4*b5	5.2E-09	3.5E-10				
			Median	5.2E-09	3.5E-10	2.8E-09	1.8E-09	1.4E-09	5.2E-10
			Mean	1.6E-08	8.2E-10	8.3E-09	5.1E-09	3.6E-09	8.3E-09
			Load hangup						
1.50E-04	1.00E-05		a1*a2*a3*a4	7.0E-08	4.7E-10	3.5E-08	1.4E-08	5.7E-09	
0.046512	0.046512								
1	1		a1*b2*a3*a4	7.0E-08	4.7E-09				
0.01	0.001		a1*b2*a3*b4	7.0E-09	4.7E-10				
			a1*b2*b3*a4	7.0E-08	4.7E-09				
			a1*b2*b3*b4	7.0E-09	4.7E-10				
			a1*a2*b3*a4	7.0E-08	4.7E-09				
			a1*a2*b3*b4	7.0E-09	4.7E-10				
			a1*a2*a3*b4	7.0E-09	4.7E-10				
			Median	3.8E-08	4.7E-10	1.9E-08	8.6E-09	4.2E-09	5.8E-09
			Mean	3.8E-08	2.0E-09	2.0E-08	1.2E-08	8.8E-09	2.0E-08
			Random component						
1.50E-04	1.00E-05		a1*a2*a3*a4	8.0E-06	5.3E-08	4.0E-06	1.6E-06	6.6E-07	
0.534884	0.534884								
1	1		a1*b2*a3*a4	8.0E-06	5.3E-07				
0.1	0.01		a1*b2*a3*b4	8.0E-07	5.3E-08				
			a1*b2*b3*a4	8.0E-06	5.3E-07				
			a1*b2*b3*b4	8.0E-07	5.3E-08				
			a1*a2*b3*a4	8.0E-06	5.3E-07				
			a1*a2*b3*b4	8.0E-07	5.3E-08				
			a1*a2*a3*b4	8.0E-07	5.3E-08				
			Median	4.4E-06	5.3E-08	2.2E-06	9.9E-07	4.9E-07	6.7E-07
			Mean	4.4E-06	2.3E-07	2.3E-06	1.4E-06	1.0E-06	2.3E-06

		Single component							
1.50E-04	1.00E-05	a1*a2*a3*a4		3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	
0.022727	0.022727	a1*b2*a3*a4		3.4E-07	2.3E-08				
1	1	a1*b2*a3*b4		3.4E-07	2.3E-08				
0.1	0.1	a1*b2*b3*a4		3.4E-07	2.3E-08				
		a1*b2*b3*b4		3.4E-07	2.3E-08				
		a1*a2*b3*a4		3.4E-07	2.3E-08				
		a1*a2*b3*b4		3.4E-07	2.3E-08				
		a1*a2*a3*b4		3.4E-07	2.3E-08				
		Median		3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	1.8E-07
		Mean		3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	1.8E-07
Crane	Failure	Range	Total	8.5E-06	7.7E-08	4.3E-06	1.8E-06	8.1E-07	
			Mean	4.8E-06	2.6E-07	2.5E-06	1.6E-06	1.1E-06	2.5E-06
		Median	Total	4.8E-06	7.7E-08	2.4E-06	1.1E-06	6.1E-07	8.6E-07
			Rigging						
		a1*a2*a3*a4		2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07	
		a1*b2*a3*a4		2.6E-06	1.7E-07				
		a1*b2*a3*b4		5.2E-07	3.5E-08				
		a1*b2*b3*a4		2.6E-06	1.7E-07				
		a1*b2*b3*b4		5.2E-07	3.5E-08				
		a1*a2*b3*a4		2.6E-06	1.7E-07				
Rigging	Failure	a1*a2*b3*b4		5.2E-07	3.5E-08				
		a1*a2*a3*b4		5.2E-07	3.5E-08				
		Median		1.6E-06	3.5E-08	8.0E-07	4.0E-07	2.3E-07	3.5E-07
		Mean		1.6E-06	8.7E-08	8.3E-07	5.1E-07	3.7E-07	8.3E-07
		Range	Total	2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07	
			Mean	1.6E-06	8.7E-08	8.3E-07	5.1E-07	3.7E-07	8.3E-07
		Median	Total	1.6E-06	3.5E-08	8.0E-07	4.0E-07	2.3E-07	3.5E-07

Total	Failure									
		Range	Total	1.1E-05	1.1E-07	5.6E-06	2.4E-06	1.1E-06		
		Mean	Total	6.4E-06	3.5E-07	3.4E-06	2.1E-06	1.5E-06	3.4E-06	
		Median	Total	6.4E-06	1.1E-07	3.2E-06	1.5E-06	8.4E-07	1.2E-06	
		Range	Loss-of-inventory							QP funs
1.11E-04	4.46E-07		a1*a2*a3*a4	1.4E-06	2.2E-10	6.9E-07	1.6E-07	1.8E-08		
0.2	0.1									
0.25	0.05		a1*b2*a3*a4	6.9E-07	2.8E-09					
0.25	0.1		a1*b2*a3*b4	2.8E-07	1.1E-09					
			a1*b2*b3*a4	1.4E-07	5.6E-10					
			a1*b2*b3*b4	5.6E-08	2.2E-10					
			a1*a2*b3*a4	2.8E-07	1.1E-09					
			a1*a2*b3*b4	1.1E-07	4.5E-10					
			a1*a2*a3*b4	5.6E-07	2.2E-09					
			Median	2.8E-07	8.4E-10	1.4E-07	4.8E-08	1.5E-08	2.9E-08	
			Mean	4.4E-07	1.1E-09	2.2E-07	7.3E-08	2.2E-08	2.2E-07	
		Mean	Loss-of-inventory							
6.38E-05	1.39E-06		a1*a2*a3*a4	8.0E-07	6.9E-10	4.0E-07	1.1E-07	2.4E-08		
0.2	0.1									
0.25	0.05		a1*b2*a3*a4	4.0E-07	8.7E-09					
0.25	0.1		a1*b2*a3*b4	1.6E-07	3.5E-09					
			a1*b2*b3*a4	8.0E-08	1.7E-09					
			a1*b2*b3*b4	3.2E-08	6.9E-10					
			a1*a2*b3*a4	1.6E-07	3.5E-09					
			a1*a2*b3*b4	6.4E-08	1.4E-09					
			a1*a2*a3*b4	3.2E-07	6.9E-09					
			Median	1.6E-07	2.6E-09	8.1E-08	3.8E-08	2.0E-08	2.0E-08	
			Mean	2.5E-07	3.4E-09	1.3E-07	5.8E-08	2.9E-08	1.3E-07	
		Median	Loss-of-inventory							
6.37E-05	4.48E-07		a1*a2*a3*a4	8.0E-07	2.2E-10	4.0E-07	9.7E-08	1.3E-08		
0.2	0.1									
0.25	0.05		a1*b2*a3*a4	4.0E-07	2.8E-09					
0.25	0.1		a1*b2*a3*b4	1.6E-07	1.1E-09					
			a1*b2*b3*a4	8.0E-08	5.6E-10					
			a1*b2*b3*b4	3.2E-08	2.2E-10					
			a1*a2*b3*a4	1.6E-07	1.1E-09					
			a1*a2*b3*b4	6.4E-08	4.5E-10					
			a1*a2*a3*b4	3.2E-07	2.2E-09					
			Median	1.6E-07	8.4E-10	8.0E-08	3.0E-08	1.2E-08	1.7E-08	
			Mean	2.5E-07	1.1E-09	1.3E-07	4.6E-08	1.7E-08	1.3E-07	

		Mean	Loss-of-inventory	QP funs					
2.35E-05	2.35E-05	Point	a1*a2*a3*a4	2.9E-07	1.2E-08	1.5E-07	8.8E-08	5.9E-08	
0.2	0.1								
0.25	0.05		a1*b2*a3*a4	1.5E-07	1.5E-07				
0.25	0.1		a1*b2*a3*b4	5.9E-08	5.9E-08				
			a1*b2*b3*a4	2.9E-08	2.9E-08				
			a1*b2*b3*b4	1.2E-08	1.2E-08				
			a1*a2*b3*a4	5.9E-08	5.9E-08				
			a1*a2*b3*b4	2.4E-08	2.4E-08				
			a1*a2*a3*b4	1.2E-07	1.2E-07				
			Median	5.9E-08	4.4E-08	5.1E-08	5.1E-08	5.1E-08	5.9E-08
			Mean	9.3E-08	5.7E-08	7.5E-08	7.4E-08	7.3E-08	7.5E-08
		Median	Loss-of-inventory						
8.44E-06	8.44E-06	Point	a1*a2*a3*a4	1.1E-07	4.2E-09	5.5E-08	3.1E-08	2.1E-08	
0.2	0.1								
0.25	0.05		a1*b2*a3*a4	5.3E-08	5.3E-08				
0.25	0.1		a1*b2*a3*b4	2.1E-08	2.1E-08				
			a1*b2*b3*a4	1.1E-08	1.1E-08				
			a1*b2*b3*b4	4.2E-09	4.2E-09				
			a1*a2*b3*a4	2.1E-08	2.1E-08				
			a1*a2*b3*b4	8.4E-09	8.4E-09				
			a1*a2*a3*b4	4.2E-08	4.2E-08				
			Median	2.1E-08	1.6E-08	1.8E-08	1.8E-08	1.8E-08	2.1E-08
			Mean	3.3E-08	2.1E-08	2.7E-08	2.6E-08	2.6E-08	2.7E-08
NUREG	0612	1.0 RF	Two-blocking	Mean LogMean GeoMean					
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	5.2E-08	3.5E-11	2.6E-08	7.2E-09	1.4E-09	
0.348837	0.348837								
1	1		a1*b2*a3*a4*a5	5.2E-08	3.5E-09				
0.01	0.001		a1*b2*a3*b4*a5	5.2E-09	3.5E-10				
0.1	0.01		a1*b2*a3*a4*b5	5.2E-09	3.5E-10				
			a1*b2*a3*b4*b5	5.2E-10	3.5E-11				
			a1*b2*b3*a4*a5	5.2E-08	3.5E-09				
			a1*b2*b3*b4*a5	5.2E-09	3.5E-10				
			a1*b2*b3*a4*b5	5.2E-09	3.5E-11				
			a1*b2*b3*b4*b5	5.2E-10	3.5E-11				
			a1*a2*b3*a4*a5	5.2E-08	3.5E-09				
			a1*a2*b3*a4*b5	5.2E-09	3.5E-10				
			a1*a2*b3*b4*b5	5.2E-10	3.5E-11				
			a1*a2*b3*b4*a5	5.2E-09	3.5E-10				
			a1*a2*a3*b4*a5	5.2E-09	3.5E-10				
			a1*a2*a3*b4*b5	5.2E-10	3.5E-11				
			a1*a2*a3*a4*b5	5.2E-09	3.5E-10				
			Median	5.2E-09	3.5E-10	2.8E-09	1.8E-09	1.4E-09	5.2E-10
			Mean	1.6E-08	8.2E-10	8.3E-09	5.1E-09	3.6E-09	8.3E-09
			Load hangup						
1.50E-04	1.00E-05		a1*a2*a3*a4	7.0E-08	4.7E-10	3.5E-08	1.4E-08	5.7E-09	

0.046512 0.046512
 1 1
 0.01 0.001

a1*b2*a3*a4	7.0E-08	4.7E-09				
a1*b2*a3*b4	7.0E-09	4.7E-10				
a1*b2*b3*a4	7.0E-08	4.7E-09				
a1*b2*b3*b4	7.0E-09	4.7E-10				
a1*a2*b3*a4	7.0E-08	4.7E-09				
a1*a2*b3*b4	7.0E-09	4.7E-10				
a1*a2*a3*b4	7.0E-09	4.7E-10				
Median	3.8E-08	4.7E-10	1.9E-08	8.6E-09	4.2E-09	5.8E-09
Mean	3.8E-08	2.0E-09	2.0E-08	1.2E-08	8.8E-09	2.0E-08

1.50E-04 1.00E-05
 0.534884 0.534884
 1 1
 0.1 0.01

Random component

a1*a2*a3*a4	8.0E-06	5.3E-08	4.0E-06	1.6E-06	6.6E-07	
a1*b2*a3*a4	8.0E-06	5.3E-07				
a1*b2*a3*b4	8.0E-07	5.3E-08				
a1*b2*b3*a4	8.0E-06	5.3E-07				
a1*b2*b3*b4	8.0E-07	5.3E-08				
a1*a2*b3*a4	8.0E-06	5.3E-07	4.3E-06	2.8E-06	2.1E-06	
a1*a2*b3*b4	8.0E-07	5.3E-08				
a1*a2*a3*b4	8.0E-07	5.3E-08				
Median	4.4E-06	5.3E-08	2.2E-06	9.9E-07	4.9E-07	6.7E-07
Mean	4.4E-06	2.3E-07	2.3E-06	1.4E-06	1.0E-06	2.3E-06

		Single component							
1.50E-04	1.00E-05	a1*a2*a3*a4		3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	
0.022727	0.022727								
1	1	a1*b2*a3*a4		3.4E-07	2.3E-08				
0.1	0.1	a1*b2*a3*b4		3.4E-07	2.3E-08				
		a1*b2*b3*a4		3.4E-07	2.3E-08				
		a1*b2*b3*b4		3.4E-07	2.3E-08				
		a1*a2*b3*a4		3.4E-07	2.3E-08				
		a1*a2*b3*b4		3.4E-07	2.3E-08				
		a1*a2*a3*b4		3.4E-07	2.3E-08				
		Median		3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	1.8E-07
		Mean		3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	1.8E-07
Crane	Failure	Range	Total	8.5E-06	7.7E-08	4.3E-06	1.8E-06	8.1E-07	
			Mean	4.8E-06	2.6E-07	2.5E-06	1.6E-06	1.1E-06	2.5E-06
			Median	4.8E-06	7.7E-08	2.4E-06	1.1E-06	6.1E-07	8.6E-07
		Rigging							
		a1*a2*a3*a4		2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07	
		a1*b2*a3*a4		2.6E-06	1.7E-07				
		a1*b2*a3*b4		5.2E-07	3.5E-08				
		a1*b2*b3*a4		2.6E-06	1.7E-07				
		a1*b2*b3*b4		5.2E-07	3.5E-08				
		a1*a2*b3*a4		2.6E-06	1.7E-07				
Rigging	Failure	a1*a2*b3*b4		5.2E-07	3.5E-08				
		a1*a2*a3*b4		5.2E-07	3.5E-08				
		Median		1.6E-06	3.5E-08	8.0E-07	4.0E-07	2.3E-07	3.5E-07
		Mean		1.6E-06	8.7E-08	8.3E-07	5.1E-07	3.7E-07	8.3E-07
		Range	Total	2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07	
			Mean	1.6E-06	8.7E-08	8.3E-07	5.1E-07	3.7E-07	8.3E-07
			Median	1.6E-06	3.5E-08	8.0E-07	4.0E-07	2.3E-07	3.5E-07

Total	Failure									
		Range	Total	1.1E-05	1.1E-07	5.6E-06	2.4E-06	1.1E-06		
		Mean	Total	6.4E-06	3.5E-07	3.4E-06	2.1E-06	1.5E-06	3.4E-06	
		Median	Total	6.4E-06	1.1E-07	3.2E-06	1.5E-06	8.4E-07	1.2E-06	
		Range	Loss-of-inventory							QP funs
1.11E-04	4.46E-07		a1*a2*a3*a4	6.9E-06	2.2E-09	3.5E-06	8.6E-07	1.2E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	6.9E-06	2.8E-08					
0.25	0.1		a1*b2*a3*b4	2.8E-06	1.1E-08					
			a1*b2*b3*a4	1.4E-06	5.6E-09					
			a1*b2*b3*b4	5.6E-07	2.2E-09					
			a1*a2*b3*a4	1.4E-06	5.6E-09					
			a1*a2*b3*b4	5.6E-07	2.2E-09					
			a1*a2*a3*b4	2.8E-06	1.1E-08					
			Median	2.1E-06	5.6E-09	1.0E-06	3.5E-07	1.1E-07	2.9E-07	
			Mean	2.9E-06	8.5E-09	1.5E-06	5.0E-07	1.6E-07	1.5E-06	
		Mean	Loss-of-inventory							
6.38E-05	1.39E-06		a1*a2*a3*a4	4.0E-06	6.9E-09	2.0E-06	6.3E-07	1.7E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	4.0E-06	8.7E-08					
0.25	0.1		a1*b2*a3*b4	1.6E-06	3.5E-08					
			a1*b2*b3*a4	8.0E-07	1.7E-08					
			a1*b2*b3*b4	3.2E-07	6.9E-09					
			a1*a2*b3*a4	8.0E-07	1.7E-08					
			a1*a2*b3*b4	3.2E-07	6.9E-09					
			a1*a2*a3*b4	1.6E-06	3.5E-08					
			Median	1.2E-06	1.7E-08	6.1E-07	2.8E-07	1.4E-07	2.0E-07	
			Mean	1.7E-06	2.6E-08	8.5E-07	4.0E-07	2.1E-07	8.5E-07	
		Median	Loss-of-inventory							
6.37E-05	4.48E-07		a1*a2*a3*a4	4.0E-06	2.2E-09	2.0E-06	5.3E-07	9.4E-08		
1	1									
0.25	0.05		a1*b2*a3*a4	4.0E-06	2.8E-08					
0.25	0.1		a1*b2*a3*b4	1.6E-06	1.1E-08					
			a1*b2*b3*a4	8.0E-07	5.6E-09					
			a1*b2*b3*b4	3.2E-07	2.2E-09					
			a1*a2*b3*a4	8.0E-07	5.6E-09					
			a1*a2*b3*b4	3.2E-07	2.2E-09					
			a1*a2*a3*b4	1.6E-06	1.1E-08					
			Median	1.2E-06	5.6E-09	6.0E-07	2.2E-07	8.2E-08	1.7E-07	
			Mean	1.7E-06	8.5E-09	8.4E-07	3.2E-07	1.2E-07	8.4E-07	

		Mean	Loss-of-inventory						QP funs
2.35E-05	2.35E-05	Point	a1*a2*a3*a4	1.5E-06	1.2E-07	7.9E-07	5.4E-07	4.2E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	1.5E-06	1.5E-06				
0.25	0.1		a1*b2*a3*b4	5.9E-07	5.9E-07				
			a1*b2*b3*a4	2.9E-07	2.9E-07				
			a1*b2*b3*b4	1.2E-07	1.2E-07				
			a1*a2*b3*a4	2.9E-07	2.9E-07				
			a1*a2*b3*b4	1.2E-07	1.2E-07				
			a1*a2*a3*b4	5.9E-07	5.9E-07				
			Median	4.4E-07	2.9E-07	3.7E-07	3.6E-07	3.6E-07	2.9E-07
			Mean	6.2E-07	4.5E-07	5.3E-07	5.3E-07	5.3E-07	5.3E-07
		Median	Loss-of-inventory						
8.44E-06	8.44E-06	Point	a1*a2*a3*a4	5.3E-07	4.2E-08	2.8E-07	1.9E-07	1.5E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	5.3E-07	5.3E-07				
0.25	0.1		a1*b2*a3*b4	2.1E-07	2.1E-07				
			a1*b2*b3*a4	1.1E-07	1.1E-07				
			a1*b2*b3*b4	4.2E-08	4.2E-08				
			a1*a2*b3*a4	1.1E-07	1.1E-07				
			a1*a2*b3*b4	4.2E-08	4.2E-08				
			a1*a2*a3*b4	2.1E-07	2.1E-07				
			Median	1.6E-07	1.1E-07	1.3E-07	1.3E-07	1.3E-07	1.1E-07
			Mean	2.2E-07	1.6E-07	1.9E-07	1.9E-07	1.9E-07	1.9E-07
NUREG	0612	Navy	Two-blocking						
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	6.8E-09	4.5E-12	3.4E-09	9.3E-10	1.8E-10	
0.04545	0.04545								
1	1		a1*b2*a3*a4*a5	6.8E-09	4.5E-10				
0.01	0.001		a1*b2*a3*b4*a5	6.8E-10	4.5E-11				
0.1	0.01		a1*b2*a3*a4*b5	6.8E-10	4.5E-11				
			a1*b2*a3*b4*b5	6.8E-11	4.5E-12				
			a1*b2*b3*a4*a5	6.8E-09	4.5E-10				
			a1*b2*b3*b4*a5	6.8E-10	4.5E-11				
			a1*b2*b3*a4*b5	6.8E-10	4.5E-12				
			a1*b2*b3*b4*b5	6.8E-11	4.5E-12				
			a1*a2*b3*a4*a5	6.8E-09	4.5E-10				
			a1*a2*b3*a4*b5	6.8E-10	4.5E-11				
			a1*a2*b3*b4*b5	6.8E-11	4.5E-12				
			a1*a2*b3*b4*a5	6.8E-10	4.5E-11				
			a1*a2*a3*b4*a5	6.8E-10	4.5E-11				
			a1*a2*a3*b4*b5	6.8E-11	4.5E-12				
			a1*a2*a3*a4*b5	6.8E-10	4.5E-11				
			Median	6.8E-10	4.5E-11	3.6E-10	2.3E-10	1.8E-10	6.8E-11
			Mean	2.1E-09	1.1E-10	1.1E-09	6.6E-10	4.7E-10	1.1E-09
			Load hangup						
1.50E-04	1.00E-05		a1*a2*a3*a4	2.0E-07	1.4E-09	1.0E-07	4.1E-08	1.7E-08	

0.13636 0.13636
 1 1
 0.01 0.001

a1*b2*a3*a4 2.0E-07 1.4E-08
 a1*b2*a3*b4 2.0E-08 1.4E-09

a1*b2*b3*a4 2.0E-07 1.4E-08
 a1*b2*b3*b4 2.0E-08 1.4E-09

a1*a2*b3*a4 2.0E-07 1.4E-08

a1*a2*b3*b4 2.0E-08 1.4E-09

a1*a2*a3*b4 2.0E-08 1.4E-09

Median 1.1E-07 1.4E-09 5.7E-08 2.5E-08 1.2E-08 1.7E-08
 Mean 1.1E-07 6.0E-09 5.9E-08 3.6E-08 2.6E-08 5.9E-08

Random component

1.50E-04 1.00E-05
 0.60606 0.60606
 1 1
 0.1 0.01

a1*a2*a3*a4 9.1E-06 6.1E-08 4.6E-06 1.8E-06 7.4E-07

a1*b2*a3*a4 9.1E-06 6.1E-07
 a1*b2*a3*b4 9.1E-07 6.1E-08

a1*b2*b3*a4 9.1E-06 6.1E-07
 a1*b2*b3*b4 9.1E-07 6.1E-08

a1*a2*b3*a4 9.1E-06 6.1E-07 4.8E-06 3.1E-06 2.3E-06

a1*a2*b3*b4 9.1E-07 6.1E-08

a1*a2*a3*b4 9.1E-07 6.1E-08

Median 5.0E-06 6.1E-08 2.5E-06 1.1E-06 5.5E-07 7.6E-07
 Mean 5.0E-06 2.7E-07 2.6E-06 1.6E-06 1.2E-06 2.6E-06

		Single component							
1.50E-04	1.00E-05	a1*a2*a3*a4		2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	
0.014925	0.014925								
1	1	a1*b2*a3*a4		2.2E-07	1.5E-08				
0.1	0.1	a1*b2*a3*b4		2.2E-07	1.5E-08				
		a1*b2*b3*a4		2.2E-07	1.5E-08				
		a1*b2*b3*b4		2.2E-07	1.5E-08				
		a1*a2*b3*a4		2.2E-07	1.5E-08				
		a1*a2*b3*b4		2.2E-07	1.5E-08				
		a1*a2*a3*b4		2.2E-07	1.5E-08				
		Median		2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	1.2E-07
		Mean		2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	1.2E-07
Crane	Failure	Range	Total	9.5E-06	7.7E-08	4.8E-06	2.0E-06	8.6E-07	
			Total	5.3E-06	2.9E-07	2.8E-06	1.7E-06	1.2E-06	2.8E-06
			Total	5.3E-06	7.7E-08	2.7E-06	1.2E-06	6.4E-07	8.9E-07
		Mean	Rigging						
			a1*a2*a3*a4	8.0E-06	1.1E-07	4.0E-06	1.8E-06	9.2E-07	
			a1*b2*a3*a4	8.0E-06	5.3E-07				
			a1*b2*a3*b4	1.6E-06	1.1E-07				
		Median	a1*b2*b3*a4	8.0E-06	5.3E-07				
			a1*b2*b3*b4	1.6E-06	1.1E-07				
			a1*a2*b3*a4	8.0E-06	5.3E-07				
Rigging	Failure			a1*a2*b3*b4	1.6E-06	1.1E-07			
				a1*a2*a3*b4	1.6E-06	1.1E-07			
				Median	4.8E-06	1.1E-07	2.4E-06	1.2E-06	7.1E-07
				Mean	4.8E-06	2.7E-07	2.5E-06	1.6E-06	1.1E-06
		Range	Total	8.0E-06	1.1E-07	4.0E-06	1.8E-06	9.2E-07	
			Total	4.8E-06	2.7E-07	2.5E-06	1.6E-06	1.1E-06	2.5E-06
			Total	4.8E-06	1.1E-07	2.4E-06	1.2E-06	7.1E-07	1.1E-06
		Mean							

Total	Failure									
		Range	Total	1.7E-05	1.8E-07	8.8E-06	3.8E-06	1.8E-06		
		Mean	Total	1.0E-05	5.5E-07	5.3E-06	3.3E-06	2.4E-06	5.3E-06	
		Median	Total	1.0E-05	1.8E-07	5.1E-06	2.5E-06	1.4E-06	2.0E-06	
		Range	Loss-of-inventory							QP funs
7.71E-05	8.76E-07		a1*a2*a3*a4	4.8E-06	4.4E-09	2.4E-06	6.9E-07	1.5E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	4.8E-06	5.5E-08					
0.25	0.1		a1*b2*a3*b4	1.9E-06	2.2E-08					
			a1*b2*b3*a4	9.6E-07	1.1E-08					
			a1*b2*b3*b4	3.9E-07	4.4E-09					
			a1*a2*b3*a4	9.6E-07	1.1E-08					
			a1*a2*b3*b4	3.9E-07	4.4E-09					
			a1*a2*a3*b4	1.9E-06	2.2E-08					
			Median	1.4E-06	1.1E-08	7.3E-07	2.9E-07	1.3E-07	2.2E-07	
			Mean	2.0E-06	1.7E-08	1.0E-06	4.2E-07	1.8E-07	1.0E-06	
		Mean	Loss-of-inventory							
4.51E-05	2.47E-06		a1*a2*a3*a4	2.8E-06	1.2E-08	1.4E-06	5.2E-07	1.9E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	2.8E-06	1.5E-07					
0.25	0.1		a1*b2*a3*b4	1.1E-06	6.2E-08					
			a1*b2*b3*a4	5.6E-07	3.1E-08					
			a1*b2*b3*b4	2.3E-07	1.2E-08					
			a1*a2*b3*a4	5.6E-07	3.1E-08					
			a1*a2*b3*b4	2.3E-07	1.2E-08					
			a1*a2*a3*b4	1.1E-06	6.2E-08					
			Median	8.5E-07	3.1E-08	4.4E-07	2.5E-07	1.6E-07	1.9E-07	
			Mean	1.2E-06	4.7E-08	6.2E-07	3.5E-07	2.4E-07	6.2E-07	
		Median	Loss-of-inventory							
4.51E-05	8.76E-07		a1*a2*a3*a4	2.8E-06	4.4E-09	1.4E-06	4.4E-07	1.1E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	2.8E-06	5.5E-08					
0.25	0.1		a1*b2*a3*b4	1.1E-06	2.2E-08					
			a1*b2*b3*a4	5.6E-07	1.1E-08					
			a1*b2*b3*b4	2.3E-07	4.4E-09					
			a1*a2*b3*a4	5.6E-07	1.1E-08					
			a1*a2*b3*b4	2.3E-07	4.4E-09					
			a1*a2*a3*b4	1.1E-06	2.2E-08					
			Median	8.5E-07	1.1E-08	4.3E-07	1.9E-07	9.6E-08	1.4E-07	
			Mean	1.2E-06	1.7E-08	6.0E-07	2.7E-07	1.4E-07	6.0E-07	

		Mean	Loss-of-inventory							QP funs		
2.38E-05	2.38E-05	Point	a1*a2*a3*a4	1.5E-06	1.2E-07	8.0E-07	5.4E-07	4.2E-07				
1	1											
0.25	0.05		a1*b2*a3*a4	1.5E-06	1.5E-06							
0.25	0.1		a1*b2*a3*b4	5.9E-07	5.9E-07							
			a1*b2*b3*a4	3.0E-07	3.0E-07							
			a1*b2*b3*b4	1.2E-07	1.2E-07							
			a1*a2*b3*a4	3.0E-07	3.0E-07							
			a1*a2*b3*b4	1.2E-07	1.2E-07							
			a1*a2*a3*b4	5.9E-07	5.9E-07							
			Median	4.5E-07	3.0E-07	3.7E-07	3.7E-07	3.6E-07	3.0E-07			
			Mean	6.2E-07	4.5E-07	5.4E-07	5.3E-07	5.3E-07	5.4E-07			
		Median	Loss-of-inventory									
9.14E-06	9.14E-06	Point	a1*a2*a3*a4	5.7E-07	4.6E-08	3.1E-07	2.1E-07	1.6E-07				
1	1											
0.25	0.05		a1*b2*a3*a4	5.7E-07	5.7E-07							
0.25	0.1		a1*b2*a3*b4	2.3E-07	2.3E-07							
			a1*b2*b3*a4	1.1E-07	1.1E-07							
			a1*b2*b3*b4	4.6E-08	4.6E-08							
			a1*a2*b3*a4	1.1E-07	1.1E-07							
			a1*a2*b3*b4	4.6E-08	4.6E-08							
			a1*a2*a3*b4	2.3E-07	2.3E-07							
			Median	1.7E-07	1.1E-07	1.4E-07	1.4E-07	1.4E-07	1.1E-07			
			Mean	2.4E-07	1.7E-07	2.1E-07	2.1E-07	2.0E-07	2.1E-07			
NUREG	0612	N/WIPP	Two-blocking			Mean	LogMean	GeoMean	QP funs			
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	6.8E-09	4.5E-12	3.4E-09	9.3E-10	1.8E-10				
0.04545	0.04545											
1	1		a1*b2*a3*a4*a5	6.8E-09	4.5E-10							
0.01	0.001		a1*b2*a3*b4*a5	6.8E-10	4.5E-11							
0.1	0.01		a1*b2*a3*a4*b5	6.8E-10	4.5E-11							
			a1*b2*a3*b4*b5	6.8E-11	4.5E-12							
			a1*b2*b3*a4*a5	6.8E-09	4.5E-10							
			a1*b2*b3*b4*a5	6.8E-10	4.5E-11							
			a1*b2*b3*a4*b5	6.8E-10	4.5E-12							
			a1*b2*b3*b4*b5	6.8E-11	4.5E-12							
			a1*a2*b3*a4*a5	6.8E-09	4.5E-10							
			a1*a2*b3*a4*b5	6.8E-10	4.5E-11							
			a1*a2*b3*b4*b5	6.8E-11	4.5E-12							
			a1*a2*b3*b4*a5	6.8E-10	4.5E-11							
			a1*a2*a3*b4*a5	6.8E-10	4.5E-11							
			a1*a2*a3*b4*b5	6.8E-11	4.5E-12							
			a1*a2*a3*a4*b5	6.8E-10	4.5E-11							
			Median	6.8E-10	4.5E-11	3.6E-10	2.3E-10	1.8E-10	6.8E-11			
			Mean	2.1E-09	1.1E-10	1.1E-09	6.6E-10	4.7E-10	1.1E-09			
			Load hangup									
1.50E-04	1.00E-05		a1*a2*a3*a4	2.0E-07	1.4E-09	1.0E-07	4.1E-08	1.7E-08				

0.13636 0.13636
 1 1
 0.01 0.001

a1*b2*a3*a4 2.0E-07 1.4E-08
 a1*b2*a3*b4 2.0E-08 1.4E-09

a1*b2*b3*a4 2.0E-07 1.4E-08
 a1*b2*b3*b4 2.0E-08 1.4E-09

a1*a2*b3*a4 2.0E-07 1.4E-08

a1*a2*b3*b4 2.0E-08 1.4E-09

a1*a2*a3*b4 2.0E-08 1.4E-09

Median 1.1E-07 1.4E-09 5.7E-08 2.5E-08 1.2E-08 1.7E-08
 Mean 1.1E-07 6.0E-09 5.9E-08 3.6E-08 2.6E-08 5.9E-08

Random component

1.50E-04 1.00E-05
 0.60606 0.60606
 1 1
 0.1 0.01

a1*a2*a3*a4 9.1E-06 6.1E-08 4.6E-06 1.8E-06 7.4E-07

a1*b2*a3*a4 9.1E-06 6.1E-07
 a1*b2*a3*b4 9.1E-07 6.1E-08

a1*b2*b3*a4 9.1E-06 6.1E-07
 a1*b2*b3*b4 9.1E-07 6.1E-08

a1*a2*b3*a4 9.1E-06 6.1E-07 4.8E-06 3.1E-06 2.3E-06

a1*a2*b3*b4 9.1E-07 6.1E-08

a1*a2*a3*b4 9.1E-07 6.1E-08

Median 5.0E-06 6.1E-08 2.5E-06 1.1E-06 5.5E-07 7.6E-07
 Mean 5.0E-06 2.7E-07 2.6E-06 1.6E-06 1.2E-06 2.6E-06

		Single component							
1.50E-04	1.00E-05		a1*a2*a3*a4	2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	
0.014925	0.014925								
1	1		a1*b2*a3*a4	2.2E-07	1.5E-08				
0.1	0.1		a1*b2*a3*b4	2.2E-07	1.5E-08				
			a1*b2*b3*a4	2.2E-07	1.5E-08				
			a1*b2*b3*b4	2.2E-07	1.5E-08				
			a1*a2*b3*a4	2.2E-07	1.5E-08				
			a1*a2*b3*b4	2.2E-07	1.5E-08				
			a1*a2*a3*b4	2.2E-07	1.5E-08				
			Median	2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	1.2E-07
			Mean	2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	1.2E-07
Crane	Failure	Range	Total	9.5E-06	7.7E-08	4.8E-06	2.0E-06	8.6E-07	
		Mean	Total	5.3E-06	2.9E-07	2.8E-06	1.7E-06	1.2E-06	2.8E-06
		Median	Total	5.3E-06	7.7E-08	2.7E-06	1.2E-06	6.4E-07	8.9E-07
			Rigging						
			a1*a2	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	
			a1*b2	8.7E-07	8.7E-07				
			Mean	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07
			Median	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07
Rigging	Failure	Range	Total	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	
		Mean	Total	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07
		Median	Total	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07

Total	Failure	Range	Total	1.0E-05	9.5E-07	5.7E-06	3.9E-06	3.1E-06	
		Mean	Total	6.2E-06	1.2E-06	3.7E-06	3.0E-06	2.7E-06	3.7E-06
		Median	Total	6.2E-06	9.5E-07	3.6E-06	2.8E-06	2.4E-06	1.8E-06
		Range	Loss-of-inventory						QP funs
3.41E-05	5.51E-06		a1*a2*a3*a4	2.1E-06	2.8E-08	1.1E-06	4.8E-07	2.4E-07	
1	1		a1*b2*a3*a4	2.1E-06	3.4E-07				
0.25	0.05		a1*b2*a3*b4	8.5E-07	1.4E-07				
0.25	0.1		a1*b2*b3*a4	4.3E-07	6.9E-08				
			a1*b2*b3*b4	1.7E-07	2.8E-08				
			a1*a2*b3*a4	4.3E-07	6.9E-08				
			a1*a2*b3*b4	1.7E-07	2.8E-08				
			a1*a2*a3*b4	8.5E-07	1.4E-07				
			Median	6.4E-07	6.9E-08	3.5E-07	2.6E-07	2.1E-07	1.7E-07
			Mean	9.0E-07	1.0E-07	5.0E-07	3.7E-07	3.1E-07	5.0E-07
		Mean	Loss-of-inventory						
2.14E-05	6.14E-06		a1*a2*a3*a4	1.3E-06	3.1E-08	6.9E-07	3.5E-07	2.0E-07	
1	1		a1*b2*a3*a4	1.3E-06	3.8E-07				
0.25	0.05		a1*b2*a3*b4	5.4E-07	1.5E-07				
0.25	0.1		a1*b2*b3*a4	2.7E-07	7.7E-08				
			a1*b2*b3*b4	1.1E-07	3.1E-08				
			a1*a2*b3*a4	2.7E-07	7.7E-08				
			a1*a2*b3*b4	1.1E-07	3.1E-08				
			a1*a2*a3*b4	5.4E-07	1.5E-07				
			Median	4.0E-07	7.7E-08	2.4E-07	2.0E-07	1.8E-07	1.5E-07
			Mean	5.6E-07	1.2E-07	3.4E-07	2.8E-07	2.6E-07	3.4E-07
		Median	Loss-of-inventory						
2.14E-05	5.51E-06		a1*a2*a3*a4	1.3E-06	2.8E-08	6.8E-07	3.4E-07	1.9E-07	
1	1		a1*b2*a3*a4	1.3E-06	3.4E-07				
0.25	0.05		a1*b2*a3*b4	5.4E-07	1.4E-07				
0.25	0.1		a1*b2*b3*a4	2.7E-07	6.9E-08				
			a1*b2*b3*b4	1.1E-07	2.8E-08				
			a1*a2*b3*a4	2.7E-07	6.9E-08				
			a1*a2*b3*b4	1.1E-07	2.8E-08				
			a1*a2*a3*b4	5.4E-07	1.4E-07				
			Median	4.0E-07	6.9E-08	2.4E-07	1.9E-07	1.7E-07	1.4E-07
			Mean	5.6E-07	1.0E-07	3.3E-07	2.7E-07	2.4E-07	3.3E-07

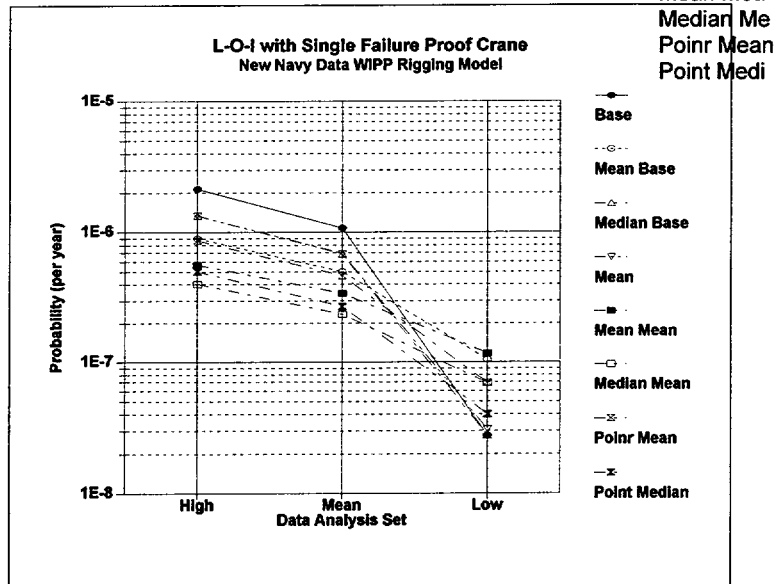
		Mean	Loss-of-inventory	QP funs					
1.38E-05	1.38E-05	Point	a1*a2*a3*a4	8.6E-07	6.9E-08	4.7E-07	3.1E-07	2.4E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	8.6E-07	8.6E-07				
0.25	0.1		a1*b2*a3*b4	3.4E-07	3.4E-07				
			a1*b2*b3*a4	1.7E-07	1.7E-07				
			a1*b2*b3*b4	6.9E-08	6.9E-08				
			a1*a2*b3*a4	1.7E-07	1.7E-07				
			a1*a2*b3*b4	6.9E-08	6.9E-08				
			a1*a2*a3*b4	3.4E-07	3.4E-07				
			Median	2.6E-07	1.7E-07	2.2E-07	2.1E-07	2.1E-07	1.7E-07
			Mean	3.6E-07	2.6E-07	3.1E-07	3.1E-07	3.1E-07	3.1E-07

		Median	Loss-of-inventory						
7.98E-06	7.98E-06	Point	a1*a2*a3*a4	5.0E-07	4.0E-08	2.7E-07	1.8E-07	1.4E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	5.0E-07	5.0E-07				
0.25	0.1		a1*b2*a3*b4	2.0E-07	2.0E-07				
			a1*b2*b3*a4	1.0E-07	1.0E-07				
			a1*b2*b3*b4	4.0E-08	4.0E-08				
			a1*a2*b3*a4	1.0E-07	1.0E-07				
			a1*a2*b3*b4	4.0E-08	4.0E-08				
			a1*a2*a3*b4	2.0E-07	2.0E-07				
			Median	1.5E-07	1.0E-07	1.2E-07	1.2E-07	1.2E-07	1.0E-07
			Mean	2.1E-07	1.5E-07	1.8E-07	1.8E-07	1.8E-07	1.8E-07

High	Mean	Low	
w/1.0			
6.9E-06	3.5E-06	2.2E-09	Base
2.9E-06	1.5E-06	8.5E-09	Mean Base
4.0E-06	2.0E-06	2.2E-09	Median Base
4.0E-06	2.0E-06	6.9E-09	Mean
1.7E-06	8.5E-07	2.6E-08	Mean Mean
1.2E-06	6.0E-07	5.6E-09	Median Mean
1.5E-06	7.9E-07	1.2E-07	Point Mean
5.3E-07	2.8E-07	4.2E-08	Point Median
Orig			
1.4E-06	6.9E-07	2.2E-10	Base
4.4E-07	2.2E-07	1.1E-09	Mean Base
8.0E-07	4.0E-07	2.2E-10	Median Base
8.0E-07	4.0E-07	6.9E-10	Mean
2.5E-07	1.3E-07	3.4E-09	Mean Mean
1.6E-07	8.0E-08	8.4E-10	Median Mean
2.9E-07	1.5E-07	1.2E-08	Point Mean
1.1E-07	5.5E-08	4.2E-09	Point Median
New Navy			
4.8E-06	2.4E-06	4.4E-09	Base
2.0E-06	1.0E-06	1.7E-08	Mean Base
2.8E-06	1.4E-06	4.4E-09	Median Base
2.8E-06	1.4E-06	1.2E-08	Mean
1.2E-06	6.2E-07	4.7E-08	Mean Mean
8.5E-07	4.3E-07	1.1E-08	Median Mean
1.5E-06	8.0E-07	1.2E-07	Point Mean
5.7E-07	3.1E-07	4.6E-08	Point Median
Navy/WIPP			

Original NUREG-0612Base
 NUREG-0612 1.0 Re MBase
 New Navy Data NUR Mean
 New Navy Data WIPPMean

Base
 Mean Base
 Median Ba
 Mean
 Mean Mea
 Median Me
 Point Mean
 Point Medi



2.1E-06	1.1E-06	2.8E-08	Base
9.0E-07	5.0E-07	1.0E-07	Mean Base
1.3E-06	6.8E-07	2.8E-08	Median Base
1.3E-06	6.9E-07	3.1E-08	Mean
5.6E-07	3.4E-07	1.2E-07	Mean Mean
4.0E-07	2.4E-07	6.9E-08	Median Mean
8.6E-07	4.7E-07	6.9E-08	Point Mean
5.0E-07	2.7E-07	4.0E-08	Point Median

TwoB

	4.5E-12	3.41E-09	1.1E-09	2.61E-10
4.5E-11				
4.5E-11				
6.8E-11				
4.5E-10				
6.8E-10				
6.8E-10				
6.8E-09	3.41E-09	1.1E-09	2.61E-10	

Data

Mean (H-LMean (data)Median (data)

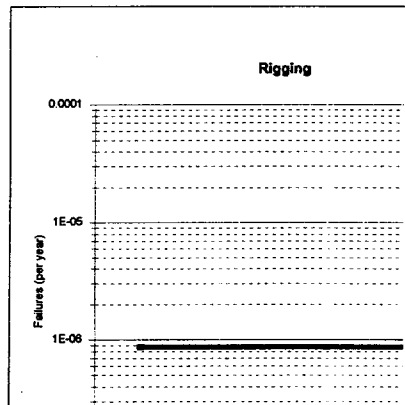
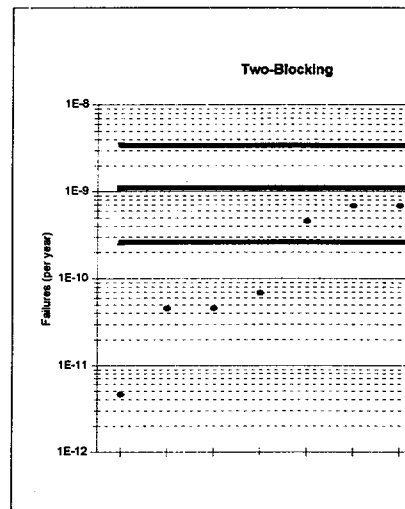
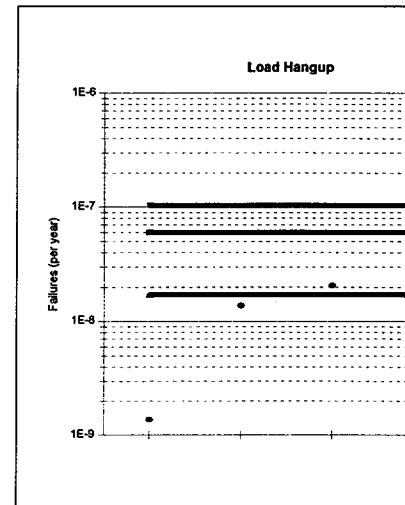
New Nav

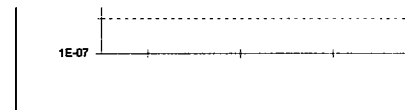
Load

	1.4E-09	1.03E-07	6E-08	1.7E-08
1.4E-08				
2.0E-08				
2.0E-07	1.03E-07	6E-08	1.7E-08	

Random

	6.1E-08	4.58E-06	2.67E-06	7.58E-07
6.1E-07				
9.1E-07				
9.1E-06	4.58E-06	2.67E-06	7.58E-07	





New Nav

Single

1.5E-08	1.19E-07	1.19E-07	1.19E-07
1.5E-08			
2.2E-07			
2.2E-07	1.19E-07	1.19E-07	1.19E-07

Rigging

8.7E-07	8.7E-07	8.7E-07	8.7E-07
8.7E-07			
8.7E-07			
8.7E-07	8.7E-07	8.7E-07	8.7E-07

LOI

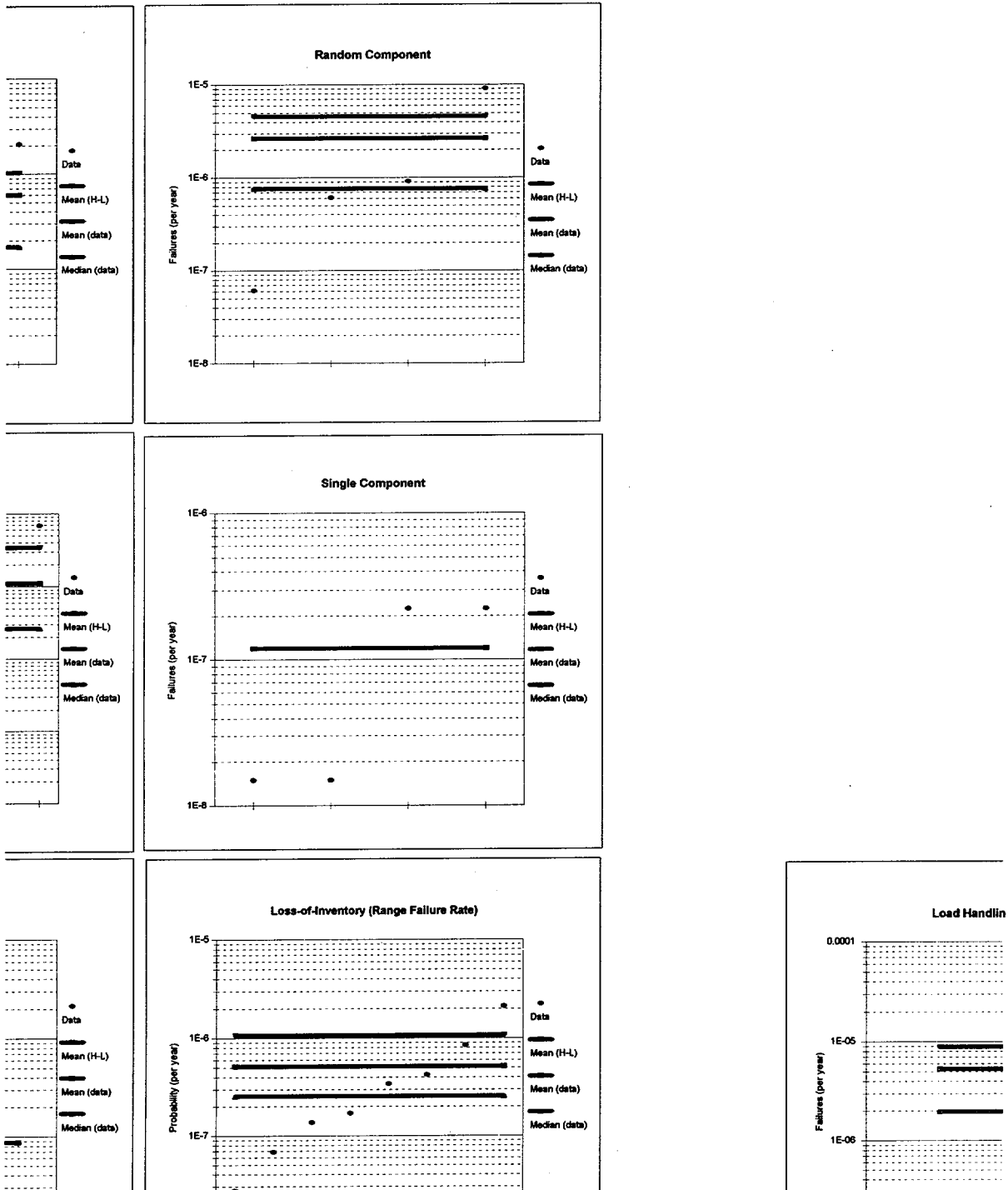
Range			
2.7E-08	1.07E-06	5.15E-07	2.55E-07
6.8E-08			
1.4E-07			
1.7E-07			
3.4E-07			
4.2E-07			
8.4E-07			
2.1E-06	1.07E-06	5.15E-07	2.55E-07

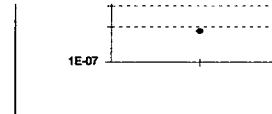
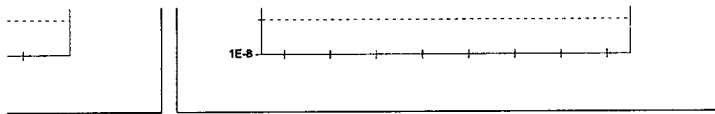
LOI	Mean			
	1.2E-08	1.42E-06	6.16E-07	1.90E-07
	1.2E-08			
	1.2E-08			
	3.1E-08			
	3.1E-08			
	6.2E-08			
	6.2E-08			
	1.5E-07			
	2.3E-07			
	2.3E-07			
	5.6E-07			
	5.6E-07			
	1.1E-06			
	1.1E-06			
	2.8E-06			
	2.8E-06	1.42E-06	6.16E-07	1.90E-07

Total Failures				
	1.83E-07	8.83E-06	5.33E-06	1.95E-06
	1.75E-05	8.83E-06	5.33E-06	1.95E-06

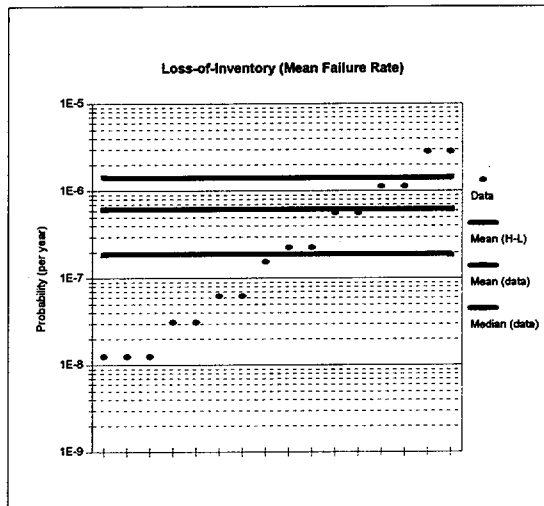
New Navy Data and WIPP Rigging Model

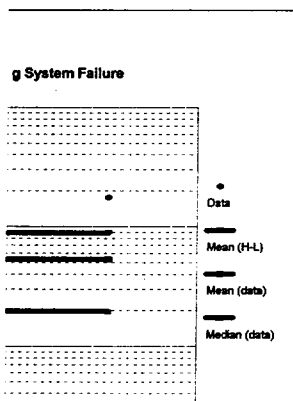
y Data and WIPP Rigging Model



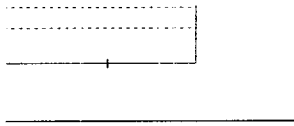


y Data and WIPP Rigging Model





HLOADQP8.WB3 09/01/99



Original NAs Reporte
NUREG-0612 1.0 Re
New Navy Data NUR
New Navy NUREG-06

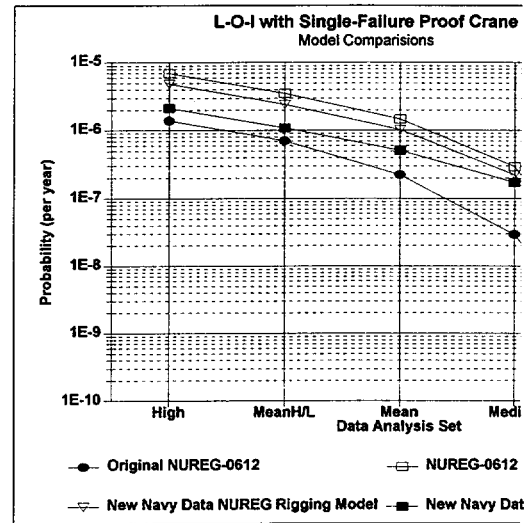
High	Mean	LogMean	GeoMean	Low	
w/1.0					
6.9E-06	3.5E-06	8.6E-07	1.2E-07	2.2E-09	Base
2.9E-06	1.5E-06	5.0E-07	1.6E-07	8.5E-09	Mean Base
4.0E-06	2.0E-06	5.3E-07	9.4E-08	2.2E-09	Median Base
					Point Mean
4.0E-06	2.0E-06	6.3E-07	1.7E-07	6.9E-09	Mean
1.7E-06	8.5E-07	4.0E-07	2.1E-07	2.6E-08	Mean Mean
1.2E-06	6.0E-07	2.2E-07	8.2E-08	5.6E-09	Median Mean
					Point Median

Orig					
1.4E-06	6.9E-07	1.6E-07	1.8E-08	2.2E-10	Base
4.4E-07	2.2E-07	7.3E-08	2.2E-08	1.1E-09	Mean Base
8.0E-07	4.0E-07	9.7E-08	1.3E-08	2.2E-10	Median Base
2.9E-07	1.5E-07	8.8E-08	5.9E-08	1.2E-08	Point Mean
8.0E-07	4.0E-07	1.1E-07	2.4E-08	6.9E-10	Mean
2.5E-07	1.3E-07	5.8E-08	2.9E-08	3.4E-09	Mean Mean
1.6E-07	8.0E-08	3.0E-08	1.2E-08	8.4E-10	Median Mean
9.3E-08	7.5E-08	7.4E-08	7.3E-08	5.7E-08	Point Median

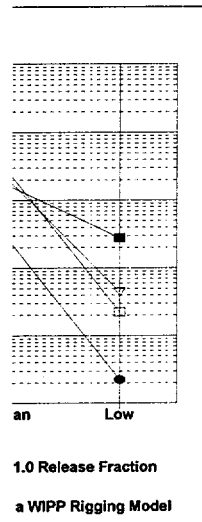
New Navy					
4.8E-06	2.4E-06	6.9E-07	1.5E-07	4.4E-09	Base
2.0E-06	1.0E-06	4.2E-07	1.8E-07	1.7E-08	Mean Base
2.8E-06	1.4E-06	4.4E-07	1.1E-07	4.4E-09	Median Base
					Point Mean
2.8E-06	1.4E-06	5.2E-07	1.9E-07	1.2E-08	Mean
1.2E-06	6.2E-07	3.5E-07	2.4E-07	4.7E-08	Mean Mean
8.5E-07	4.3E-07	1.9E-07	9.6E-08	1.1E-08	Median Mean
					Point Median

Navy/WIPP					
2.1E-06	1.1E-06	4.8E-07	2.4E-07	2.8E-08	Base
9.0E-07	5.0E-07	3.7E-07	3.1E-07	1.0E-07	Mean Base
1.3E-06	6.8E-07	3.4E-07	1.9E-07	2.8E-08	Median Base
8.6E-07	4.7E-07	3.1E-07	2.4E-07	6.9E-08	Point Mean
1.3E-06	6.9E-07	3.5E-07	2.0E-07	3.1E-08	Mean
5.6E-07	3.4E-07	2.8E-07	2.6E-07	1.2E-07	Mean Mean
4.0E-07	2.4E-07	1.9E-07	1.7E-07	6.9E-08	Median Mean
3.6E-07	3.1E-07	3.1E-07	3.1E-07	2.6E-07	Point Median

High	MeanH/L	Mean	Median	Low		GMeanHL	LMeanHL	LM/GM
1.4E-06	6.9E-07	2.2E-07	2.9E-08	2.2E-10	Original	1.8E-08	1.6E-07	9.03
6.9E-06	3.5E-06	1.5E-06	2.9E-07	2.2E-09	1.0 Release	1.2E-07	8.6E-07	6.93
4.8E-06	2.4E-06	1.0E-06	2.2E-07	4.4E-09	Navy/NUREG	1.5E-07	6.9E-07	4.73
2.1E-06	1.1E-06	5.0E-07	1.7E-07	2.8E-08	Navy/WIPP	2.4E-07	4.8E-07	2.00
1.0E-05	5.0E-06		2.0E-07	3.0E-09	Chp 5	1.7E-07	1.2E-06	7.12



d Table 5.2-1
lease Fraction
EG Rigging Model
12 1.0 Release Fract



	NUREG	Original						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	7.0E-08	8.0E-06	5.2E-08	3.4E-07	8.5E-06	2.6E-06	1.1E-05	
MeanHL	3.5E-08	4.0E-06	2.6E-08	1.8E-07	4.3E-06	1.3E-06	5.6E-06	
Mean	2.0E-08	2.3E-06	8.3E-09	1.8E-07	2.5E-06	8.3E-07	3.4E-06	
Median	5.8E-09	6.7E-07	5.2E-10	1.8E-07	8.6E-07	3.5E-07	1.2E-06	
Low	4.7E-10	5.3E-08	3.5E-11	2.3E-08	7.7E-08	3.5E-08	1.1E-07	
Mean		Loss-of-inventory	Range	Loss-of-inventory		Ratio		
High		8.0E-07		1.4E-06		1.74		
MeanHL		4.0E-07		6.9E-07		1.74		
Mean		1.3E-07		2.2E-07		1.72		
Median		2.0E-08		2.9E-08		1.44		
Low		6.9E-10		2.2E-10		0.32		

	NUREG	1.0 Release						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	7.0E-08	8.0E-06	5.2E-08	3.4E-07	8.5E-06	2.6E-06	1.1E-05	
MeanHL	3.5E-08	4.0E-06	2.6E-08	1.8E-07	4.3E-06	1.3E-06	5.6E-06	
Mean	2.0E-08	2.3E-06	8.3E-09	1.8E-07	2.5E-06	8.3E-07	3.4E-06	
Median	5.8E-09	6.7E-07	5.2E-10	1.8E-07	8.6E-07	3.5E-07	1.2E-06	
Low	4.7E-10	5.3E-08	3.5E-11	2.3E-08	7.7E-08	3.5E-08	1.1E-07	
Mean		Loss-of-inventory	Range	Loss-of-inventory		Ratio		
High		4.0E-06		6.9E-06		1.74		
MeanHL		2.0E-06		3.5E-06		1.74		
Mean		8.5E-07		1.5E-06		1.72		
Median		2.0E-07		2.9E-07		1.44		
Low		6.9E-09		2.2E-09		0.32		

	New Navy	NUREG Rigging						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	2.0E-07	9.1E-06	6.8E-09	2.2E-07	9.5E-06	8.0E-06	1.7E-05	
MeanHL	1.0E-07	4.6E-06	3.4E-09	1.2E-07	4.8E-06	4.0E-06	8.8E-06	
Mean	5.9E-08	2.6E-06	1.1E-09	1.2E-07	2.8E-06	2.5E-06	5.3E-06	
Median	1.7E-08	7.6E-07	6.8E-11	1.2E-07	8.9E-07	1.1E-06	2.0E-06	
Low	1.4E-09	6.1E-08	4.5E-12	1.5E-08	7.7E-08	1.1E-07	1.8E-07	
Mean		Loss-of-inventory	Range	Loss-of-inventory		Ratio		
High		2.8E-06		4.8E-06		1.71		
MeanHL		1.4E-06		2.4E-06		1.70		
Mean		6.2E-07		1.0E-06		1.66		
Median		1.9E-07		2.2E-07		1.16		
Low		1.2E-08		4.4E-09		0.35		

	New Navy	WIPP Rigging						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	2.0E-07	9.1E-06	6.8E-09	2.2E-07	9.5E-06	8.7E-07	1.0E-05	
MeanHL	1.0E-07	4.6E-06	3.4E-09	1.2E-07	4.8E-06	8.7E-07	5.7E-06	
Mean	5.9E-08	2.6E-06	1.1E-09	1.2E-07	2.8E-06	8.7E-07	3.7E-06	
Median	1.7E-08	7.6E-07	6.8E-11	1.2E-07	8.9E-07	8.7E-07	1.8E-06	
Low	1.4E-09	6.1E-08	4.5E-12	1.5E-08	7.7E-08	8.7E-07	9.5E-07	
Mean		Loss-of-inventory	Range	Loss-of-inventory		Ratio		
High		1.3E-06		2.1E-06		1.59		
MeanHL		6.9E-07		1.1E-06		1.58		
Mean		3.4E-07		5.0E-07		1.47		
Median		1.5E-07		1.7E-07		1.11		
Low		3.1E-08		2.8E-08		0.90		

Two blocking sheet D New Navy WIPP Rigging								
	4.5E-12	3.41E-09	1.08E-09	6.82E-11		4.5E-12	3.41E-09	1.1E-09 2.61E-10
	4.5E-12					4.5E-11		
	4.5E-12					4.5E-11		
	4.5E-12					6.8E-11		
	4.5E-12					4.5E-10		
	4.5E-12					6.8E-10		

4.5E-11
 4.5E-11
 4.5E-11
 4.5E-11
 4.5E-11
 4.5E-11
 6.8E-11
 6.8E-11
 6.8E-11
 6.8E-11
 4.5E-10
 4.5E-10
 4.5E-10
 6.8E-10
 6.8E-10
 6.8E-10
 6.8E-10
 6.8E-10
 6.8E-10
 6.8E-10
 6.8E-09
 6.8E-09
 6.8E-09
 6.8E-09
 6.8E-09 3.41E-09 1.08E-09 6.82E-11

6.8E-10
 6.8E-09 3.41E-09 1.1E-09 2.61E-10

Load Hangup

1.4E-09 1.03E-07 5.92E-08 1.70E-08
 1.4E-09
 1.4E-09
 1.4E-09
 1.4E-09
 1.4E-08
 1.4E-08
 1.4E-08
 2.0E-08
 2.0E-08
 2.0E-08
 2.0E-08
 2.0E-07
 2.0E-07
 2.0E-07
 2.0E-07 1.03E-07 5.92E-08 1.70E-08

1.4E-09 1.03E-07 6E-08 1.7E-08
 1.4E-08
 2.0E-08
 2.0E-07 1.03E-07 6E-08 1.7E-08

Random

6.1E-08 4.58E-06 2.63E-06 7.58E-07
 6.1E-08
 6.1E-08
 6.1E-08
 6.1E-08
 6.1E-07
 6.1E-07
 6.1E-07
 9.1E-07
 9.1E-07
 9.1E-07
 9.1E-07
 9.1E-06
 9.1E-06
 9.1E-06
 9.1E-06 4.58E-06 2.63E-06 7.58E-07

6.1E-08 4.58E-06 2.67E-06 7.58E-07
 6.1E-07
 9.1E-07
 9.1E-06 4.58E-06 2.67E-06 7.58E-07

Single

1.5E-08 1.19E-07 1.19E-07 1.19E-07
 1.5E-08
 1.5E-08
 1.5E-08
 1.5E-08
 1.5E-08
 1.5E-08
 2.2E-07
 2.2E-07
 2.2E-07
 2.2E-07
 2.2E-07
 2.2E-07
 2.2E-07
 2.2E-07 1.19E-07 1.19E-07 1.19E-07

1.5E-08 1.19E-07 1.19E-07 1.19E-07
 1.5E-08
 2.2E-07
 2.2E-07 1.19E-07 1.19E-07 1.19E-07

Rigging

8.7E-07 8.7E-07 8.7E-07 8.7E-07
 8.7E-07
 8.7E-07
 8.7E-07 8.7E-07 8.7E-07 8.7E-07

8.7E-07 8.7E-07 8.7E-07 8.7E-07
 8.7E-07
 8.7E-07
 8.7E-07 8.7E-07 8.7E-07 8.7E-07

LOI Range

2.8E-08 1.08E-06 5.01E-07 1.71E-07
 2.8E-08
 2.8E-08
 6.9E-08
 6.9E-08
 1.4E-07
 1.4E-07
 1.7E-07
 1.7E-07
 3.4E-07
 4.3E-07
 4.3E-07
 8.5E-07
 8.5E-07
 2.1E-06
 2.1E-06 1.08E-06 5.01E-07 1.71E-07

2.7E-08 1.07E-06 5.15E-07 2.55E-07
 6.8E-08
 1.4E-07
 1.7E-07
 3.4E-07
 4.2E-07
 8.4E-07
 2.1E-06 1.07E-06 5.15E-07 2.55E-07

LOI Mean

3.1E-08 6.86E-07 3.40E-07 1.53E-07
 3.1E-08
 3.1E-08
 7.7E-08
 7.7E-08
 1.1E-07
 1.1E-07
 1.5E-07
 1.5E-07
 2.7E-07
 2.7E-07
 3.8E-07
 5.4E-07
 5.4E-07
 1.3E-06
 1.3E-06 6.86E-07 3.40E-07 1.53E-07

Two-blocking Sheet A Original NUREG-0612

3.5E-11 2.62E-08 8.32E-09 5.23E-10

3.5E-11 2.62E-08 8.44E-09 2.01E-09

3.5E-11
 3.5E-11
 3.5E-11
 3.5E-11
 3.5E-11
 3.5E-10
 3.5E-10
 3.5E-10
 3.5E-10
 3.5E-10
 3.5E-10
 5.2E-10
 5.2E-10
 5.2E-10
 5.2E-10
 3.5E-09
 3.5E-09
 3.5E-09
 5.2E-09
 5.2E-09
 5.2E-09
 5.2E-09
 5.2E-09
 5.2E-09
 5.2E-09
 5.2E-08
 5.2E-08
 5.2E-08
 5.2E-08
 5.2E-08 2.62E-08 8.32E-09 5.23E-10

3.5E-10
 3.5E-10
 5.2E-10
 3.5E-09
 5.2E-09
 5.2E-09
 5.2E-08 2.62E-08 8.44E-09 2.01E-09

Load Hangup

4.7E-10 3.51E-08 2.02E-08 5.81E-09
 4.7E-10
 4.7E-10
 4.7E-10
 4.7E-10
 4.7E-09
 4.7E-09
 4.7E-09
 7.0E-09
 7.0E-09
 7.0E-09
 7.0E-09
 7.0E-09
 7.0E-08
 7.0E-08
 7.0E-08
 7.0E-08 3.51E-08 2.02E-08 5.81E-09

4.7E-10 3.51E-08 2.05E-08 5.81E-09
 4.7E-09
 7.0E-09
 7.0E-08 6.98E-08 2.05E-08 5.81E-09

Random

5.3E-08 4.04E-06 2.32E-06 6.69E-07
 5.3E-08
 5.3E-08
 5.3E-08
 5.3E-08
 5.3E-07
 5.3E-07
 5.3E-07
 8.0E-07
 8.0E-07
 8.0E-07

5.3E-08 4.04E-06 2.35E-06 6.69E-07
 5.3E-07
 8.0E-07
 8.0E-06 4.04E-06 2.35E-06 6.69E-07

	8.0E-07						
	8.0E-06						
	8.0E-06						
	8.0E-06						
	8.0E-06	4.04E-06	2.32E-06	6.69E-07			
Single							
	2.3E-08	1.82E-07	1.82E-07	1.82E-07	3.4E-07	1.82E-07	1.82E-07
	2.3E-08				3.4E-07		
	2.3E-08				2.3E-08		
	2.3E-08				2.3E-08	1.82E-07	1.82E-07
	2.3E-08						
	2.3E-08						
	2.3E-08						
	3.4E-07						
	3.4E-07						
	3.4E-07						
	3.4E-07						
	3.4E-07						
	3.4E-07						
	3.4E-07	1.82E-07	1.82E-07	1.82E-07			
Rigging							
	3.5E-08	1.33E-06	8.28E-07	3.49E-07	3.5E-08	1.33E-06	8.37E-07
	3.5E-08				1.7E-07		
	3.5E-08				5.2E-07		
	3.5E-08				2.6E-06	1.33E-06	8.37E-07
	3.5E-08						
	1.7E-07						
	1.7E-07						
	1.7E-07						
	5.2E-07						
	5.2E-07						
	5.2E-07						
	5.2E-07						
	2.6E-06						
	2.6E-06						
	2.6E-06						
	2.6E-06	1.33E-06	8.28E-07	3.49E-07			
LOI Range							
	2.2E-10	6.94E-07	2.19E-07	2.92E-08	2.2E-10	6.94E-07	2.92E-07
	2.2E-10				5.6E-10		
	4.5E-10				1.1E-09		
	5.6E-10				2.8E-09		
	1.1E-09				1.1E-07		
	1.1E-09				2.8E-07		
	2.2E-09				5.6E-07		
	2.8E-09				1.4E-06	6.94E-07	2.92E-07
	5.6E-08						5.69E-08
	1.1E-07						
	1.4E-07						
	2.8E-07						
	2.8E-07						
	5.6E-07						
	6.9E-07						
	1.4E-06	6.94E-07	2.19E-07	2.92E-08			
LOI Mean							
	6.9E-10	3.99E-07	1.27E-07	2.03E-08	4.3E-07	6.8E-09	

6.9E-10			
1.4E-09	8.5E-08	3.4E-08	
1.7E-09	3.4E-08	8.5E-08	
3.5E-09			
3.5E-09	1.7E-07	1.7E-08	
6.9E-09			
8.7E-09			
3.2E-08			
6.4E-08			
8.0E-08			
1.6E-07			
1.6E-07			
3.2E-07			
4.0E-07			
8.0E-07	3.99E-07	1.27E-07	2.03E-08

Two-blocking Shhet B NUREG-0612 1.0 Release

LOI Range

2.2E-09	3.47E-06	1.46E-06	2.92E-07	2.2E-09	3.47E-06	1.46E-06	2.92E-07
2.2E-09				5.6E-09			
2.2E-09				1.1E-08			
5.6E-09				2.8E-08			
5.6E-09				5.6E-07			
1.1E-08				1.4E-06			
1.1E-08				2.8E-06			
2.8E-08				6.9E-06			
5.6E-07							
5.6E-07							
1.4E-06							
1.4E-06							
2.8E-06							
2.8E-06							
6.9E-06							
6.9E-06	3.47E-06	1.46E-06	2.92E-07				

LOI Mean

6.9E-09	2.00E-06	8.50E-07	2.03E-07
6.9E-09			
6.9E-09			
1.7E-08			
1.7E-08			
3.5E-08			
3.5E-08			
8.7E-08			
3.2E-07			
3.2E-07			
8.0E-07			
8.0E-07			
1.6E-06			
1.6E-06			
4.0E-06			
4.0E-06	2.00E-06	8.50E-07	2.03E-07

Two-Blocking Sheet C New Navy data NUREG Rigging

Rigging

1.1E-07	4.03E-06	2.52E-06	1.06E-06	1.1E-07	4.03E-06	2.55E-06	1.06E-06
1.1E-07				5.3E-07			
1.1E-07				1.6E-06			
1.1E-07				8.0E-06	4.03E-06	2.55E-06	1.06E-06
1.1E-07							
5.3E-07							

5.3E-07
 5.3E-07
 1.6E-06
 1.6E-06
 1.6E-06
 1.6E-06
 8.0E-06
 8.0E-06
 8.0E-06
 8.0E-06 4.03E-06 2.52E-06 1.06E-06

LOI Range

4.4E-09 2.41E-06 1.02E-06 2.20E-07
 4.4E-09
 4.4E-09
 1.1E-08
 1.1E-08
 2.2E-08
 2.2E-08
 5.5E-08
 3.9E-07
 3.9E-07
 9.6E-07
 9.6E-07
 1.9E-06
 1.9E-06
 4.8E-06
 4.8E-06 2.41E-06 1.02E-06 2.20E-07

4.3E-09 2.39E-06 1.01E-06 2.18E-07
 1.1E-08
 2.2E-08
 5.4E-08
 3.8E-07
 9.5E-07
 1.9E-06
 4.8E-06 2.39E-06 1.01E-06 2.18E-07

LOI Mean

1.2E-08 1.42E-06 6.16E-07 1.90E-07
 1.2E-08
 1.2E-08
 3.1E-08
 3.1E-08
 6.2E-08
 6.2E-08
 1.5E-07
 2.3E-07
 2.3E-07
 5.6E-07
 5.6E-07
 1.1E-06
 1.1E-06
 2.8E-06
 2.8E-06 1.42E-06 6.16E-07 1.90E-07

Heavy Loads NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1
As presented in NUREG-0612

Event	Description	Units	High	Low	Mean	Median
N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05		
	Crane Failure					
F1	Fraction of load hangup events (2/43 1970s Navy data)	—	0.05	0.05		
CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07		
CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	2.0E-08	5.8E-09
F2	Fraction of component failure events (23/43 1970s Navy data)	—	0.53	0.53		
CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06		
CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	2.4E-06	6.7E-07
F3	Fraction of two-blocking events (15/43 1970s Navy data)	—	0.35	0.35		
CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06		
CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	8.4E-09	2.0E-09
F4	Fraction of single component failure (1/44 1970s Navy data)	—	0.02	0.02		
F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01		
CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	3.4E-07	2.3E-08	1.8E-07	1.8E-07
CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	2.6E-06	8.6E-07
D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4		
CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	3.0E-05	1.7E-05
	Rigging failure - Based on NUREG-0612 method					
F5	Fraction of improper rigging events (3/43 1970s Navy data)	—	0.07	0.07		
CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07		
CR12	Failure of redundant/alternate rigging	/demand	2.5E-01	5.0E-02		
RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	8.4E-07	3.5E-07
D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4		
CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	9.3E-06	5.4E-06
FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	3.4E-06	1.2E-06
CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	3.9E-05	2.3E-05
	Loss-of-inventory for a single-failure proof crane					
RF	Fraction of year over which a release may occur	—	0.20	0.10		
P	Fraction of path near/over pool	—	0.25	0.05		
P'	Fraction of path critical for load drop	—	0.25	0.10		
LOI-S	(CFCR) * P * P' * RF	/year	1.4E-06	2.2E-10	2.9E-07	5.7E-08
LOI-S-MEAN	(CFCR-Mean) * P * P' * RF	/year	4.3E-07	6.8E-09	1.1E-07	6.0E-08
	Loss-of-inventory for a non single-failure proof crane					
CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-04	2.0E-07		
RF	Fraction of year over which a release may occur	—	0.20	0.10		
LOI-N	(CFCRNON) * P * P' * RF	/year	3.0E-05	2.0E-08	3.1E-06	6.4E-07
	Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	—	22	90		

Heavy Loads NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1
Based on release fraction of 1 for current storage configuration

Event	Description	Units	High	Low	Mean	Median
N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05		
	Crane Failure					
F1	Fraction of load hangup events (2/43 1970s Navy data)	—	0.05	0.05		
CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07		
CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	2.0E-08	5.8E-09
F2	Fraction of component failure events (23/43 1970s Navy data)	—	0.53	0.53		
CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06		
CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	2.4E-06	6.7E-07
F3	Fraction of two-blocking events (15/43 1970s Navy data)	—	0.35	0.35		
CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06		
CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	8.4E-09	2.0E-09
F4	Fraction of single component failure (1/44 1970s Navy data)	—	0.02	0.02		
F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01		
CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	3.4E-07	2.3E-08	1.8E-07	1.8E-07
CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	2.6E-06	8.6E-07
D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4		
CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	3.0E-05	1.7E-05
	Rigging failure - Based on NUREG-0612 method					
F5	Fraction of improper rigging events (3/43 1970s Navy data)	—	0.07	0.07		
CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07		
CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05		
RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	8.4E-07	3.5E-07
D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4		
CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	9.3E-06	5.4E-06
FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	3.4E-06	1.2E-06
CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	3.9E-05	2.3E-05
	Loss-of-inventory for a single-failure proof crane					
RF	Fraction of year over which a release may occur	—	1.00	1.00		
P	Fraction of path near/over pool	—	0.25	0.05		
P'	Fraction of path critical for load drop	—	0.25	0.10		
LOI-S	(CFCR) * P * P' * RF	/year	6.9E-06	2.2E-09	1.5E-06	2.9E-07
LOI-S-MEAN	(CFCR-Mean) * P * P' * RF	/year	2.1E-06	6.8E-08	6.3E-07	3.8E-07
	Loss-of-inventory for a non single-failure proof crane					
CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-04	2.0E-07		
RF	Fraction of year over which a release may occur	—	1.00	1.00		
LOI-N	(CFCRNON) * P * P' * RF	/year	1.5E-04	2.0E-07	2.1E-05	5.1E-06
	Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	—	22	90		

Heavy Loads NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet NI
(Based on new Navy Data)

Event	Description	Units	High	Low	Mean	Median
N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05		
	Crane Failure					
F1	Fraction of load hangup events (new 1990s Navy data)	—	0.14	0.14		
CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06		
CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	6.0E-08	1.7E-08
F2	Fraction of component failure events (new 1990s Navy data)	—	0.61	0.61		
CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06		
CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	2.7E-06	7.6E-07
F3	Fraction of two-blocking events (new 1990s Navy data)	—	0.05	0.05		
CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07		
CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	1.1E-09	2.6E-10
F4	Fraction of single component failure (new 1990s Navy data)	—	0.01	0.01		
F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01		
CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	2.2E-07	1.5E-08	1.2E-07	1.2E-07
CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	2.8E-06	8.9E-07
D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3		
CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	1.5E-05	1.5E-05
	Rigging failure - Based on NUREG-0612 method					
F5	Fraction of improper rigging events (new 1990s Navy data)	—	0.21	0.21		
CR11	Failure due to improper rigging (N0*F5)	/year	3.2E-05	2.1E-06		
CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05		
RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.0E-06	1.1E-07	2.5E-06	1.1E-06
D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6		
CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	4.8E-05	6.4E-07	2.4E-05	2.4E-05
FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.7E-05	1.8E-07	5.4E-06	2.0E-06
CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	7.7E-05	8.8E-07	3.9E-05	3.9E-05
	Loss-of-inventory for a single-failure proof crane					
RF	Fraction of year over which a release may occur	—	1.00	1.00		
P	Fraction of path near/over pool	—	0.25	0.05		
P'	Fraction of path critical for load drop	—	0.25	0.10		
LOI-S	(CFCR) * P * P' * RF	/year	4.8E-06	4.4E-09	1.0E-06	2.2E-07
LOI-S-MEAN	(CFCR-Mean) * P * P' * RF	/year	1.5E-06	1.6E-07	7.4E-07	5.0E-07
	Loss-of-inventory for a non single-failure proof crane					
CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07		
RF	Fraction of year over which a release may occur	—	1.00	1.00		
LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	7.7E-06	2.6E-06
	Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	—	16	23		

Heavy Loads NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1
(Based on new Navy Data AND WIPP Rigging Evaluation)

Event	Description	Units	High	Low	Mean	Median
N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05		
	Crane Failure					
F1	Fraction of load hangup events (new 1990s Navy data)	—	0.14	0.14		
CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06		
CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	6.0E-08	1.7E-08
F2	Fraction of component failure events (new 1990s Navy data)	—	0.61	0.61		
CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06		
CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	2.7E-06	7.6E-07
F3	Fraction of two-blocking events (new 1990s Navy data)	—	0.05	0.05		
CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07		
CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	1.1E-09	2.6E-10
F4	Fraction of single component failure (new 1990s Navy data)	—	0.01	0.01		
F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01		
CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-07	1.5E-08	1.2E-07	1.2E-07
CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	2.8E-06	8.9E-07
D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3		
CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	1.5E-05	1.5E-05
	Rigging failure - Based on WIPP method					
F5	Fraction of improper rigging events (new 1990s Navy data)	—	0.21	0.21		
CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07
CR12	Failure of redundant/alternate rigging	N/A				
RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07
D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6		
CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	5.3E-06	5.3E-06	5.3E-06	5.3E-06
FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.0E-05	9.5E-07	3.7E-06	1.8E-06
CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	3.4E-05	5.6E-06	2.0E-05	2.0E-05
	Loss-of-inventory for a single-failure proof crane					
RF	Fraction of year over which a release may occur	—	1.00	1.00		
P	Fraction of path near/over pool	—	0.25	0.05		
P'	Fraction of path critical for load drop	—	0.25	0.10		
LOI-S	(CFCR) * P * P' * RF	/year	2.1E-06	2.8E-08	5.2E-07	2.5E-07
LOI-S-MEAN	(CFCR-Mean) * P * P' * RF	/year	8.6E-07	1.1E-07	4.7E-07	3.1E-07
	Loss-of-inventory for a non single-failure proof crane					
CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07		
RF	Fraction of year over which a release may occur	—	1.00	1.00		
LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	5.2E-06	1.9E-06
	Risk reduction for a single-failure proof crane (LOI-N / LOI-S)	---	35	4		

Summary of 1990s Navy Data

Data summary by count		ID	Non-rig	Rig
	Crane collision	CC	11	0
	Damaged crane	DC	13	5
	Damaged load	DL	1	2
	Dropped load	DD	2	4
	Load collision	LC	7	2
	Other	OO	1	0
	Overload	OL	5	3
	Personnel injury	PI	2	3
	Shock	SK	0	1
	Two-blocking	TB	3	0
	Unidentified	UD	1	0
	Totals		46	20
		Fraction		
F1	$OL + 0.5*(DL+LC)$	0.14	9	
F2	$CC + DC + 0.5(DL+LC) + DD + OO + PI + SK + UD$	0.52	34	
F3	TB	0.05	3	
F4	1/67 events (assume none in 66)			
F5	Rigging	0.30		20
	Totals	1.00	46	20

Summary of 1990s Navy Data

Summary by Accident Type (fraction of events)		ID	Non-rig	Rigging
	Crane collision	CC	0.17	0.00
	Damaged crane	DC	0.20	0.08
	Damaged load	DL	0.02	0.03
	Dropped load	DD	0.03	0.06
	Load collision	LC	0.11	0.03
	Other	OO	0.02	0.00
	Overload	OL	0.08	0.05
	Personnel injury	PI	0.03	0.05
	Shock	SK	0.00	0.02
	Two-blocking	TB	0.05	0.00
	Unidentified	UD	0.02	0.00
	Totals		0.70	0.30
	Summary by Accident Cause (fraction of total events)			
	Improper operation	IO	0.38	
	Procedures	PROC	0.20	
	Equipment failure	EQ	0.05	
	Improper rigging	IR	0.30	
	Others	OTHER	0.08	
	Totals		1.00	
	Application of new Navy data to heavy load drop evaluation			-612
F1	$OL + 0.5*(DL+LC)$	0.14		0.05
F2	$CC + DC + 0.5(DL+LC) + DD + OO + PI + SK + UD + 0.3*IR$	0.61		0.53
F3	TB	0.05		0.35
F4	1/67 events (assume none in 66)	(.01)		(1/44)
F5	Rigging 0.7*IR	0.21		0.07
	Totals	1.00		1.00

Ave	Dep
-----	-----

3.5E-08	5.7E-09
---------	---------

4.0E-06	6.6E-07
---------	---------

2.6E-08	1.4E-09
---------	---------

1.8E-07	8.8E-08
4.3E-06	8.1E-07

4.3E-05	5.1E-06
---------	---------

1.3E-06	3.0E-07
---------	---------

1.3E-05	1.9E-06
---------	---------

5.6E-06	1.1E-06
5.6E-05	7.0E-06

6.9E-07	1.8E-08
2.2E-07	5.4E-08

1.5E-05	7.7E-07
---------	---------

Average Dep

3.5E-08 5.7E-09

4.0E-06 6.6E-07

2.6E-08 1.4E-09

1.8E-07 8.8E-08

4.3E-06 8.1E-07

4.3E-05 5.1E-06

1.3E-06 3.0E-07

1.3E-05 1.9E-06

5.6E-06 1.1E-06

5.6E-05 7.0E-06

3.5E-06 1.2E-07

1.1E-06 3.8E-07

7.5E-05 5.5E-06

Average Dep

1.0E-07 1.7E-08

4.6E-06 7.4E-07

3.4E-09 1.8E-10

1.2E-07 5.8E-08

4.8E-06 8.6E-07

1.5E-05 2.6E-06

4.0E-06 9.2E-07

2.4E-05 5.6E-06

8.8E-06 1.8E-06

3.9E-05 8.2E-06

2.4E-06 1.5E-07

8.3E-07 4.9E-07

3.8E-05 2.7E-06

Average Dep

1.0E-07 1.7E-08

4.6E-06 7.4E-07

3.4E-09 1.8E-10

1.2E-07 5.8E-08

4.8E-06 8.6E-07

1.5E-05 2.6E-06

8.7E-07 8.7E-07

5.3E-06 5.3E-06

5.7E-06 3.1E-06

2.0E-05 1.4E-05

1.1E-06 2.4E-07

4.9E-07 3.1E-07

3.8E-05 2.7E-06

Original NUREG

Event				High	Low		Mean	Median
Two-Blk								
5.23E-05	3.49E-06	a1*a2*a3	5.2E-08	3.5E-11	b1*b2*b3	2.6E-08	1.4E-09	
0.1	0.01							
0.01	0.001	a1*b2*a3	5.2E-09	3.5E-10	b1*a2*b3			
		a1*b2*b3	5.2E-10	3.5E-09	b1*a2*a3			
1.50E-04	1.00E-05							
0.348837209	0.3488372093	a1*a2*b3	5.2E-09	3.5E-10	b1*b2*a3	2.8E-09	1.4E-09	
1	1					8.4E-09	2.0E-09	
0.01	0.001							
0.1	0.01							
Load Hgup								
6.98E-06	4.65E-07	a1*a2	7.0E-08	4.7E-10	b1*b2	3.5E-08	5.7E-09	
0.01	0.001							
		a1*b2	7.0E-09	4.7E-09	b1*a2	5.8E-09	5.7E-09	
1.50E-04	1.00E-05					2.0E-08	5.8E-09	
0.046511628	0.04651162791							
1	1							
0.01	0.001							
Random								
8.02E-05	5.35E-06	a1*a2	8.0E-06	5.3E-08	b1*b2	4.0E-06	6.6E-07	
0.1	0.01							
		a1*b2	8.0E-07	5.3E-07	b1*a2	6.7E-07	6.6E-07	
1.50E-04	1.00E-05					2.4E-06	6.7E-07	
0.534883721	0.53488372093							
1	1							
0.1	0.01							
Single								
3.41E-06	2.27E-07	a1*a2	3.4E-07	2.3E-08	b1*b2	1.8E-07	8.8E-08	
0.1	0.1							
		a1*b2	3.4E-07	2.3E-08	b1*a2	1.8E-07	8.8E-08	
1.50E-04	1.00E-05					1.8E-07	1.8E-07	
0.022727273	0.02272727273							
1	1							
0.1	0.1							
CRANE			8.5E-06	7.7E-08		2.6E-06	8.6E-07	
Rigging								
1.05E-05	6.98E-07	a1*a2	2.6E-06	3.5E-08	b1*b2	1.3E-06	3.0E-07	
0.25	0.05							
		a1*b2	5.2E-07	1.7E-07	b1*a2	3.5E-07	3.0E-07	
1.50E-04	1.00E-05					8.4E-07	3.5E-07	
0.069767442	0.06976744186							
1	1							
0.25	0.05							
TOTAL			1.1E-05	1.1E-07		3.4E-06	1.2E-06	
LOI-Range								
1.11E-04	4.46E-07	a1*a2*a3	6.9E-06	2.2E-09	b1*b2*b3	3.5E-06	1.2E-07	
0.25	0.05							
0.25	0.1	a1*b2*a3	1.4E-06	1.1E-08	b1*a2*b3			
		a1*b2*b3	5.6E-07	2.8E-08	b1*a2*a3			
10	4							
0.25	0.05	a1*a2*b3	2.8E-06	5.6E-09	b1*b2*a3	1.4E-06	1.2E-07	
0.25	0.1					1.5E-06	2.9E-07	
LOI-Mean								
3.40E-05	1.36E-05	a1*a2*a3	2.1E-06	6.8E-08	b1*b2*b3	1.1E-06	3.8E-07	
0.25	0.05							
0.25	0.1	a1*b2*a3	4.3E-07	3.4E-07	b1*a2*b3			
		a1*b2*b3	1.7E-07	8.5E-07	b1*a2*a3			
10	4							
0.25	0.05	a1*a2*b3	8.5E-07	1.7E-07	b1*b2*a3	5.1E-07	3.8E-07	
0.25	0.1					6.3E-07	3.8E-07	

Original NUREG (.2/1 Release)

Event				High	Low		Mean	Median
Two-Blk								
5.23E-05	3.49E-06	a1*a2*a3	5.2E-08	3.5E-11	b1*b2*b3	2.6E-08	1.4E-09	
0.1	0.01							
0.01	0.001	a1*b2*a3	5.2E-09	3.5E-10	b1*a2*b3			
		a1*b2*b3	5.2E-10	3.5E-09	b1*a2*a3			
1.50E-04	1.00E-05							
0.348837209	0.3488372093	a1*a2*b3	5.2E-09	3.5E-10	b1*b2*a3	2.8E-09	1.4E-09	
1	1					8.4E-09	2.0E-09	
0.01	0.001							
0.1	0.01							
Load Hgup								
6.98E-06	4.65E-07	a1*a2	7.0E-08	4.7E-10	b1*b2	3.5E-08	5.7E-09	
0.01	0.001	a1*b2	7.0E-09	4.7E-09	b1*a2	5.8E-09	5.7E-09	
						2.0E-08	5.8E-09	
1.50E-04	1.00E-05							
0.046511628	0.04651162791							
1	1							
0.01	0.001							
Random								
8.02E-05	5.35E-06	a1*a2	8.0E-06	5.3E-08	b1*b2	4.0E-06	6.6E-07	
0.1	0.01	a1*b2	8.0E-07	5.3E-07	b1*a2	6.7E-07	6.6E-07	
						2.4E-06	6.7E-07	
1.50E-04	1.00E-05							
0.534883721	0.53488372093							
1	1							
0.1	0.01							
Single								
3.41E-06	2.27E-07	a1*a2	3.4E-07	2.3E-08	b1*b2	1.8E-07	8.8E-08	
0.1	0.1	a1*b2	3.4E-07	2.3E-08	b1*a2	1.8E-07	8.8E-08	
						1.8E-07	1.8E-07	
1.50E-04	1.00E-05							
0.022727273	0.02272727273							
1	1							
0.1	0.1							
CRANE			8.5E-06	7.7E-08		2.6E-06	8.6E-07	
Rigging								
1.05E-05	6.98E-07	a1*a2	2.6E-06	3.5E-08	b1*b2	1.3E-06	3.0E-07	
0.25	0.05	a1*b2	5.2E-07	1.7E-07	b1*a2	3.5E-07	3.0E-07	
						8.4E-07	3.5E-07	
1.50E-04	1.00E-05							
0.069767442	0.06976744186							
1	1							
0.25	0.05							
TOTAL			1.1E-05	1.1E-07		3.4E-06	1.2E-06	
LOI-Range								
2.22E-05	4.46E-08	a1*a2*a3	1.4E-06	2.2E-10	b1*b2*b3	6.9E-07	1.8E-08	
0.25	0.05	a1*b2*a3	2.8E-07	1.1E-09	b1*a2*b3			
0.25	0.1	a1*b2*b3	1.1E-07	2.8E-09	b1*a2*a3			
10	4							
0.25	0.05	a1*a2*b3	5.6E-07	5.6E-10	b1*b2*a3	2.8E-07	1.8E-08	
0.25	0.1					2.9E-07	5.7E-08	
LOI-Mean								
6.80E-06	1.36E-06	a1*a2*a3	4.3E-07	6.8E-09	b1*b2*b3	2.2E-07	5.4E-08	
0.25	0.05	a1*b2*a3	8.5E-08	3.4E-08	b1*a2*b3			
0.25	0.1	a1*b2*b3	3.4E-08	8.5E-08	b1*a2*a3			
10	4							
0.25	0.05	a1*a2*b3	1.7E-07	1.7E-08	b1*b2*a3	9.4E-08	5.4E-08	
0.25	0.1					1.1E-07	6.0E-08	

New Navy NUREG Rigging

Event			High	Low		Mean	Median
Two-Blk							
6.82E-06	4.55E-07	a1*a2*a3	6.8E-09	4.5E-12	b1*b2*b3	3.4E-09	1.8E-10
0.1	0.01						
0.01	0.001	a1*b2*a3	6.8E-10	4.5E-11	b1*a2*b3		
		a1*b2*b3	6.8E-11	4.5E-10	b1*a2*a3		
1.50E-04	1.00E-05						
0.04545	0.04545	a1*a2*b3	6.8E-10	4.5E-11	b1*b2*a3	3.6E-10	1.8E-10
1	1					1.1E-09	2.6E-10
0.01	0.001						
0.1	0.01						
Load Hgup							
2.05E-05	1.36E-06	a1*a2	2.0E-07	1.4E-09	b1*b2	1.0E-07	1.7E-08
0.01	0.001						
		a1*b2	2.0E-08	1.4E-08	b1*a2	1.7E-08	1.7E-08
1.50E-04	1.00E-05					6.0E-08	1.7E-08
0.13636	0.13636						
1	1						
0.01	0.001						
Random							
9.09E-05	6.06E-06	a1*a2	9.1E-06	6.1E-08	b1*b2	4.6E-06	7.4E-07
0.1	0.01						
		a1*b2	9.1E-07	6.1E-07	b1*a2	7.6E-07	7.4E-07
1.50E-04	1.00E-05					2.7E-06	7.6E-07
0.60606	0.60606						
1	1						
0.1	0.01						
Single							
2.24E-06	1.49E-07	a1*a2	2.2E-07	1.5E-08	b1*b2	1.2E-07	5.8E-08
0.1	0.1						
		a1*b2	2.2E-07	1.5E-08	b1*a2	1.2E-07	5.8E-08
1.50E-04	1.00E-05					1.2E-07	1.2E-07
0.014925373	0.014925373						
1	1						
0.1	0.1						
CRANE			9.5E-06	7.7E-08		2.8E-06	8.9E-07
Rigging							
3.18E-05	2.12E-06	a1*a2	8.0E-06	1.1E-07	b1*b2	4.0E-06	9.2E-07
0.25	0.05						
		a1*b2	1.6E-06	5.3E-07	b1*a2	1.1E-06	9.2E-07
1.50E-04	1.00E-05					2.5E-06	1.1E-06
0.21212	0.21212						
1	1						
0.25	0.05						
TOTAL			1.7E-05	1.8E-07		5.4E-06	2.0E-06
LOI-Range							
7.63E-05	8.67E-07	a1*a2*a3	4.8E-06	4.3E-09	b1*b2*b3	2.4E-06	1.4E-07
0.25	0.05						
0.25	0.1	a1*b2*a3	9.5E-07	2.2E-08	b1*a2*b3		
		a1*b2*b3	3.8E-07	5.4E-08	b1*a2*a3		
3	6						
0.25	0.05	a1*a2*b3	1.9E-06	1.1E-08	b1*b2*a3	9.6E-07	1.4E-07
0.25	0.1					1.0E-06	2.2E-07
LOI-Mean							
2.38E-05	3.24E-05	a1*a2*a3	1.5E-06	1.6E-07	b1*b2*b3	8.3E-07	4.9E-07
0.25	0.05						
0.25	0.1	a1*b2*a3	3.0E-07	8.1E-07	b1*a2*b3		
		a1*b2*b3	1.2E-07	2.0E-06	b1*a2*a3		
3	6						
0.25	0.05	a1*a2*b3	6.0E-07	4.0E-07	b1*b2*a3	5.0E-07	4.9E-07
0.25	0.1					7.4E-07	5.0E-07

New Navy WIPP Rigging

Event			High	Low		Mean	Median
Two-Blk							
6.82E-06	4.55E-07	a1*a2*a3	6.8E-09	4.5E-12	b1*b2*b3	3.4E-09	1.8E-10
0.1	0.01						
0.01	0.001	a1*b2*a3	6.8E-10	4.5E-11	b1*a2*b3		
		a1*b2*b3	6.8E-11	4.5E-10	b1*a2*a3		
1.50E-04	1.00E-05						
0.04545	0.04545	a1*a2*b3	6.8E-10	4.5E-11	b1*b2*a3	3.6E-10	1.8E-10
1	1					1.1E-09	2.6E-10
0.01	0.001						
0.1	0.01						
Load Hgup							
2.05E-05	1.36E-06	a1*a2	2.0E-07	1.4E-09	b1*b2	1.0E-07	1.7E-08
0.01	0.001	a1*b2	2.0E-08	1.4E-08	b1*a2	1.7E-08	1.7E-08
						6.0E-08	1.7E-08
1.50E-04	1.00E-05						
0.13636	0.13636						
1	1						
0.01	0.001						
Random							
9.09E-05	6.06E-06	a1*a2	9.1E-06	6.1E-08	b1*b2	4.6E-06	7.4E-07
0.1	0.01	a1*b2	9.1E-07	6.1E-07	b1*a2	7.6E-07	7.4E-07
						2.7E-06	7.6E-07
1.50E-04	1.00E-05						
0.60606	0.60606						
1	1						
0.1	0.01						
Single							
2.24E-06	1.49E-07	a1*a2	2.2E-07	1.5E-08	b1*b2	1.2E-07	5.8E-08
0.1	0.1	a1*b2	2.2E-07	1.5E-08	b1*a2	1.2E-07	5.8E-08
						1.2E-07	1.2E-07
1.50E-04	1.00E-05						
0.014925373	0.014925373						
1	1						
0.1	0.1						
CRANE							
Rigging							
			9.5E-06	7.7E-08		2.8E-06	8.9E-07
8.70E-07	8.70E-07	a1*a2	8.7E-07	8.7E-07	b1*b2	8.7E-07	8.7E-07
1	1	a1*b2	8.7E-07	8.7E-07	b1*a2	8.7E-07	8.7E-07
						8.7E-07	8.7E-07
8.70E-07	8.70E-07						
1	1						
1	1						
0.25	0.05						
TOTAL			1.0E-05	9.5E-07		3.7E-06	1.8E-06
LOI-Range							
3.38E-05	5.45E-06	a1*a2*a3	2.1E-06	2.7E-08	b1*b2*b3	1.1E-06	2.4E-07
0.25	0.05						
0.25	0.1	a1*b2*a3	4.2E-07	1.4E-07	b1*a2*b3		
		a1*b2*b3	1.7E-07	3.4E-07	b1*a2*a3		
3	6						
0.25	0.05	a1*a2*b3	8.4E-07	6.8E-08	b1*b2*a3	4.6E-07	2.4E-07
0.25	0.1					5.2E-07	2.5E-07
LOI-Mean							
1.38E-05	2.23E-05	a1*a2*a3	8.6E-07	1.1E-07	b1*b2*b3	4.9E-07	3.1E-07
0.25	0.05						
0.25	0.1	a1*b2*a3	1.7E-07	5.6E-07	b1*a2*b3		
		a1*b2*b3	6.9E-08	1.4E-06	b1*a2*a3		
3	6						
0.25	0.05	a1*a2*b3	3.4E-07	2.8E-07	b1*b2*a3	3.1E-07	3.1E-07
0.25	0.1					4.7E-07	3.1E-07

Orig .2/.1

High	8.0E-07	1.4E-06
Average	4.0E-07	6.9E-07
Mean	1.3E-07	2.2E-07
Median	2.0E-08	2.9E-08
Low	6.9E-10	2.2E-10

Original NUREG-0612 0.2/0.1 Release Fraction
New Navy Data and WIPP Rigging Model
Using mean failure rate

New Navy Data and NUREG Rigging Model

Orig 1.0

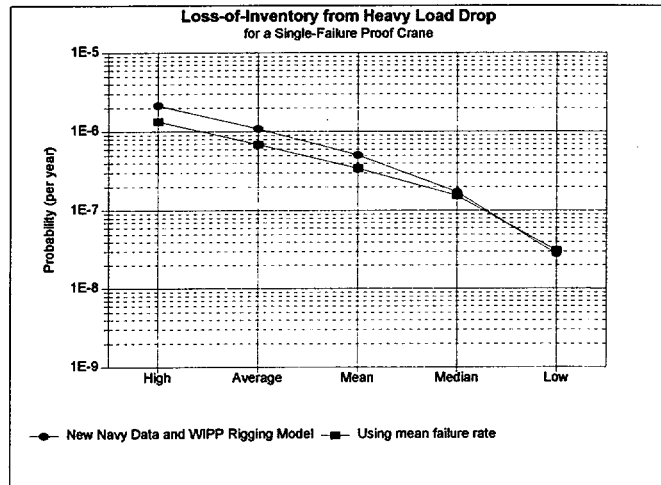
High	4.0E-06	6.9E-06
Average	2.0E-06	3.5E-06
Mean	8.5E-07	1.5E-06
Median	2.0E-07	2.9E-07
Low	6.9E-09	2.2E-09

NNavy

High	2.8E-06	4.8E-06
Average	1.4E-06	2.4E-06
Mean	6.2E-07	1.0E-06
Median	1.9E-07	2.2E-07
Low	1.2E-08	4.4E-09

NN/WIPP

High	1.3E-06	2.1E-06
Average	6.9E-07	1.1E-06
Mean	3.4E-07	5.0E-07
Median	1.5E-07	1.7E-07
Low	3.1E-08	2.8E-08



Heavy Loads NUREG-0612 Evaluation
Data Sheet 2(B-1) As presented in NUREG-0612

1.5E-04 2.0E-07 5.5E-06

Event	Description	Units	Geo			
			High	Low	Median	Mean
N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	3.9E-05	8.0E-05
	Crane Failure					
F1	Fraction of load hangup events (2/43 1970s Navy data)	—	0.05	0.05		
CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07		
CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	5.7E-09	3.5E-08
F2	Fraction of component failure events (23/43 1970s Navy data)	—	0.53	0.53		
CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06		
CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	6.6E-07	4.0E-06
F3	Fraction of two-blocking events (15/43 1970s Navy data)	—	0.35	0.35		
CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06		
CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	1.4E-09	2.6E-08
F4	Fraction of single component failure (1/44 1970s Navy data)	—	0.02	0.02		
F4'	Credit for NUREG-0554	/demand	0.10	0.10		
CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	3.4E-07	2.3E-08	8.8E-08	1.8E-07
CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.6E-06	7.7E-08	7.5E-07	4.3E-06
D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	6	7
CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	5.1E-06	4.3E-05
	Rigging failure - Based on NUREG_0612 method					
F5	Fraction of improper rigging events (3/43 1970s Navy data)	—	0.07	0.07		
CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07	2.7E-06	5.6E-06
CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05		
RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	3.0E-07	1.3E-06
D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	6	7
CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	1.9E-06	1.3E-05
FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	1.1E-06	5.6E-06
CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	7.0E-06	5.6E-05

Loss-of-inventory for a single-failure proof crane

RF	Fraction of year over which a release may occur	—	0.20	0.10	0.14	0.15
P	Fraction of path near/over pool	—	0.25	0.05	0.11	0.15
P'	Fraction of path critical for load drop	—	0.25	0.10	0.16	0.18
LOI-S	(CFCR) * P * P' * RF	/year	1.4E-06	2.2E-10	1.8E-08	6.9E-07
Loss-of-inventory for a non single-failure proof crane						
CFCRNON	Failures leading to a dropped load (NUREG-0612 Fig B-2, Event 2.1.1)	No.	1.5E-04	2.0E-07	5.5E-06	7.5E-05
RF	Fraction of year over which a release may occur (Fig B-2, Event 2.1.2)	—	0.20	0.10	0.14	0.15
LOI-N	(CFCRNON) * RF	/year	3.0E-05	2.0E-08	7.7E-07	1.5E-05
	Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	—	22	90	44	22

Heavy Loads NUREG-0612 Evaluation
Data Sheet 2(B-1) RF of 1 for current storage configuration

Heavy Loads NUREG-0612 Evaluation Data Sheet 2(B-1) RF of 1 for current storage configuration			1.5E-04	2.0E-07	5.5E-06	
Event	Description	Units	High	Low	Geo Median	Mean
N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	3.9E-05	8.0E-05
	Crane Failure					
F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05		
CF11	Operator error leading to load hangup (N0*F1))	/year	7.0E-06	4.7E-07		
CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	5.7E-09	3.5E-08
F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53		
CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06		
CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	6.6E-07	4.0E-06
F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35		
CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06		
CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	1.4E-09	2.6E-08
F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02		
F4'	Credit for NUREG-0554	/demand	0.10	0.10		
CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	3.4E-07	2.3E-08	8.8E-08	1.8E-07
CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	7.5E-07	4.3E-06
D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	6	7
CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	5.1E-06	4.3E-05
	Rigging failure - Based on NUREG-0612 method					
F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07		
CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07	2.7E-06	5.6E-06
CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05		
RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	3.0E-07	1.3E-06
D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	6	7
CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	1.9E-06	1.3E-05
FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	1.1E-06	5.6E-06
CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	7.0E-06	5.6E-05
	Loss-of-inventory for a single-failure proof crane					
RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00	1.00
P	Fraction of path near/over pool	---	0.25	0.05	0.11	0.15
P'	Fraction of path critical for load drop	---	0.25	0.10	0.16	0.18
LOI-S	(CFCR) * P * P' * RF	/year	6.9E-06	2.2E-09	1.2E-07	3.5E-06
	Loss-of-inventory for a non single-failure proof crane					
CFCRNON	Failures leading to a dropped load (NUREG-0612 Fig B-2, Event 2.1.1)	No.	1.5E-04	2.0E-07	5.5E-06	7.5E-05
RF	Fraction of year over which a release may occur (current configuration)	---	1.00	1.00	1.00	1.00
LOI-N	(CFCRNON) * RF	/year	1.5E-04	2.0E-07	5.5E-06	7.5E-05
	Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	22	90	44	22

Heavy Loads NUREG-0612 Evaluation
Data Sheet 2(B-1) (Based on new Navy Data)

1.5E-04 2.0E-07 5.5E-06

Event	Description	Units	Geo			
			High	Low	Median	Mean
N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	3.9E-05	8.0E-05
	Crane Failure					
F1	Fraction of load hangup events (new 1990s Navy data)	—	0.14	0.14		
CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06		
CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	1.7E-08	1.0E-07
F2	Fraction of component failure events (new 1990s Navy data)	—	0.61	0.61		
CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06		
CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	7.4E-07	4.6E-06
F3	Fraction of two-blocking events (new 1990s Navy data)	—	0.05	0.05		
CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07		
CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	1.8E-10	3.4E-09
F4	Fraction of single component failure (new 1990s Navy data)	—	0.01	0.01		
F4'	Credit for NUREG-0554	/demand	0.10	0.10		
CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-07	1.5E-08	5.8E-08	1.2E-07
CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	8.2E-07	4.8E-06
D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	3	3
CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	2.6E-06	1.5E-05
	Rigging failure - Based on NUREG-0612 method					
F5	Fraction of improper rigging events (new 1990ss Navy data)	—	0.21	0.21		
CR11	Failure due to improper rigging (N0*F5)	/year	3.2E-05	2.1E-06	8.2E-06	1.7E-05
CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05		
RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.0E-06	1.1E-07	9.2E-07	4.0E-06
D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6	6	6
CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	4.8E-05	6.4E-07	5.6E-06	2.4E-05
FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.7E-05	1.8E-07	1.7E-06	8.8E-06
CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	7.7E-05	8.8E-07	8.2E-06	3.9E-05
	Loss-of-inventory for a single-failure proof crane					
RF	Fraction of year over which a release may occur	—	1.00	1.00	1.00	1.00
P	Fraction of path near/over pool	—	0.25	0.05	0.11	0.15
P'	Fraction of path critical for load drop	—	0.25	0.10	0.16	0.18
LOI-S	(CFCR) * P * P' * RF	/year	4.8E-06	4.4E-09	1.5E-07	2.4E-06
	Loss-of-inventory for a non single-failure proof crane					
CFCRNON	Failures leading to a dropped load (0.5 * NUREG-0612 Fig B-2, Event 2.1.1 No.		7.5E-05	1.0E-07	2.7E-06	3.8E-05
RF	Fraction of year over which a release may occur (current configuration)	—	1.00	1.00	1.00	1.00
LOI-N	(CFCRNON) * RF	/year	7.5E-05	1.0E-07	2.7E-06	3.8E-05
	Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	—	16	23	19	16

Heavy Loads NUREG-0612 Evaluation (Based on new Navy Data AND WIPP Rigging Evaluation)		1.5E-04 2.0E-07 5.5E-06				
Event	Description	Units	Geo			
			High	Low	Median	Mean
N0	Base range of failure of handling system Crane Failure	/year	1.5E-04	1.0E-05	3.9E-05	8.0E-05
F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14		
CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06		
CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	1.7E-08	1.0E-07
F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61		
CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06		
CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	7.4E-07	4.6E-06
F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05		
CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07		
CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	1.8E-10	3.4E-09
F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01		
F4'	Credit for NUREG-0554	/demand	0.10	0.10		
CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-07	1.5E-08	5.8E-08	1.2E-07
CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	8.2E-07	4.8E-06
D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	3	3
CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	2.6E-06	1.5E-05
	Rigging failure - Based on WIPP method					
F5	Fraction of improper rigging events (new 1990ss Navy data)	---	0.21	0.21		
CR11	Failure due to improper rigging (from WIPP report)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07
CR12	Failure of redundant/alternate rigging (considered as part of CR11)	/demand	1	1		
RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07
D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6	6	6
CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	5.3E-06	5.3E-06	5.3E-06	5.3E-06
FHSL	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.0E-05	9.5E-07	1.7E-06	5.7E-06
CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	3.4E-05	5.5E-06	7.9E-06	2.0E-05
	Loss-of-inventory for a single-failure proof crane					
RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00	1.00
P	Fraction of path near/over pool	---	0.25	0.05	0.11	0.15
P'	Fraction of path critical for load drop	---	0.25	0.10	0.16	0.18
LOI-S	(CFCR) * P * P' * RF	/year	2.1E-06	2.8E-08	2.4E-07	1.1E-06
	Loss-of-inventory for a non single-failure proof crane					
CFCRNON	Failures leading to a dropped load (0.5 * NUREG-0612 Fig B-2, Event 2.1.1 No.		7.5E-05	1.0E-07	2.7E-06	3.8E-05
RF	Fraction of year over which a release may occur (current configuration)	---	1.00	1.00	1.00	1.00
LOI-N	(CFCRNON) * RF	/year	7.5E-05	1.0E-07	2.7E-06	3.8E-05
	Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	70	7	11	35

Summary of 1990s Navy Data

		ID	Non-rig	Rig	Total
Data summary by count					
	Crane collision	CC	11	0	11
	Damaged crane	DC	13	5	18
	Damaged load	DL	1	2	3
	Dropped load	DD	2	4	6
	Load collision	LC	7	2	9
	Other	OO	1	0	1
	Overload	OL	5	3	8
	Personnel injury	PI	2	3	5
	Shock	SK	0	1	1
	Two-blocking	TB	3	0	3
	Unidentified	UD	1	0	1
	Totals		46	20	66
		Fraction			
F1	OL + 0.5*(DL+LC)	0.14	9		
F2	CC + DC + 0.5(DL+LC) + DD + OO + PI + SK +UD	0.52	34		
F3	TB	0.05	3		
F4	1/67 events (assume none in 66)				
F5	Rigging	0.30		20	
	Totals	1.00	46	20	66

Summary of 1990s Navy Data

		ID	Non-rig	Rigging	Total
Summary by Accident Type (fraction of events)					
	Crane collision	CC	0.17	0.00	0.17
	Damaged crane	DC	0.20	0.08	0.27
	Damaged load	DL	0.02	0.03	0.05
	Dropped load	DD	0.03	0.06	0.09
	Load collision	LC	0.11	0.03	0.14
	Other	OO	0.02	0.00	0.02
	Overload	OL	0.08	0.05	0.12
	Personnel injury	PI	0.03	0.05	0.08
	Shock	SK	0.00	0.02	0.02
	Two-blocking	TB	0.05	0.00	0.05
	Unidentified	UD	0.02	0.00	0.02
	Totals		0.70	0.30	1.00
Summary by Accident Cause (fraction of total events)					
	Improper operation	IO	0.38		
	Procedures	PROC	0.20		
	Equipment failure	EQ	0.05		
	Improper rigging	IR	0.30		
	Others	OTHER	0.08		
	Totals		1.00		
Application of new Navy data to heavy load drop evaluation					
				-612	
F1	$OL + 0.5*(DL+LC)$		0.14	0.05	
F2	$CC + DC + 0.5(DL+LC) + DD + OO + PI + SK + UD + 0.3*IR$		0.61	0.53	
F3	TB		0.05	0.35	
F4	1/67 events (assume none in 66)		(.01)	(1/44)	
F5	Rigging 0.7*IR		0.21	0.07	
	Totals		1.00	1.00	

nureg

High	6.9E-06	4.8E-06	2.1E-06	2.1E-06
Mean				5.0E-07
Median	1.2E-07	1.5E-07	2.4E-07	1.7E-07
Dep				
Low	2.2E-09	4.4E-09	2.8E-08	2.8E-08

6.9E-07	2.9E-07	5.7E-08
3.5E-06	1.5E-06	2.9E-07
2.4E-06	1.0E-06	2.2E-07
1.1E-06	5.2E-07	2.5E-07

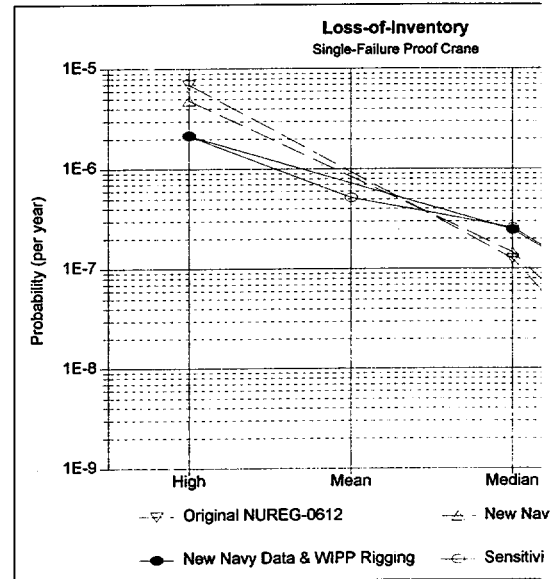
Original NUREG-0612

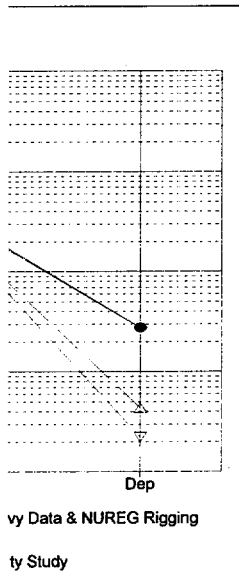
New Navy

New Navy Data & WIPP Rigging

Sensitivity Study

1.4E-06		1.8E-08	2.2E-10
6.9E-06		1.2E-07	2.2E-09
4.8E-06		1.5E-07	4.4E-09
2.1E-06		2.4E-07	2.8E-08
2.1E-06	5.2E-07	2.5E-07	2.8E-08





DRAFT

A	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet NI				
2		As presented in NUREG-0612				
3						
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05
6		Crane Failure				
7	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	1.8E-08
11	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53	
12	CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	2.1E-06
15	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	1.6E-08
20	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	3.4E-07	2.3E-08	1.2E-07
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	2.2E-06
24	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	2.2E-05
26		Rigging failure - Based on NUREG-0612 method				
27	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07	
28	CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07	3.8E-06
29	CR12	Failure of redundant/alternate rigging	/demand	2.5E-01	5.0E-02	
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	7.1E-07
31	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	6.8E-06
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	3.0E-06
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	2.9E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	0.20	0.10	0.14
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16
41	LOI-S	(CFCR) * P * P' * RF	/year	1.4E-06	2.2E-10	8.6E-08
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-04	2.0E-07	4.1E-05
45	RF	Fraction of year over which a release may occur	---	0.20	0.10	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	3.0E-05	2.0E-08	9.2E-06
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	22	90	106

09-29-99

DRAFT

A	G	H	I	J	K
1		mu	sigma	std dev	
2					
3					
4	Mean				
5		-10.16	0.82	5.3E-05	
6					
7		-3.07	-0.00	0.0E+00	
8		-13.23	0.82	2.5E-06	
9		-5.76	0.70	3.2E-03	
10	0.0E+00	-18.98	1.52	5.5E-08	ERR
11		-0.63	-0.00	0.0E+00	
12		-10.78	0.82	2.9E-05	
13		-3.45	0.70	3.2E-02	
14	0.0E+00	-14.24	1.52	6.3E-06	ERR
15		-1.05	-0.00	0.0E+00	
16		-11.21	0.82	1.9E-05	
17		-5.76	0.70	3.2E-03	
18		-3.45	0.70	3.2E-02	
19	0.0E+00	-20.42	2.22	1.9E-07	ERR
20		-3.78	-0.00	0.0E+00	
21		-2.30	-0.00	0.0E+00	
22	0.0E+00	-16.25	0.82	1.2E-07	ERR
23	8.1E-07	-14.03	1.43	5.8E-06	2.78
24		1.84	0.28	1.9E+00	
25	0.0E+00	-12.19	1.71	9.2E-05	ERR
26					
27		-2.66	0.00	0.0E+00	
28	2.7E-06	-12.82	0.82	3.7E-06	
29					
30	3.0E-07	-15.01	1.31	1.5E-06	2.37
31	6	1.84	0.28	1.9E+00	
32	1.9E-06	-13.17	1.59	2.3E-05	3.54
33					
34	1.1E-06	-13.71	1.40	7.3E-06	2.67
35	1.9E-06	-11.86	1.68	1.1E-04	15.05
36					0.00
37					0.00
38	1.4E-01	-1.96	0.21	3.1E-02	
39	1.1E-01	-2.19	0.49	6.6E-02	
40	1.6E-01	-1.84	0.28	4.7E-02	
41	5.7E-09	-17.86	2.66	2.0E-05	15.05
42					0.00
43					
44	5.5E-06	-12.11	2.01	3.1E-04	
45	0.14	-1.96	0.21	3.1E-02	
46	7.7E-07	-14.07	2.22	1.1E-04	
47					
48	44	3.78	-0.43	2.2E+01	

09-29-99

DRAFT

B	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N!				
2		Based on release fraction of 1 for current storage configuration				
3						
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05
6		Crane Failure				
7	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	1.8E-08
11	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53	
12	CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	2.1E-06
15	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	1.6E-08
20	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	3.4E-07	2.3E-08	1.2E-07
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	2.2E-06
24	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	2.2E-05
26		Rigging failure - Based on NUREG-0612 method				
27	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07	
28	CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07	3.8E-06
29	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05	
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	7.1E-07
31	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	6.8E-06
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	3.0E-06
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	2.9E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16
41	LOI-S	(CFCR) * P * P' * RF	/year	6.9E-06	2.2E-09	6.0E-07
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-04	2.0E-07	4.1E-05
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	1.5E-04	2.0E-07	4.1E-05
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	22	90	70

09-29-99

DRAFT

B	G	H	I	J	K
1		mu	sigma	std dev	
2					
3					
4	Mean				
5		-10.16	0.82	5.3E-05	
6					
7		-3.07	-0.00	0.0E+00	
8		-13.23	0.82	2.5E-06	
9		-5.76	0.70	3.2E-03	
10	0.0E+00	-18.98	1.52	5.5E-08	ERR
11		-0.63	-0.00	0.0E+00	
12		-10.78	0.82	2.9E-05	
13		-3.45	0.70	3.2E-02	
14	0.0E+00	-14.24	1.52	6.3E-06	ERR
15		-1.05	-0.00	0.0E+00	
16		-11.21	0.82	1.9E-05	
17		-5.76	0.70	3.2E-03	
18		-3.45	0.70	3.2E-02	
19	0.0E+00	-20.42	2.22	1.9E-07	ERR
20		-3.78	-0.00	0.0E+00	
21		-2.30	-0.00	0.0E+00	
22	0.0E+00	-16.25	0.82	1.2E-07	ERR
23	8.1E-07	-14.03	1.43	5.8E-06	2.78
24		1.84	0.28	1.9E+00	
25	0.0E+00	-12.19	1.71	9.2E-05	ERR
26					
27		-2.66	0.00	0.0E+00	
28	2.7E-06	-12.82	0.82	3.7E-06	
29					
30	3.0E-07	-15.01	1.31	1.5E-06	2.37
31	6	1.84	0.28	1.9E+00	
32	1.9E-06	-13.17	1.59	2.3E-05	3.54
33					
34	1.1E-06	-13.71	1.40	7.3E-06	2.67
35	1.9E-06	-11.86	1.68	1.1E-04	15.05
36					0.00
37					0.00
38	1.0E+00	0.00	0.00	0.0E+00	
39	1.1E-01	-2.19	0.49	6.6E-02	
40	1.6E-01	-1.84	0.28	4.7E-02	
41	4.0E-08	-15.90	2.44	4.9E-05	15.05
42					0.00
43					
44	5.5E-06	-12.11	2.01	3.1E-04	
45	1.00	0.00	0.00	0.0E+00	
46	5.5E-06	-12.11	2.01	3.1E-04	
47					
48	44	3.78	-0.43	2.2E+01	

09-29-99

DRAFT

C	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet NI				
2		(Based on new Navy Data)				
3						
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05
6		Crane Failure				
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	5.3E-08
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	
12	CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	2.4E-06
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	2.1E-09
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-07	1.5E-08	8.1E-08
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	2.5E-06
24	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	7.6E-06
26		Rigging failure - Based on NUREG-0612 method				
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	
28	CR11	Failure due to improper rigging (N0*F5)	/year	3.2E-05	2.1E-06	1.2E-05
29	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05	
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.0E-06	1.1E-07	2.2E-06
31	D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	4.8E-05	6.4E-07	1.3E-05
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.7E-05	1.8E-07	4.7E-06
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	7.7E-05	8.8E-07	2.1E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16
41	LOI-S	(CFCR) * P * P' * RF	/year	4.8E-06	4.4E-09	4.3E-07
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.1E-05
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	16	23	48

09-29-99

DRAFT

C	G	H	I	J	K
1		mu	sigma	std dev	
2					
3					
4	Mean				
5		-10.16	0.82	5.3E-05	
6					
7		-1.99	0.00	0.0E+00	
8		-12.15	0.82	7.3E-06	
9		-5.76	0.70	3.2E-03	
10	0.0E+00	-17.91	1.52	1.6E-07	ERR
11		-0.50	0.00	0.0E+00	
12		-10.66	0.82	3.2E-05	
13		-3.45	0.70	3.2E-02	
14	0.0E+00	-14.11	1.52	7.2E-06	ERR
15		-3.09	-0.00	0.0E+00	
16		-13.25	0.82	2.4E-06	
17		-5.76	0.70	3.2E-03	
18		-3.45	0.70	3.2E-02	
19	0.0E+00	-22.46	2.22	2.5E-08	ERR
20		-4.20	-0.00	0.0E+00	
21		-2.30	-0.00	0.0E+00	
22	0.0E+00	-16.67	0.82	8.0E-08	ERR
23	8.6E-07	-13.97	1.46	6.9E-06	2.93
24		1.11	-0.00	0.0E+00	
25	0.0E+00	-12.86	1.46	2.1E-05	ERR
26					
27		-1.55	0.00	0.0E+00	
28	8.2E-06	-11.71	0.82	1.1E-05	
29					
30	9.2E-07	-13.90	1.31	4.7E-06	2.37
31	6	1.80	-0.00	0.0E+00	
32	5.6E-06	-12.10	1.31	2.8E-05	2.37
33					
34	1.8E-06	-13.23	1.39	1.1E-05	2.64
35	5.6E-06	-11.71	1.36	4.8E-05	3.73
36					0.00
37					0.00
38	1.0E+00	0.00	0.00	0.0E+00	
39	1.1E-01	-2.19	0.49	6.6E-02	
40	1.6E-01	-1.84	0.28	4.7E-02	
41	1.2E-07	-15.74	2.13	1.3E-05	3.73
42					0.00
43					
44	2.7E-06	-12.81	2.01	1.6E-04	
45	1.00	0.00	0.00	0.0E+00	
46	2.7E-06	-12.81	2.01	1.6E-04	
47					
48	19	2.94	-0.12	2.2E+00	

09-29-99

DRAFT

D	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1				
2		(Based on new Navy Data AND WIPP Rigging Evaluation)				
3						
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05
6		Crane Failure				
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	5.3E-08
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	
12	CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	2.4E-06
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	2.1E-09
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-07	1.5E-08	8.1E-08
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	2.5E-06
24	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	7.6E-06
26		Rigging failure - Based on WIPP method				
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	
28	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	8.7E-07
29	CR12	Failure of redundant/alternate rigging	N/A			
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07
31	D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	5.3E-06	5.3E-06	5.3E-06
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.0E-05	9.5E-07	3.4E-06
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	3.4E-05	5.5E-06	1.3E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16
41	LOI-S	(CFCR) * P * P' * RF	/year	2.1E-06	2.8E-08	2.7E-07
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.1E-05
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	35	4	78

09-29-99

DRAFT

D	G	H	I	J	K	L	M	N	O	P	Q
1		mu	sigma	std dev							
2											
3											
4	Mean										
5		-10.16	0.82	5.3E-05							
6											
7		-1.99	0.00	0.0E+00							
8		-12.15	0.82	7.3E-06							
9		-5.76	0.70	3.2E-03							
10	0.0E+00	-17.91	1.52	1.6E-07	ERR						
11		-0.50	0.00	0.0E+00							
12		-10.66	0.82	3.2E-05							
13		-3.45	0.70	3.2E-02							
14	0.0E+00	-14.11	1.52	7.2E-06	ERR						
15		-3.09	-0.00	0.0E+00							
16		-13.25	0.82	2.4E-06							
17		-5.76	0.70	3.2E-03							
18		-3.45	0.70	3.2E-02							
19	0.0E+00	-22.46	2.22	2.5E-08	ERR						
20		-4.20	-0.00	0.0E+00							
21		-2.30	-0.00	0.0E+00							
22	0.0E+00	-16.67	0.82	8.0E-08	ERR						
23	8.6E-07	-13.97	1.46	6.9E-06	2.93						
24		1.11	-0.00	0.0E+00							
25	0.0E+00	-12.86	1.46	2.1E-05	ERR						
26											
27		-1.55	0.00	0.0E+00							
28	8.7E-07	-13.95	0.00	0.0E+00							
29											
30	8.7E-07	-13.95	0.00	0.0E+00	1.00			8.7E-07			
31	6	1.80	-0.00	0.0E+00							
32	5.3E-06	-12.15	0.00	0.0E+00	1.00			5.3E-06			
33											
34	1.7E-06	-12.67	0.73	3.4E-06	1.95			3.1E-06			
35	5.3E-06	-11.20	0.55	9.6E-06	2.44			1.4E-05			
36					0.00						
37					0.00						
38	1.0E+00	0.00	0.00	0.0E+00							
39	1.1E-01	-2.19	0.49	6.6E-02							
40	1.6E-01	-1.84	0.28	4.7E-02							
41	1.1E-07	-15.23	1.32	1.3E-06	2.44	8E-07	6.4E-08	2.4E-07	2.3E-07	-15.30	0.77
42					0.00						
43											
44	2.7E-06	-12.81	2.01	1.6E-04							
45	1.00	0.00	0.00	0.0E+00							
46	2.7E-06	-12.81	2.01	1.6E-04							
47											
48	11	2.42	0.69	1.1E+01							

09-29-99

DRAFT

D	R
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	2.7E-07
42	
43	
44	
45	
46	
47	
48	

09-29-99

DRAFT

E	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1		7.1E-04	2.7E-04	
2		(Based on new Navy Data AND WIPP Rigging Evaluation)				
3		NEI 95% C-level				
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	7.1E-04	2.7E-04	4.6E-04
6		Crane Failure				
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	9.7E-05	3.7E-05	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	9.7E-07	3.7E-08	3.1E-07
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	
12	CF21	Failure of single component with a backup (N0*F2)	/year	4.3E-04	1.6E-04	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	4.3E-05	1.6E-06	1.4E-05
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	3.2E-05	1.2E-05	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	3.2E-08	1.2E-10	8.4E-09
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	1.1E-06	4.0E-07	6.8E-07
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	4.5E-05	2.1E-06	1.5E-05
24	D1	Lifts per year leading to drop set to 1	No.	1	1	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	4.5E-05	2.1E-06	1.5E-05
26		Rigging failure - Based on WIPP method				
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	
28	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	8.7E-07
29	CR12	Failure of redundant/alternate rigging	N/A			
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07
31	D2	Lifts per year leading to drop set to 1	No.	1	1	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	8.7E-07	8.7E-07	8.7E-07
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	4.6E-05	2.9E-06	1.6E-05
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	4.6E-05	2.9E-06	1.6E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16
41	LOI-S	(CFCR) * P * P' * RF	/year	2.9E-06	1.5E-08	3.3E-07
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.1E-05
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	26	7	63

09-29-99

DRAFT

E	G	H	I	J	K
1		mu	sigma	std dev	
2					
3					
4	Mean				
5		-7.73	0.30	1.4E-04	
6					
7		-1.99	0.00	0.0E+00	
8		-9.73	0.30	1.9E-05	
9		-5.76	0.70	3.2E-03	
10	0.0E+00	-15.48	1.00	4.1E-07	ERR
11		-0.50	0.00	0.0E+00	
12		-8.24	0.30	8.4E-05	
13		-3.45	0.70	3.2E-02	
14	0.0E+00	-11.69	1.00	1.8E-05	ERR
15		-3.09	-0.00	0.0E+00	
16		-10.83	0.30	6.3E-06	
17		-5.76	0.70	3.2E-03	
18		-3.45	0.70	3.2E-02	
19	0.0E+00	-20.04	1.70	3.5E-08	ERR
20		-4.20	-0.00	0.0E+00	
21		-2.30	-0.00	0.0E+00	
22	0.0E+00	-14.24	0.30	2.1E-07	ERR
23	9.7E-06	-11.55	0.94	1.8E-05	1.53
24		0.00	0.00	0.0E+00	
25	0.0E+00	-11.55	0.94	1.8E-05	ERR
26					
27		-1.55	0.00	0.0E+00	
28	8.7E-07	-13.95	0.00	0.0E+00	
29					
30	8.7E-07	-13.95	0.00	0.0E+00	1.00
31	1	0.00	0.00	0.0E+00	
32	8.7E-07	-13.95	0.00	0.0E+00	1.00
33					
34	1.1E-05	-11.36	0.84	1.7E-05	1.49
35	8.7E-07	-11.36	0.84	1.7E-05	18.28
36					0.00
37					0.00
38	1.0E+00	0.00	0.00	0.0E+00	
39	1.1E-01	-2.19	0.49	6.6E-02	
40	1.6E-01	-1.84	0.28	4.7E-02	
41	1.8E-08	-15.40	1.61	2.6E-06	18.28
42					0.00
43					
44	2.7E-06	-12.81	2.01	1.6E-04	
45	1.00	0.00	0.00	0.0E+00	
46	2.7E-06	-12.81	2.01	1.6E-04	
47					
48	13	2.59	0.41	6.1E+00	

09-29-99

DRAFT

F	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1				
2		(Based on new Navy Data AND WIPP Rigging Evaluation)				
3		NEI 50% C-level				
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	1.6E-04	6.2E-05	1.0E-04
6		Crane Failure				
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	2.2E-05	8.5E-06	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	2.2E-07	8.5E-09	7.0E-08
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	
12	CF21	Failure of single component with a backup (N0*F2)	/year	9.7E-05	3.8E-05	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	9.7E-06	3.8E-07	3.1E-06
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	7.3E-06	2.8E-06	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	7.3E-09	2.8E-11	1.9E-09
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.4E-07	9.3E-08	1.5E-07
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	1.0E-05	4.8E-07	3.3E-06
24	D1	Lifts per year leading to drop set to 1	No.	1	1	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	1.0E-05	4.8E-07	3.4E-06
26		Rigging failure - Based on WIPP method				
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	
28	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	8.7E-07
29	CR12	Failure of redundant/alternate rigging	N/A			
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07
31	D2	Lifts per year leading to drop set to 1	No.	1	1	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	8.7E-07	8.7E-07	8.7E-07
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.3E-06	4.2E-06
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-05	1.3E-06	4.3E-06
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16
41	LOI-S	(CFCR) * P * P' * RF	/year	6.9E-07	6.7E-09	8.8E-08
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.1E-05
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	109	15	235

09-29-99

DRAFT

F	G	H	I	J	K
1		mu	sigma	std dev	
2					
3					
4	Mean				
5		-9.21	0.29	3.1E-05	
6					
7		-1.99	0.00	0.0E+00	
8		-11.21	0.29	4.2E-06	
9		-5.76	0.70	3.2E-03	
10	0.0E+00	-16.96	0.99	9.0E-08	ERR
11		-0.50	0.00	0.0E+00	
12		-9.72	0.29	1.9E-05	
13		-3.45	0.70	3.2E-02	
14	0.0E+00	-13.17	0.99	4.0E-06	ERR
15		-3.09	-0.00	0.0E+00	
16		-12.31	0.29	1.4E-06	
17		-5.76	0.70	3.2E-03	
18		-3.45	0.70	3.2E-02	
19	0.0E+00	-21.52	1.69	7.6E-09	ERR
20		-4.20	-0.00	0.0E+00	
21		-2.30	-0.00	0.0E+00	
22	0.0E+00	-15.72	0.29	4.6E-08	ERR
23	2.2E-06	-13.03	0.93	4.0E-06	1.52
24		0.00	0.00	0.0E+00	
25	0.0E+00	-13.03	0.93	4.0E-06	ERR
26					
27		-1.55	0.00	0.0E+00	
28	8.7E-07	-13.95	0.00	0.0E+00	
29					
30	8.7E-07	-13.95	0.00	0.0E+00	1.00
31	1	0.00	0.00	0.0E+00	
32	8.7E-07	-13.95	0.00	0.0E+00	1.00
33					
34	3.1E-06	-12.47	0.64	3.4E-06	1.37
35	8.7E-07	-12.47	0.64	3.4E-06	4.90
36					0.00
37					0.00
38	1.0E+00	0.00	0.00	0.0E+00	
39	1.1E-01	-2.19	0.49	6.6E-02	
40	1.6E-01	-1.84	0.28	4.7E-02	
41	1.8E-08	-16.50	1.41	4.6E-07	4.90
42					0.00
43					
44	2.7E-06	-12.81	2.01	1.6E-04	
45	1.00	0.00	0.00	0.0E+00	
46	2.7E-06	-12.81	2.01	1.6E-04	
47					
48	40	3.69	0.61	3.2E+01	

09-29-99

DRAFT

G	A	B	C	D	E	F	G
1		*****	7.7E-07	*****		Non-single failure estimate	
2		*****	1.8E-08	*****		Base NUREG-0612 with reduced critical time	
3		High	Median	Low	Mean	Case	High
4	Case 1	*****	1.2E-07	*****	3.5E-06	NUREG-0612	6.9E-06
5	Case 2	*****	1.5E-07	*****	2.4E-06	New Navy data, NUREG rigging model	4.8E-06
6	Case 3	*****	2.4E-07	*****	1.1E-06	New Navy data, WIPP rigging model	2.1E-06
7	Case 4	*****	1.7E-07	*****	1.1E-06	NEI 95% (new Navy/WIPP rigging)	2.2E-06
8	Case 5	*****	6.8E-08	*****	3.5E-07	5 - NEI 50% (new Navy/WIPP rigging)	6.9E-07
9	Case 6	*****	1.4E-06	*****	1.6E-05	6 - NEI 95%, NUREG-0612	3.3E-05
10	Case 7	*****	3.2E-07	*****	3.7E-06	7 - NEI 50%, NUREG-0612	7.4E-06
11	Median	5E-06	1.7E-07	1E-08	2.4E-06	Median - All cases	4.8E-06
12	GMean	4E-06	2.2E-07	1E-08	2.1E-06	Mean - All cases	7.7E-06
13	High	*****	2.2E-09			Probability of a Loss-of-Inventory from a heavy load (cask) drop	4.4E-06
14	Median	*****	4.4E-09				
15	Low	*****	2.8E-08				
16	4	*****	1.5E-08				
17							
18							
19	1	*****					
20	1	*****					
21	2	*****					
22	2	*****					
23	3	*****					
24	3	*****					
25	4	*****					
26	4	*****					
27	1						
28							
29							
30							
31							
32						High	High
33						NUREG-0612	6.9E-06
34						New Navy data, NUREG rigging model	4.8E-06
35						New Navy data, WIPP rigging model	2.1E-06
36						NEI 95% (new Navy/WIPP rigging)	2.9E-06
37							
38							High
39							
40							High
41							6.9E-06
42							4.8E-06
43							2.1E-06
44							2.9E-06
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							

09-29-99

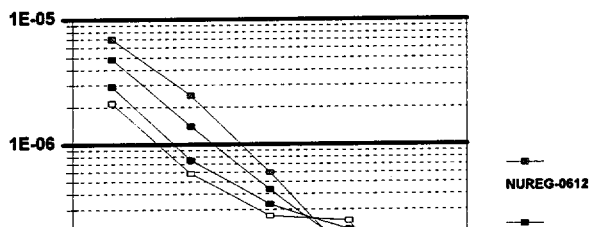
DRAFT

G	A	B	C	D	E	F	G
55							
56							
57							
58							
59							
60							
61							
62							
63							
64							
65							
66							
67							
68							

09-29-99

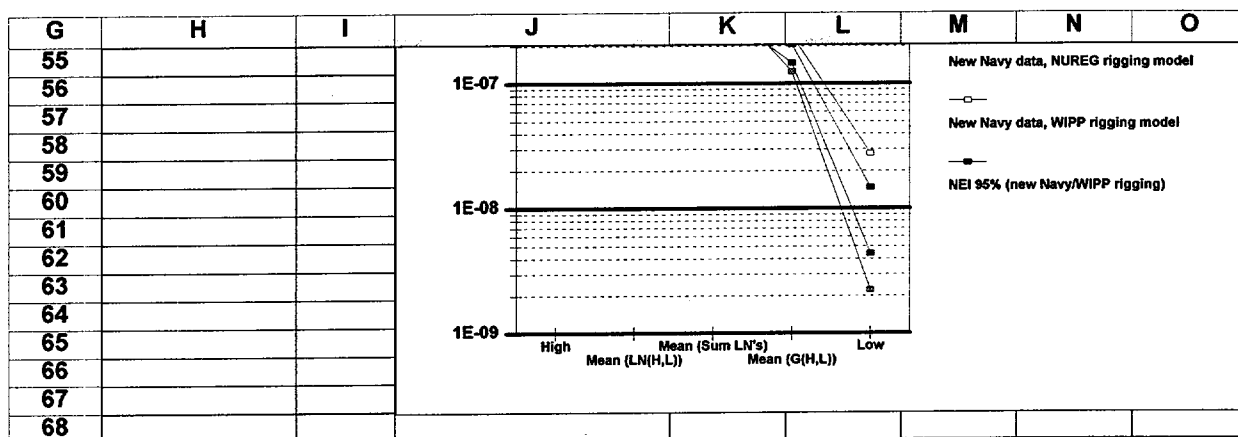
DRAFT

G	H	I	J	K	L	M	N	O
1								
2								
3	Median	Low	Average					
4	1.2E-07	2.2E-09	3.5E-06					
5	1.5E-07	4.4E-09	2.4E-06					
6	2.4E-07	2.8E-08	1.1E-06					
7	1.7E-07	1.4E-08	1.2E-06					
8	6.8E-08	6.7E-09	3.5E-07					
9	1.4E-06	6.0E-08	1.6E-05					
10	3.2E-07	1.4E-08	3.7E-06					
11	1.7E-07	1.4E-08	2.4E-06					
12	3.3E-07	1.8E-08	3.9E-06					
13	2.2E-07	1.1E-08	7.8E-06	3.4E-07	1.8E-08			
14								
15								
16			7.8E-06	3.4E-07	1.8E-08			
17								
18								
19	2.2E-07	1.1E-08	7.8E-06	3.4E-07	1.8E-08			
20	2.2E-07	1.1E-08						
21	2.1E-07	1.4E-08						
22	-1.8E-08	2.6E-09						
23	-8.53	18.99						
24								
25								
26								
27								
28								
29								
30								
31								
32	Mean	Low	GeoMean	Median		High	Low	LogNormal
33	6.0E-07	2.2E-09	1.244505969846E-07	1.5E-07		6.9E-06	2.2E-09	2.5E-06
34	4.3E-07	4.4E-09	1.4524246040398E-07	1.7E-07		4.8E-06	4.4E-09	1.4E-06
35	2.7E-07	2.8E-08	2.4236190985888E-07	1.6E-07		2.1E-06	2.8E-08	5.8E-07
36	3.3E-07	1.5E-08	2.0574019439063E-07	2.2E-07		2.9E-06	1.5E-08	7.5E-07
37								
38	Mean	Low		Mean2				
39								
40	Mean (LN(H,L))	Mean	Mean (G(H,L))	Low				
41	2.5E-06	6.0E-07	1.2E-07	2.2E-09				
42	1.4E-06	4.3E-07	1.5E-07	4.4E-09				
43	5.8E-07	2.7E-07	2.4E-07	2.8E-08				
44	7.5E-07	3.3E-07	2.1E-07	1.5E-08				
45	High							
46	Mean (LN(H,L))							
47	Mean (Sum LN's)							
48	Mean (G(H,L))							
49	Low							
50								
51								
52								
53								
54								



09-29-99

DRAFT



09-29-99

DRAFT

G	P	Q	R	S
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32	I	mu	sigma	
33		-15.90	2.44	4.9E-05
34		-15.74	2.13	1.3E-05
35		-15.23	1.32	1.3E-06
36		-15.40	1.61	2.6E-06
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				

09-29-99

DRAFT

G	P	Q	R	S
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				

09-29-99

DRAFT

H	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1				
2		(Based on new Navy Data AND WIPP Rigging Evaluation)				
3		Based on 1 incident and 1-in-1,000 lift results in a srop				
4	Event	Description	Units	High	Low	Median
5	N0	Base range of failure of handling system	/year	1	1	1
6		Crane Failure				
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	
8	CF11	Operator error leading to load hangup (N0*F1))	/year	1.4E-01	1.4E-01	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	1.4E-03	1.4E-04	4.3E-04
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	
12	CF21	Failure of single component with a backup (N0*F2)	/year	6.1E-01	6.1E-01	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	6.1E-02	6.1E-03	1.9E-02
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	4.5E-02	4.5E-02	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	4.5E-05	4.5E-07	4.5E-06
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	1.5E-03	1.5E-03	1.5E-03
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	6.4E-02	7.7E-03	2.1E-02
24	D1	Lifts per year leading to drop (1-in1,000)	No.	1.0E-03	1.0E-03	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	6.4E-05	7.7E-06	2.2E-05
26		Rigging failure - Based on WIPP method				
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	
28	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	
29	CR12	Failure of redundant/alternate rigging	N/A			
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07
31	D2	Lifts per year leading to drop (1-in1,000)	No.	1.0E-03	1.0E-03	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	8.7E-10	8.7E-10	8.7E-10
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	6.4E-02	7.7E-03	2.1E-02
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	6.4E-05	7.7E-06	2.2E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	
39	P	Fraction of path near/over pool	---	0.25	0.05	
40	P'	Fraction of path critical for load drop	---	0.25	0.10	
41	LOI-S	(CFCR) * P * P' * RF	/year	4.0E-06	3.8E-08	3.9E-07
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.7E-06
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.7E-06
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	19	3	7
I	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1				
2		Based on release fraction of 1 for current storage configuration				
3		NEI 95% confidence interval				
4	Event	Description	Units	High	Low	Median
5	N0	Base range of failure of handling system	/year	7.1E-04	2.7E-04	4.4E-04

09-29-99

DRAFT

I	A	B	C	D	E	F
6		Crane Failure				
7	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	3.3E-05	1.3E-05	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	3.3E-07	1.3E-08	6.4E-08
11	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53	
12	CF21	Failure of single component with a backup (N0*F2)	/year	3.8E-04	1.4E-04	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	3.8E-05	1.4E-06	7.4E-06
15	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	2.5E-04	9.4E-05	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	2.5E-07	9.4E-10	1.5E-08
20	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	1.6E-06	6.1E-07	1.0E-06
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	4.0E-05	2.1E-06	8.5E-06
24	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	4.0E-04	8.3E-06	5.8E-05
26		Rigging failure - Based on NUREG-0612 method				
27	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07	
28	CR11	Failure due to improper rigging (N0*F5)	/year	5.0E-05	1.9E-05	
29	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05	
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	1.2E-05	9.4E-07	3.4E-06
31	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	1.2E-04	3.8E-06	2.2E-05
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	5.3E-05	3.0E-06	1.2E-05
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	5.3E-04	1.2E-05	7.9E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	
39	P	Fraction of path near/over pool	---	0.25	0.05	
40	P'	Fraction of path critical for load drop	---	0.25	0.10	
41	LOI-S	(CFCR) * P * P' * RF	/year	3.3E-05	6.0E-08	1.4E-06
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-04	2.0E-07	5.5E-06
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	1.5E-04	2.0E-07	5.5E-06
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	5	3	4

09-29-99

DRAFT

J	A	B	C	D	E
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N!			
2		(Based on new Navy Data AND WIPP Rigging Evaluation)			
3		page 4 study, cf22 /10; cf4/10; cf1 and cf3 to ~0			
4	Event	Description	Units	High	Low
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05
6		Crane Failure			
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14
8	CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06
9	CF12	Failure of the overload device	/demand	1.0E-10	1.0E-10
10	CF1	Load hangup event (CF11*CF12)	/year	2.0E-15	1.4E-16
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61
12	CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06
13	CF22	Failure of backup component given CF21	/demand	1.0E-02	1.0E-03
14	CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-07	6.1E-09
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03
18	CF33	Failure of upper limit switch	/demand	1.0E-10	1.0E-10
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-18	4.5E-20
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01
21	F4'	Credit for NUREG-0554	/demand	1.0E-02	1.0E-02
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-08	1.5E-09
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.3E-07	7.6E-09
24	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.8E-06	2.3E-08
26		Rigging failure - Based on WIPP method			
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21
28	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07
29	CR12	Failure of redundant/alternate rigging	N/A		
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07
31	D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	5.3E-06	5.3E-06
33					
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.8E-06	8.8E-07
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	8.1E-06	5.3E-06
36					
37		Loss-of-inventory for a single-failure proof crane			
38	RF	Fraction of year over which a release may occur	---	1.00	1.00
39	P	Fraction of path near/over pool	---	0.25	0.05
40	P'	Fraction of path critical for load drop	---	0.25	0.10
41	LOI-S	(CFCR) * P * P' * RF	/year	5.1E-07	2.6E-08
42					
43		Loss-of-inventory for a non single-failure proof crane			
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07
45	RF	Fraction of year over which a release may occur	---	1.00	1.00
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07
47					
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	148	4
49					
50		Estimate of Event 2.1.1		1.50E-04	2E-07

09-29-99

DRAFT

J	F	G	H	I	J
1			mu	sigma	std dev
2					
3					
4	Mean	Mean			
5	5.4E-05		-10.16	0.82	5.3E-05
6					
7			-1.99	0.00	0.0E+00
8			-12.15	0.82	7.3E-06
9			-23.03	0.00	0.0E+00
10	7.4E-16	0.0E+00	-35.18	0.82	7.3E-16
11			-0.50	0.00	0.0E+00
12			-10.66	0.82	3.2E-05
13			-5.76	0.70	3.2E-03
14	2.4E-07	0.0E+00	-16.42	1.52	7.2E-07
15			-3.09	-0.00	0.0E+00
16			-13.25	0.82	2.4E-06
17			-5.76	0.70	3.2E-03
18			-23.03	0.00	0.0E+00
19	1.8E-18	0.0E+00	-42.03	1.52	5.4E-18
20			-4.20	-0.00	0.0E+00
21			-4.61	-0.00	0.0E+00
22	8.1E-09	0.0E+00	-18.97	0.82	8.0E-09
23	2.4E-07	8.4E-08	-16.29	1.46	6.7E-07
24			1.11	-0.00	0.0E+00
25	7.4E-07	0.0E+00	-15.19	1.46	2.0E-06
26					
27			-1.55	0.00	0.0E+00
28	8.7E-07	8.7E-07	-13.95	0.00	0.0E+00
29					
30	8.7E-07	8.7E-07	-13.95	0.00	0.0E+00
31		6	1.80	-0.00	0.0E+00
32	5.3E-06	5.3E-06	-12.15	0.00	0.0E+00
33					
34	1.1E-06	9.5E-07	-13.59	0.22	2.8E-07
35	6.0E-06	5.3E-06	-11.94	0.13	8.6E-07
36					
37					
38	1.00	1.0E+00	0.00	0.00	0.0E+00
39	0.13	1.1E-01	-2.19	0.49	6.6E-02
40	0.16	1.6E-01	-1.84	0.28	4.7E-02
41	1.2E-07	1.1E-07	-15.97	0.90	1.9E-07
42					
43					
44	2.1E-05	2.7E-06	-12.81	2.01	1.6E-04
45		1.00	0.00	0.00	0.0E+00
46	2.1E-05	2.7E-06	-12.81	2.01	1.6E-04
47					
48	166	24	3.16	1.12	6.9E+01
49					
50	4.1E-05	5.5E-06	-12.11	2.01	3.1E-04

09-29-99

DRAFT

A	A	B	C	D	E	F	G	H	I	J	K	L
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet NI						mu	sigma	std dev	Mean	EF
2		As presented in NUREG-0612										
3												
4	Event	Description	Units	High	Low	Mean	MeanHL					
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05		-10.16	0.82	5.3E-05	3.873E-05	3.873
6		Crane Failure										
7	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05	0.05		-3.07	-0.00	0.0E+00	4.651E-02	1.000
8	CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07	2.5E-06		-13.23	0.82	2.5E-06	1.801E-06	3.873
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
10	CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	1.0E-08	1.8E-08	-18.98	1.52	5.5E-08	5.696E-09	
11	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53	0.53		-0.63	-0.00	0.0E+00	5.349E-01	1.000
12	CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06	2.9E-05		-10.78	0.82	2.9E-05	2.072E-05	3.873
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
14	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	1.2E-06	2.1E-06	-14.24	1.52	6.3E-06	6.551E-07	
15	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35	0.35		-1.05	-0.00	0.0E+00	3.488E-01	1.000
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06	1.9E-05		-11.21	0.82	1.9E-05	1.351E-05	3.873
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	3.1E-09	1.6E-08	-20.42	2.22	1.9E-07	1.351E-09	
20	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02	0.02		-3.78	-0.00	0.0E+00	2.273E-02	1.000
21	F4'	Credit for NUREG-0554	/demand	0.10	0.10	0.10		-2.30	-0.00	0.0E+00	1.000E-01	1.000
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	3.4E-07	2.3E-08	1.2E-07	1.2E-07	-16.25	0.82	1.2E-07	8.802E-08	3.873
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	1.3E-06	2.2E-06	-14.03	1.43	5.8E-06	8.069E-07	
24	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	7		1.84	0.28	1.9E+00	6.325E+00	1.581
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	8.6E-06	2.2E-05	-12.19	1.71	9.2E-05	5.103E-06	
26		Rigging failure - Based on NUREG-0612 method										
27	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07	0.07		-2.66	0.00	0.0E+00	6.977E-02	1.000
28	CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07	2.7E-06		-12.82	0.82	3.7E-06	2.702E-06	3.873
29	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05	0.13		-2.19	0.49	6.6E-02		
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	3.4E-07	7.1E-07	-15.01	1.31	1.5E-06	3.021E-07	8.660
31	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	7		1.84	0.28	1.9E+00	6.325E+00	1.581
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	2.2E-06	6.8E-06	-13.17	1.59	2.3E-05	1.911E-06	13.693
33												
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	1.7E-06	3.0E-06	-13.71	1.40	7.3E-06	1.113E-06	9.974
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	1.1E-05	2.9E-05	-11.86	1.68	1.1E-04	7.040E-06	15.771
36												
37		Loss-of-inventory for a single-failure proof crane										
38	RF	Fraction of year over which a release may occur	---	0.20	0.10	0.14		-1.96	0.21	3.1E-02	1.414E-01	1.414
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13		-2.19	0.49	6.6E-02	1.118E-01	2.236
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16		-1.84	0.28	4.7E-02	1.581E-01	1.581
41	LOI-S	(CFCR) * P * P' * RF	/year	1.4E-06	2.2E-10	3.3E-08	6.0E-07	-17.86	2.66	2.0E-05	1.760E-08	
42							8.6E-08					

DRAFT

A	A	B	C	D	E	F	G	H	I	J	K	L
43		Loss-of-inventory for a non single-failure proof crane										
44	CFCRNON	Total failures leading to a dropped load (est. from NUREG-0612)	No.	1.5E-04	2.0E-07	4.1E-05		-12.11	2.01	3.1E-04	5.477E-06	27.386
45	RF	Fraction of year over which a release may occur	—	0.20	0.10	0.14		-1.96	0.21	3.1E-02	1.414E-01	1.414
46	LOI-N	(CFCRNON) * P * P' * RF	/year	3.0E-05	2.0E-08	6.0E-06	9.2E-06	-14.07	2.22	1.1E-04	7.746E-07	
47												
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	—	22	90	184	15	3.78	-0.43	2.2E+01	4.401E+01	0.491
B	A	B	C	D	E	F	G	H	I	J	K	L
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N!						mu	sigma	std dev	Mean	EF
2		Based on release fraction of 1 for current storage configuration										
3												
4	Event	Description	Units	High	Low	Mean	MeanHL					
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05		-10.16	0.82	5.3E-05	3.873E-05	3.873
6		Crane Failure										
7	F1	Fraction of load hangup events (2/43 1970s Navy data)	—	0.05	0.05	0.05		-3.07	-0.00	0.0E+00	4.651E-02	1.000
8	CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07	2.5E-06		-13.23	0.82	2.5E-06	1.801E-06	3.873
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
10	CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	1.0E-08	1.8E-08	-18.98	1.52	5.5E-08	5.696E-09	
11	F2	Fraction of component failure events (23/43 1970s Navy data)	—	0.53	0.53	0.53		-0.63	-0.00	0.0E+00	5.349E-01	1.000
12	CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06	2.9E-05		-10.78	0.82	2.9E-05	2.072E-05	3.873
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
14	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	1.2E-06	2.1E-06	-14.24	1.52	6.3E-06	6.551E-07	
15	F3	Fraction of two-blocking events (15/43 1970s Navy data)	—	0.35	0.35	0.35		-1.05	-0.00	0.0E+00	3.488E-01	1.000
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06	1.9E-05		-11.21	0.82	1.9E-05	1.351E-05	3.873
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	3.1E-09	1.6E-08	-20.42	2.22	1.9E-07	1.351E-09	
20	F4	Fraction of single component failure (1/44 1970s Navy data)	—	0.02	0.02	0.02		-3.78	-0.00	0.0E+00	2.273E-02	1.000
21	F4'	Credit for NUREG-0554	/demand	0.10	0.10	0.10		-2.30	-0.00	0.0E+00	1.000E-01	1.000
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	3.4E-07	2.3E-08	1.2E-07		-16.25	0.82	1.2E-07	8.802E-08	3.873
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	1.3E-06	2.2E-06	-14.03	1.43	5.8E-06	8.069E-07	
24	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	7		1.84	0.28	1.9E+00	6.325E+00	1.581
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	8.6E-06	2.2E-05	-12.19	1.71	9.2E-05	5.103E-06	
26		Rigging failure - Based on NUREG-0612 method										
27	F5	Fraction of improper rigging events (3/43 1970s Navy data)	—	0.07	0.07	0.07		-2.66	0.00	0.0E+00	6.977E-02	1.000
28	CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07	2.7E-06		-12.82	0.82	3.7E-06	2.702E-06	3.873
29	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05	0.13		-2.19	0.49	6.6E-02	1.118E-01	2.236
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	3.4E-07	7.1E-07	-15.01	1.31	1.5E-06	3.021E-07	8.660
31	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	7		1.84	0.28	1.9E+00	6.325E+00	1.581
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	2.2E-06	6.8E-06	-13.17	1.59	2.3E-05	1.911E-06	13.693
33												
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	1.7E-06	3.0E-06	-13.71	1.40	7.3E-06	1.113E-06	9.974
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	1.1E-05	2.9E-05	-11.86	1.68	1.1E-04	7.040E-06	15.771

09-29-99

DRAFT

B	A	B	C	D	E	F	G	H	I	J	K	L
36												
37		Loss-of-inventory for a single-failure proof crane										
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13		-2.19	0.49	6.6E-02	1.118E-01	2.236
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16		-1.84	0.28	4.7E-02	1.581E-01	1.581
41	LOI-S	(CFCR) * P * P' * RF	/year	6.9E-06	2.2E-09	2.2E-07	2.5E-06	-15.90	2.44	4.9E-05	1.245E-07	
42							5.9E-07					
43		Loss-of-inventory for a non single-failure proof crane										
44	CFCRNON	Total failures leading to a dropped load (est. from NUREG-0612)	No.	7.5E-05	1.0E-07	2.1E-05		-12.81	2.01	1.6E-04	2.739E-06	27.386
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05	2.1E-05	-12.81	2.01	1.6E-04	2.739E-06	
47												
48		Risk reduction for a single-failure proof crane (LOI-N / LOI-S)	---	11	45	92	8	3.09	-0.43	1.1E+01	2.201E+01	0.491
49												
50				0.25	0.05	0.13		-2.19	0.49			
51				0.25	0.10	0.16		-1.84	0.28			
52				1.2E-03	2.0E-05	1.0E-03	3.4E-04	-8.77	1.24			
C	A	B	C	D	E	F	G	H	I	J	K	L
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N!						mu	sigma	std dev	Mean	EF
2		(Based on new Navy Data)										
3												
4	Event	Description	Units	High	Low	Mean	MeanHL					
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05		-10.16	0.82	5.3E-05	3.873E-05	3.873
6		Crane Failure										
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.1364	0.1364	0.1364		-1.99	0.00	0.0E+00	1.364E-01	1.000
8	CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06	7.4E-06		-12.15	0.82	7.3E-06	5.281E-06	3.873
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
10	CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	3.0E-08	5.3E-08	-17.91	1.52	1.6E-07	1.670E-08	
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.6061	0.6061	0.6061		-0.50	0.00	0.0E+00	6.061E-01	1.000
12	CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06	3.3E-05		-10.66	0.82	3.2E-05	2.347E-05	3.873
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
14	CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	1.3E-06	2.4E-06	-14.11	1.52	7.2E-06	7.423E-07	
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.0455	0.0455	0.0455		-3.09	-0.00	0.0E+00	4.545E-02	1.000
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07	2.5E-06		-13.25	0.82	2.4E-06	1.760E-06	3.873
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	4.0E-10	2.1E-09	-22.46	2.22	2.5E-08	1.760E-10	
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.0149	0.0149	0.0149		-4.20	-0.00	0.0E+00	1.493E-02	1.000
21	F4'	Credit for NUREG-0554	/demand	0.10	0.10	0.10		-2.30	-0.00	0.0E+00	1.000E-01	1.000
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-07	1.5E-08	8.1E-08		-16.67	0.82	8.0E-08	5.781E-08	3.873
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	1.4E-06	2.5E-06	-13.97	1.46	6.9E-06	8.559E-07	
24	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	3		1.11	-0.00	0.0E+00	3.030E+00	1.000

DRAFT

C	A	B	C	D	E	F	G	H	I	J	K	L
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	4.4E-06	7.6E-06	-12.86	1.46	2.1E-05	2.594E-06	
26		Rigging failure - Based on NUREG-0612 method										
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.2121	0.2121	0.2121		-1.55	0.00	0.0E+00	2.121E-01	1.000
28	CR11	Failure due to improper rigging (N0*F5)	/year	3.2E-05	2.1E-06	1.2E-05		-11.71	0.82	1.1E-05	8.215E-06	3.873
29	CR12	Failure of redundant/alternate rigging	/N/A	0.25	0.05	0.13		-2.19	0.49	6.6E-02		
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.0E-06	1.1E-07	1.5E-06	2.2E-06	-13.90	1.31	4.7E-06	9.185E-07	8.660
31	D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6	6		1.80	-0.00	0.0E+00	6.061E+00	1.000
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	4.8E-05	6.4E-07	8.8E-06	1.3E-05	-12.10	1.31	2.8E-05	5.567E-06	8.660
33												
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.7E-05	1.8E-07	2.9E-06	4.7E-06	-13.23	1.39	1.1E-05	1.788E-06	9.775
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	7.7E-05	8.8E-07	1.3E-05	2.1E-05	-11.71	1.36	4.8E-05	8.216E-06	9.381
36												
37		Loss-of-inventory for a single-failure proof crane										
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13		-2.19	0.49	6.6E-02	1.118E-01	2.236
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16		-1.84	0.28	4.7E-02	1.581E-01	1.581
41	LOI-S	(CFCR) * P * P' * RF	/year	4.8E-06	4.4E-08	2.7E-07	1.4E-06	-15.74	2.13	1.3E-05	1.452E-07	
42							4.3E-07					
43		Loss-of-inventory for a non single-failure proof crane										
44	CFCRNON	Total failures leading to a dropped load (est. from NUREG-0612)	No.	7.5E-05	1.0E-07	2.1E-05		-12.81	2.01	1.6E-04	2.739E-06	27.386
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05	2.1E-05	-12.81	2.01	1.6E-04	2.739E-06	
47												
48		Risk reduction for a single-failure proof crane (LOI-N/LOI-S)	---	16	23	76	15	2.94	-0.12	2.2E+00	1.886E+01	0.826
D	A	B	C	D	E	F	G	H	I	J	K	L
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet NI						mu	sigma	std dev	Mean	EF
2		(Based on new Navy Data AND WIPP Rigging Evaluation)										
3												
4	Event	Description	Units	High	Low	Mean	MeanHL					
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05	5.4E-05	-10.16	0.82	5.3E-05	3.873E-05	3.873
6		Crane Failure										
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.1364	0.1364	0.1364		-1.99	0.00	0.0E+00	1.364E-01	1.000
8	CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06	7.4E-06		-12.15	0.82	7.3E-06	5.281E-06	3.873
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
10	CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	3.0E-08	5.3E-08	-17.91	1.52	1.6E-07	1.670E-08	
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.6061	0.6061	0.6061		-0.50	0.00	0.0E+00	6.061E-01	1.000
12	CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06	3.3E-05		-10.66	0.82	3.2E-05	2.347E-05	3.873
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
14	CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	1.3E-06	2.4E-06	-14.11	1.52	7.2E-06	7.423E-07	
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.0455	0.0455	0.0455		-3.09	-0.00	0.0E+00	4.545E-02	1.000
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07	2.5E-06		-13.25	0.82	2.4E-06	1.760E-06	3.873
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162

DRAFT

D	A	B	C	D	E	F	G	H	I	J	K	L
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	4.0E-10	2.1E-09	-22.46	2.22	2.5E-08	1.760E-10	
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.0149	0.0149	0.0149		-4.20	-0.00	0.0E+00	1.493E-02	1.000
21	F4'	Credit for NUREG-0554	/demand	0.10	0.10	0.10		-2.30	-0.00	0.0E+00	1.000E-01	1.000
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-07	1.5E-08	8.1E-08	8.1E-08	-16.67	0.82	8.0E-08	5.781E-08	3.873
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	1.4E-06	2.5E-06	-13.97	1.46	6.9E-06	8.559E-07	
24	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	3		1.11	-0.00	0.0E+00	3.030E+00	1.000
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	4.4E-06	7.6E-06	-12.86	1.46	2.1E-05	2.594E-06	
26		Rigging failure - Based on WIPP method										
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.2121	0.2121	0.2121		-1.55	0.00	0.0E+00	2.121E-01	1.000
28	CR11	Failure due to improper rigging, mean from WIPP study	/year	8.7E-07	8.7E-07	8.7E-07		-13.95	0.00	0.0E+00	8.700E-07	1.000
29	CR12	Failure of redundant/alternate rigging	N/A									
30	RIGGING	Failure due to improper rigging (CR11)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07	-13.95	0.00	0.0E+00	8.700E-07	1.000
31	D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6	6		1.80	-0.00	0.0E+00	6.061E+00	1.000
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	5.3E-06	5.3E-06	5.3E-06	5.3E-06	-12.15	0.00	0.0E+00	5.273E-06	1.000
33												
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.0E-05	9.5E-07	2.3E-06	4.1E-06	-12.67	0.73	3.4E-06	3.138E-06	3.313
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	3.4E-05	5.5E-06	9.6E-06	1.6E-05	-11.20	0.55	9.6E-06	1.371E-05	2.490
36												
37		Loss-of-inventory for a single-failure proof crane										
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13		-2.19	0.49	6.6E-02	1.118E-01	2.236
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16		-1.84	0.28	4.7E-02	1.581E-01	1.581
41	LOI-S	(CFCR) * P * P' * RF	/year	2.1E-06	2.8E-08	2.0E-07	5.8E-07	-15.23	1.32	1.3E-06	2.424E-07	
42							3.3E-07					
43		Loss-of-inventory for a non single-failure proof crane										
44	CFCRNON	Total failures leading to a dropped load (est. from NUREG-0612)	No.	7.5E-05	1.0E-07	2.1E-05		-12.81	2.01	1.6E-04	2.739E-06	27.386
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05	2.1E-05	-12.81	2.01	1.6E-04	2.739E-06	
47												
48		Risk reduction for a single-failure proof crane (LOI-N / LOI-S)	---	35	4	104	36	2.42	0.69	1.1E+01	1.130E+01	3.111
49												
50				0.25	0.05	0.13		-2.19	0.49			
51				0.25	0.10	0.16		-1.84	0.28			
52				1.2E-03	2.0E-05	1.0E-03	3.4E-04	-8.77	1.24			
E	A	B	C	D	E	F	G	H	I	J	K	L
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1		7.1E-04	2.7E-04			mu	sigma	std dev	Mean	EF
2		(Based on new Navy Data AND WIPP Rigging Evaluation)										
3		NEI 95% C-level										
4	Event	Description	Units	High	Low	Mean	MeanHL					
5	N0	Base range of failure of handling system	/year	7.1E-04	2.7E-04	4.6E-04		-7.73	0.30	1.4E-04	4.374E-04	1.633
6		Crane Failure										

DRAFT

E	A	B	C	D	E	F	G	H	I	J	K	L
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.1364	0.1364	0.1364		-1.99	0.00	0.0E+00	1.364E-01	1.000
8	CF11	Operator error leading to load hangup (N0*F1)	/year	9.7E-05	3.7E-05	6.2E-05		-9.73	0.30	1.9E-05	5.965E-05	1.633
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
10	CF1	Load hangup event (CF11*CF12)	/year	9.7E-07	3.7E-08	2.5E-07	3.1E-07	-15.48	1.00	4.1E-07	1.886E-07	
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.6061	0.6061	0.6061		-0.50	0.00	0.0E+00	6.061E-01	1.000
12	CF21	Failure of single component with a backup (N0*F2)	/year	4.3E-04	1.6E-04	2.8E-04		-8.24	0.30	8.4E-05	2.651E-04	1.633
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
14	CF2	Failure due to random component failure (CF21*CF22)	/year	4.3E-05	1.6E-06	1.1E-05	1.4E-05	-11.69	1.00	1.8E-05	8.383E-06	
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.0455	0.0455	0.0455		-3.09	-0.00	0.0E+00	4.545E-02	1.000
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	3.2E-05	1.2E-05	2.1E-05		-10.83	0.30	6.3E-06	1.988E-05	1.633
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	3.2E-08	1.2E-10	3.4E-09	8.4E-09	-20.04	1.70	3.5E-08	1.988E-09	
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.0149	0.0149	0.0149		-4.20	-0.00	0.0E+00	1.493E-02	1.000
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	1.0E-01		-2.30	-0.00	0.0E+00	1.000E-01	1.000
22	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	1.1E-06	4.0E-07	6.8E-07	6.8E-07	-14.24	0.30	2.1E-07	6.528E-07	1.633
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	4.5E-05	2.1E-06	1.2E-05	1.5E-05	-11.55	0.94	1.8E-05	9.666E-06	
24	D1	Lifts per year leading to drop set to 1	No.	1	1	1		0.00	0.00	0.0E+00	1.000E+00	1.000
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	4.5E-05	2.1E-06	1.2E-05	1.5E-05	-11.55	0.94	1.8E-05	9.666E-06	
26		Rigging failure - Based on WIPP method										
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.2121	0.2121	0.2121		-1.55	0.00	0.0E+00	2.121E-01	1.000
28	CR11	Failure due to improper rigging, mean from WIPP study	/year	8.7E-07	8.7E-07	8.7E-07		-13.95	0.00	0.0E+00	8.700E-07	1.000
29	CR12	Failure of redundant/alternate rigging	N/A									
30	RIGGING	Failure due to improper rigging (CR11)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07	-13.95	0.00	0.0E+00	8.700E-07	1.000
31	D2	Lifts per year leading to drop set to 1	No.	1	1	1		0.00	0.00	0.0E+00	1.000E+00	1.000
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07	-13.95	0.00	0.0E+00	8.700E-07	1.000
33												
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	4.6E-05	2.9E-06	1.3E-05	1.7E-05	-11.36	0.84	1.7E-05	1.164E-05	3.972
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	4.6E-05	2.9E-06	1.3E-05	1.7E-05	-11.36	0.84	1.7E-05	1.164E-05	3.972
36												
37		Loss-of-inventory for a single-failure proof crane										
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13		-2.19	0.49	6.6E-02	1.118E-01	2.236
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16		-1.84	0.28	4.7E-02	1.581E-01	1.581
41	LOI-S	(CFCR) * P * P' * RF	/year	2.9E-06	1.5E-08	2.7E-07	7.5E-07	-15.40	1.61	2.6E-06	2.057E-07	
42							3.4E-07					
43		Loss-of-inventory for a non single-failure proof crane										
44	CFCRNON	Total failures leading to a dropped load (est. from NUREG-0612)	No.	7.5E-05	1.0E-07	2.1E-05		-12.81	2.01	1.6E-04	2.739E-06	27.386
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05	2.1E-05	-12.81	2.01	1.6E-04	2.739E-06	
47												
48		Risk reduction for a single-failure proof crane (LOI-N / LOI-S)	---	26	7	77	28	2.59	0.41	6.1E+00	1.331E+01	1.950

DRAFT

F	A	B	C	D	E	F	G	H	I	J	K	L
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1						mu	sigma	std dev	Mean	EF
2		(Based on new Navy Data AND WIPP Rigging Evaluation)										
3		NEI 50% C-level										
4	Event	Description	Units	High	Low	Mean	Mean					
5	N0	Base range of failure of handling system	/year	1.6E-04	6.2E-05	1.0E-04		-9.21	0.29	3.1E-05	9.960E-05	1.606
6		Crane Failure										
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	0.14		-1.99	0.00	0.0E+00	1.364E-01	1.000
8	CF11	Operator error leading to load hangup (N0*F1)	/year	2.2E-05	8.5E-06	1.4E-05		-11.21	0.29	4.2E-06	1.358E-05	1.606
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
10	CF1	Load hangup event (CF11*CF12)	/year	2.2E-07	8.5E-09	5.7E-08	7.0E-08	-16.96	0.99	9.0E-08	4.295E-08	
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	0.61		-0.50	0.00	0.0E+00	6.061E-01	1.000
12	CF21	Failure of single component with a backup (N0*F2)	/year	9.7E-05	3.8E-05	6.3E-05		-9.72	0.29	1.9E-05	6.036E-05	1.606
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
14	CF2	Failure due to random component failure (CF21*CF22)	/year	9.7E-06	3.8E-07	2.5E-06	3.1E-06	-13.17	0.99	4.0E-06	1.909E-06	
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	0.05		-3.09	-0.00	0.0E+00	4.545E-02	1.000
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	7.3E-06	2.8E-06	4.7E-06		-12.31	0.29	1.4E-06	4.527E-06	1.606
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	7.3E-09	2.8E-11	7.7E-10	1.9E-09	-21.52	1.69	7.6E-09	4.527E-10	
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	0.01		-4.20	-0.00	0.0E+00	1.493E-02	1.000
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	1.0E-01		-2.30	-0.00	0.0E+00	1.000E-01	1.000
22	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	2.4E-07	9.3E-08	1.5E-07	1.5E-07	-15.72	0.29	4.6E-08	1.487E-07	1.606
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	1.0E-05	4.8E-07	2.8E-06	3.4E-06	-13.03	0.93	4.0E-06	2.201E-06	
24	D1	Lifts per year leading to drop set to 1	No.	1	1	1		0.00	0.00	0.0E+00	1.000E+00	1.000
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	1.0E-05	4.8E-07	2.8E-06	3.4E-06	-13.03	0.93	4.0E-06	2.201E-06	
26		Rigging failure - Based on WIPP method										
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	0.21		-1.55	0.00	0.0E+00	2.121E-01	1.000
28	CR11	Failure due to improper rigging, mean from WIPP study	/year	8.7E-07	8.7E-07	8.7E-07		-13.95	0.00	0.0E+00	8.700E-07	1.000
29	CR12	Failure of redundant/alternate rigging	N/A									
30	RIGGING	Failure due to improper rigging (CR11)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07	-13.95	0.00	0.0E+00	8.700E-07	1.000
31	D2	Lifts per year leading to drop set to 1	No.	1	1	1		0.00	0.00	0.0E+00	1.000E+00	1.000
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07	-13.95	0.00	0.0E+00	8.700E-07	1.000
33												
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.3E-06	3.6E-06	4.7E-06	-12.47	0.64	3.4E-06	3.854E-06	2.862
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-05	1.3E-06	3.6E-06	4.7E-06	-12.47	0.64	3.4E-06	3.854E-06	2.862
36												
37		Loss-of-inventory for a single-failure proof crane										
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13		-2.19	0.49	6.6E-02	1.118E-01	2.236
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16		-1.84	0.28	4.7E-02	1.581E-01	1.581
41	LOI-S	(CFCR) * P * P' * RF	/year	6.9E-07	6.7E-09	7.5E-08	1.8E-07	-16.50	1.41	4.6E-07	6.814E-08	
42							9.8E-08					

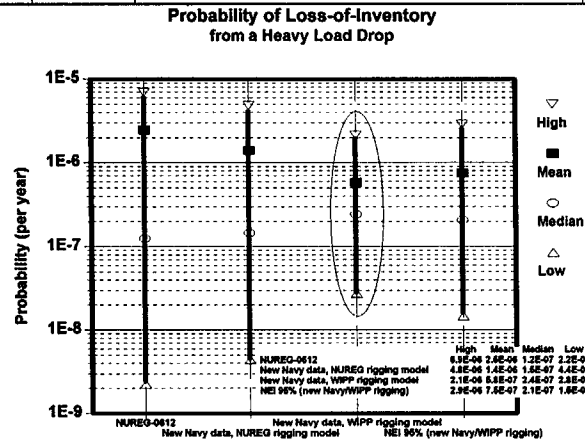
09-29-99

DRAFT

F	A	B	C	D	E	F	G	H	I	J	K	L			
43		Loss-of-inventory for a non single-failure proof crane													
44	CFCRNON	Total failures leading to a dropped load (est. from NUREG-0612)				No.	7.5E-05	1.0E-07	2.1E-05		-12.81	2.01	1.6E-04	2.739E-06	27.386
45	RF	Fraction of year over which a release may occur				---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
46	LOI-N	(CFCRNON) * P * P' * RF				/year	7.5E-05	1.0E-07	2.1E-05	2.1E-05	-12.81	2.01	1.6E-04	2.739E-06	
47															
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)				---	109	15	276	113	3.69	0.61	3.2E+01	4.019E+01	2.707
G	A	B	C	D	E	F	G	H	I	J	K	L			
1		*****	7.7E-07	*****		Non-single failure estimate									
2		*****	1.8E-08	*****		Base NUREG-0612 with reduced critical time									
3		High	Median	Low	Mean	Case	High	Median	Low	Average					
4	Case 1	*****	1.2E-07	*****	3.5E-06	NUREG-0612	6.9E-06	1.2E-07	2.2E-09	3.5E-06					
5	Case 2	*****	1.5E-07	*****	2.4E-06	New Navy data, NUREG rigging model	4.8E-06	1.5E-07	4.4E-09	2.4E-06					
6	Case 3	*****	2.4E-07	*****	1.1E-06	New Navy data, WIPP rigging model	2.1E-06	2.4E-07	2.8E-08	1.1E-06					
7	Case 4	*****	1.7E-07	*****	1.1E-06	NEI 95% (new Navy/WIPP rigging) (09/99)	2.2E-06	1.7E-07	1.4E-08	1.2E-06					
8	Case 5	*****	6.8E-08	*****	3.5E-07	5 - NEI 50% (new Navy/WIPP rigging)	6.9E-07	6.8E-08	6.7E-09	3.5E-07					
9	Case 6	*****	1.4E-06	*****	1.6E-05	6 - NEI 95%, NUREG-0612	3.3E-05	1.4E-06	6.0E-08	1.6E-05					
10	Case 7	*****	3.2E-07	*****	3.7E-06	7 - NEI 50%, NUREG-0612	7.4E-06	3.2E-07	1.4E-08	3.7E-06					
11	Median	5E-06	1.7E-07	1E-08	2.4E-06	Median - All cases	4.8E-06	1.7E-07	1.4E-08	2.4E-06					
12	GMean	4E-06	2.2E-07	1E-08	2.1E-06	Mean - All cases	7.7E-06	3.3E-07	1.8E-08	3.9E-06					
13	High	*****	2.2E-09			Probability of Loss-of-Inventory from a Heavy Load Drop	4.4E-06	2.2E-07	1.1E-08	7.8E-06	3.4E-07	1.8E-08			
14	Median	*****	4.4E-09												
15	Low	*****	2.8E-08												
16	4	*****	1.5E-08							7.8E-06	3.4E-07	1.8E-08			
17															
18															
19	1	*****					4.4E-06	2.2E-07	1.1E-08	7.8E-06	3.4E-07	1.8E-08			
20	1	*****					4.4E-06	2.2E-07	1.1E-08						
21	2	*****					4.8E-06	2.1E-07	1.4E-08						
22	2	*****					3.7E-07	-1.8E-08	2.6E-09						
23	3	*****					7.71	-8.53	18.99						
24	3	*****													
25	4	*****													
26	4	*****													
27	1														
28															
29															
30															
31															
32							High	Mean	Median	Low					
33						NUREG-0612	6.9E-06	2.5E-06	1.2E-07	2.2E-09					
34						New Navy data, NUREG rigging model	4.8E-06	1.4E-06	1.5E-07	4.4E-09					
35						New Navy data, WIPP rigging model	2.1E-06	5.8E-07	2.4E-07	2.8E-08					

Probability of Loss-of-Inventory
from a Heavy Load Drop

Case	High	Mean	Median	Low
NUREG-0612	6.9E-06	2.5E-06	1.2E-07	2.2E-09
New Navy data, NUREG rigging model	4.8E-06	1.4E-06	1.5E-07	4.4E-09
New Navy data, WIPP rigging model	2.1E-06	5.8E-07	2.4E-07	2.8E-08
NEI 95% (new Navy/WIPP rigging)	2.2E-06	1.7E-07	1.4E-08	1.2E-06



09-29-99

DRAFT

G	A	B	C	D	E	F	G	H	I	J	K	L			
36						NEI 95% (new Navy/WIPP rigging)	2.9E-06	7.5E-07	2.1E-07	1.5E-08					
37															
38							High	Mean	Median	Low					
H	A	B				C	D	E	F	G	H	I	J	K	L
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet NI									mu	sigma	std dev	Mean	EF
2		(Based on new Navy Data AND WIPP Rigging Evaluation)													
3		Based on 1 incident and 1-in-1,000 lift results in a srop													
4	Event	Description	Units	High	Low	Mean	MeanHL								
5	N0	Base range of failure of handling system	/year	1	1	1.0E+00	1.0E+00	0.00	0.00	0.0E+00	1.000E+00	1.000			
6		Crane Failure													
7	F1	Fraction of load hangup events (new 1990s Navy data)	—	0.14	0.14	0.1364		-1.99	0.00	0.0E+00	1.364E-01	1.000			
8	CF11	Operator error leading to load hangup (N0*F1))	/year	1.4E-01	1.4E-01	1.4E-01		-1.99	0.00	0.0E+00	1.364E-01	1.000			
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162			
10	CF1	Load hangup event (CF11*CF12)	/year	1.4E-03	1.4E-04	5.5E-04	5.5E-04	-7.75	0.70	4.4E-04	4.312E-04				
11	F2	Fraction of component failure events (new 1990s Navy data)	—	0.61	0.61	0.6061		-0.50	0.00	0.0E+00	6.061E-01	1.000			
12	CF21	Failure of single component with a backup (N0*F2)	/year	6.1E-01	6.1E-01	6.1E-01		-0.50	0.00	0.0E+00	6.061E-01	1.000			
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162			
14	CF2	Failure due to random component failure (CF21*CF22)	/year	6.1E-02	6.1E-03	2.4E-02	2.4E-02	-3.95	0.70	1.9E-02	1.917E-02				
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	0.0455		-3.09	-0.00	0.0E+00	4.545E-02	1.000			
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	4.5E-02	4.5E-02	4.5E-02		-3.09	-0.00	0.0E+00	4.545E-02	1.000			
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	3.162E-03	3.162			
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	4.0E-02		-3.45	0.70	3.2E-02	3.162E-02	3.162			
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	4.5E-05	4.5E-07	7.4E-06	1.2E-05	-12.30	1.40	3.0E-05	4.545E-06				
20	F4	Fraction of single component failure (new 1990s Navy data)	—	0.01	0.01	0.0149		-4.20	-0.00	0.0E+00	1.493E-02	1.000			
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	0.10		-2.30	-0.00	0.0E+00	1.000E-01	1.000			
22	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	1.5E-03	1.5E-03	1.5E-03	1.5E-03	-6.51	-0.00	0.0E+00	1.493E-03	1.000			
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	6.4E-02	7.7E-03	2.7E-02	2.7E-02	-3.81	0.64	1.9E-02	2.210E-02				
24	D1	Lifts per year leading to drop (1-in1,000)	No.	1.0E-03	1.0E-03	0		-6.91	-0.00	0.0E+00	1.000E-03	1.000			
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	6.4E-05	7.7E-06	2.7E-05	2.7E-05	-10.72	0.64	1.9E-05	2.210E-05				
26		Rigging failure - Based on WIPP method													
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	0.2121		-1.55	0.00	0.0E+00	2.121E-01	1.000			
28	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	8.7E-07		-13.95	0.00	0.0E+00	8.700E-07	1.000			
29	CR12	Failure of redundant/alternate rigging	N/A												
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07	-13.95	0.00	0.0E+00	8.700E-07	1.000			
31	D2	Lifts per year leading to drop (1-in1,000)	No.	1.0E-03	1.0E-03	0		-6.91	-0.00	0.0E+00	1.000E-03	1.000			
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	8.7E-10	8.7E-10	8.7E-10	8.7E-10	-20.86	-0.00	0.0E+00	8.700E-10	1.000			
33															
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	6.4E-02	7.7E-03	2.7E-02	2.7E-02	-3.81	0.64	1.9E-02	2.210E-02	2.874			
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	6.4E-05	7.7E-06	2.7E-05	2.7E-05	-10.72	0.64	1.9E-05	2.210E-05	2.874			
36															
37		Loss-of-inventory for a single-failure proof crane													
38	RF	Fraction of year over which a release may occur	—	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000			

DRAFT

H	A	B	C	D	E	F	G	H	I	J	K	L
39	P	Fraction of path near/over pool	---	0.25	0.05	0.13		-2.19	0.49	6.6E-02	1.118E-01	2.236
40	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16		-1.84	0.28	4.7E-02	1.581E-01	1.581
41	LOI-S	(CFCR) * P * P' * RF	/year	4.0E-06	3.8E-08	5.5E-07	1.1E-06	-14.76	1.41	2.6E-06	3.907E-07	
42						3.9E-07	5.6E-07					
43		Loss-of-inventory for a non single-failure proof crane										
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.1E-05		-12.81	2.01	1.6E-04	2.739E-06	27.386
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	1.000E+00	1.000
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05	2.1E-05	-12.81	2.01	1.6E-04	2.739E-06	
47												
48		Risk reduction for a single-failure proof crane (LOI-N / LOI-S)	---	19	3	38	20	1.95	0.60	5.6E+00	7.010E+00	2.696
I	A	B	C	D	E	F						
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N!										
2		Based on release fraction of 1 for current storage configuration										
3		NEI 95% confidence interval										
4	Event	Description	Units	High	Low	Median						
5	N0	Base range of failure of handling system	/year	7.1E-04	2.7E-04	4.4E-04						
6		Crane Failure										
7	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05							
8	CF11	Operator error leading to load hangup (N0*F1)	/year	3.3E-05	1.3E-05							
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03							
10	CF1	Load hangup event (CF11*CF12)	/year	3.3E-07	1.3E-08	6.4E-08						
11	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53							
12	CF21	Failure of single component with a backup (N0*F2)	/year	3.8E-04	1.4E-04							
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02							
14	CF2	Failure due to random component failure (CF21*CF22)	/year	3.8E-05	1.4E-06	7.4E-06						
15	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35							
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	2.5E-04	9.4E-05							
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03							
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02							
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	2.5E-07	9.4E-10	1.5E-08						
20	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02							
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01							
22	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	1.6E-06	6.1E-07	1.0E-06						
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	4.0E-05	2.1E-06	8.5E-06						
24	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4							
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	4.0E-04	8.3E-06	5.8E-05						
26		Rigging failure - Based on NUREG-0612 method										
27	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07							
28	CR11	Failure due to improper rigging (N0*F5)	/year	5.0E-05	1.9E-05							
29	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05							
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	1.2E-05	9.4E-07	3.4E-06						
31	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4							

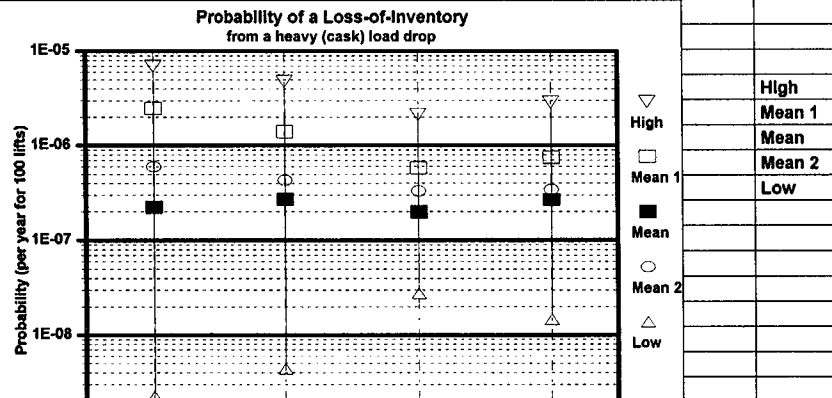
DRAFT

I	A	B	C	D	E	F					
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	1.2E-04	3.8E-06	2.2E-05					
33											
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	5.3E-05	3.0E-06	1.2E-05					
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	5.3E-04	1.2E-05	7.9E-05					
36											
37		Loss-of-inventory for a single-failure proof crane									
38	RF	Fraction of year over which a release may occur	---	1.00	1.00						
39	P	Fraction of path near/over pool	---	0.25	0.05						
40	P'	Fraction of path critical for load drop	---	0.25	0.10						
41	LOI-S	(CFCR) * P * P' * RF	/year	3.3E-05	6.0E-08	1.4E-06					
42											
43		Loss-of-inventory for a non single-failure proof crane									
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-04	2.0E-07	5.5E-06					
45	RF	Fraction of year over which a release may occur	---	1.00	1.00						
46	LOI-N	(CFCRNON) * P * P' * RF	/year	1.5E-04	2.0E-07	5.5E-06					
47											
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	5	3	4					
J	A	B	C	D	E	F	G	H	I	J	K
1											
2											
3			High	Mean	Low	Alt Mean		Alt2 Mean	GeoMean		
4		NUREG-0612	6.9E-06	2.2E-07	2.2E-09	2.5E-06	0.09	5.9E-07	1.2E-07	6.9E-06	2.2E-09
5		New Navy data, NUREG rigging model	4.8E-06	2.7E-07	4.4E-09	1.4E-06	0.19	4.3E-07	1.5E-07	4.8E-06	4.4E-09
6		New Navy data, WIPP rigging model	2.1E-06	2.0E-07	2.8E-08	5.8E-07	0.34	3.3E-07	2.4E-07	2.1E-06	2.8E-08
7		NEI 95% (new Navy/WIPP rigging)	2.9E-06	2.7E-07	1.5E-08	7.5E-07	0.36	3.4E-07	2.1E-07	2.9E-06	1.5E-08
8		Reassessment of NUREG-1353	---	1.5E-07	---						
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											

Probability of a Loss-of-inventory
from a heavy (cask) load drop

Probability (per year for 100 lifts)

High
Mean 1
Mean 2
Low



09-29-99

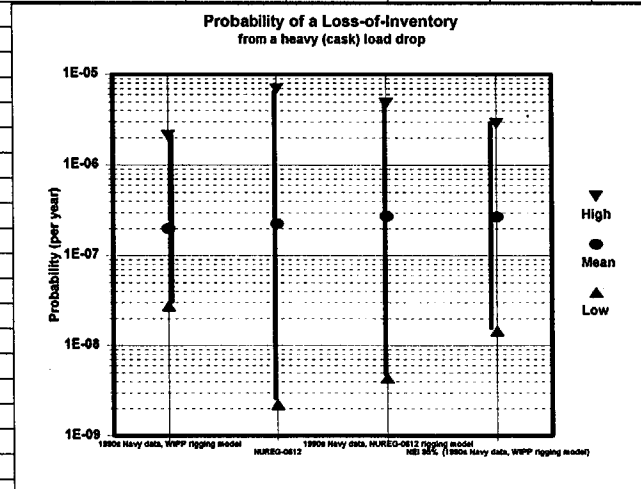
DRAFT

J	A	B	C	D	E	F	G	H	I	J	K
25											
26			1E-09								
27			NUREG-0612								
28			New Navy data, NUREG rigging model								
29			New Navy data, WIPP rigging model								
			NEI 95% (new Navy/WIPP rigging)								
			Mean 1 - mean of the high,low value for a log normal distribution								
			Mean - mean of the product of the means for a log normal distribution								
			Mean 2 - mean of the sum of the high,low values for a log normal distribution								
K	A	B	C	D	E	F	G	H	I	J	
1		New Navy/WIPP with reductions for CF2/CF4, no CF1/CF3									
2	Event	Description	Units	High	Low	Mean	MeanHL				
3	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05		-10.16	0.82	5.3E-05	
4		Crane Failure									
5	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	0.14		-1.99	0.00	0.0E+00	
6	CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06	7.4E-06		-12.15	0.82	7.3E-06	
7	CF12	Failure of the overload device	/demand	1.0E-12	1.0E-12	1.0E-12		-27.63	-0.00	0.0E+00	
8	CF1	Load hangup event (CF11*CF12)	/year	2.0E-17	1.4E-18	7.4E-18	7.4E-18	-39.78	0.82	7.3E-18	
9	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	0.61		-0.50	0.00	0.0E+00	
10	CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06	3.3E-05		-10.66	0.82	3.2E-05	
11	CF22	Failure of backup component given CF21	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	
12	CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-07	6.1E-09	1.3E-07	2.4E-07	-16.42	1.52	7.2E-07	
13	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	0.05		-3.09	-0.00	0.0E+00	
14	CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07	2.5E-06		-13.25	0.82	2.4E-06	
15	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	4.0E-03		-5.76	0.70	3.2E-03	
16	CF33	Failure of upper limit switch	/demand	1.0E-12	1.0E-12	1.0E-12		-27.63	-0.00	0.0E+00	
17	CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-20	4.5E-22	1.0E-20	1.8E-20	-46.64	1.52	5.4E-20	
18	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	0.01		-4.20	-0.00	0.0E+00	
19	F4'	Credit for NUREG-0554	/demand	0.01	0.01	0.01		-4.61	-0.00	0.0E+00	
20	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-08	1.5E-09	8.1E-09	8.1E-09	-18.97	0.82	8.0E-09	
21	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.3E-07	7.6E-09	1.4E-07	2.4E-07	-16.29	1.46	6.7E-07	
22	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	3		1.11	-0.00	0.0E+00	
23	CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.8E-06	2.3E-08	4.3E-07	7.4E-07	-15.19	1.46	2.0E-06	
24		Rigging failure - Based on WIPP method									
25	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	0.21		-1.55	0.00	0.0E+00	
26	CR11	Failure due to improper rigging, mean from WIPP study	/year	8.7E-07	8.7E-07	8.7E-07		-13.95	0.00	0.0E+00	
27	CR12	Failure of redundant/alternate rigging	N/A								
28	RIGGING	Failure due to improper rigging (CR11)	/year	8.7E-07	8.7E-07	8.7E-07	8.7E-07	-13.95	0.00	0.0E+00	
29	D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6	6		1.80	-0.00	0.0E+00	
30	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	5.3E-06	5.3E-06	5.3E-06	5.3E-06	-12.15	0.00	0.0E+00	
31											
32	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.8E-06	8.8E-07	1.0E-06	1.3E-06	-13.59	0.22	2.8E-07	
33	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	8.1E-06	5.3E-06	5.7E-06	6.6E-06	-11.94	0.13	8.6E-07	
34											
35		Loss-of-inventory for a single-failure proof crane									
36	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00	

09-29-99

DRAFT

K	A	B	C	D	E	F	G	H	I	J
37	P	Fraction of path near/over pool	---	0.25	0.05	0.13		-2.19	0.49	6.6E-02
38	P'	Fraction of path critical for load drop	---	0.25	0.10	0.16		-1.84	0.28	4.7E-02
39	LOI-S	(CFCR) * P * P' * RF	/year	5.1E-07	2.6E-08	1.2E-07	1.7E-07	-15.97	0.90	1.9E-07
40							1.4E-07			
41		Loss-of-inventory for a non single-failure proof crane								
42	CFCRNON	Total failures leading to a dropped load (est. from NUREG-0612)	No.	7.5E-05	1.0E-07	2.1E-05		-12.81	2.01	1.6E-04
43	RF	Fraction of year over which a release may occur	---	1.00	1.00	1.00		0.00	0.00	0.0E+00
44	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05	2.1E-05	-12.81	2.01	1.6E-04
45										
46		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	148	4	176	120	3.16	1.12	6.9E+01
L	A	B	C	D	E	F				
1										
2										
3				High	Mean	Low				
4	1990s Navy data, WIPP rigging model			2.1E-06	2.0E-07	2.8E-08				
5	NUREG-0612			6.9E-06	2.2E-07	2.2E-09				
6	1990s Navy data, NUREG-0612 rigging model			4.8E-06	2.7E-07	4.4E-09				
7	NEI 95% (1990s Navy data, WIPP rigging model)			2.9E-06	2.7E-07	1.5E-08				
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
M	A	B	C	D	E	F				
1	Event NO	Description	Units	High	Low	Mean				
2		Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05				



09-29-99

DRAFT

M	A	B	C	D	E	F
3	F1	Crane Failure				
4	CF11	Fraction of load hangup events (2/43 1970s Navy data)	—	0.05	0.05	0.05
5	CF12	Operator error leading to load hangup (N0°F1))	/year	7.0E-06	4.7E-07	2.5E-06
6	CF1	Failure of the overload device	/demand	1.0E-02	1.0E-03	4.0E-03
7	F2	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	1.0E-08
8	CF21	Fraction of component failure events (23/43 1970s Navy data)	—	0.53	0.53	0.53
9	CF22	Failure of single component with a backup (N0°F2)	/year	8.0E-05	5.3E-06	2.9E-05
10	CF2	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	4.0E-02
11	F3	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	1.2E-06
12	CF31	Fraction of two-blocking events (15/43 1970s Navy data)	—	0.35	0.35	0.35
13	CF32	Operator error leading to Two-blocking (N0°F3)	/year	5.2E-05	3.5E-06	1.9E-05
14	CF33	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	4.0E-03
15	CF3	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	4.0E-02
16	F4	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	3.1E-09
17	F4'	Fraction of single component failure (1/44 1970s Navy data)	—	0.02	0.02	0.02
18	CF4	Credit for NUREG-0554	/demand	0.10	0.10	0.10
19	CRANE	Failure of component that doesn't have backup (N0°F4*F4')	/year	3.4E-07	2.3E-08	1.2E-07
20	D1	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-08	7.7E-08	1.3E-08
21	CF	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	7
22		Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	8.6E-06
23	F5	Rigging failure - Based on NUREG-0612 method				
24	CR11	Fraction of improper rigging events (3/43 1970s Navy data)	—	0.07	0.07	0.07
25	CR12	Failure due to improper rigging (N0°F5)	/year	1.0E-05	7.0E-07	2.7E-06
26	RIGGING	Failure of redundant/alternate rigging	/demand	0.25	0.05	1.00
27	D2	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	2.7E-06
28	CR	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	7
29		Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	1.8E-05
30	FHLS					
31	CFCR	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	4.0E-06
32		Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	2.6E-05
33						
34	RF	Loss-of-inventory for a single-failure proof crane				
35	P	Fraction of year over which a release may occur	—	1.00	1.00	1.00
36	P'	Fraction of path near/over pool	—	0.25	0.05	0.13
37	LOI-S	Fraction of path critical for load drop	—	0.25	0.10	0.16
38		(CFCR) * P * P' * RF	/year	6.9E-06	2.2E-09	5.5E-07
39						
40	CFCRNON	Loss-of-inventory for a non single-failure proof crane				
41	RF	Total failures leading to a dropped load (est. from NUREG-0612)	No.	7.5E-05	1.0E-07	2.1E-05
42	LOI-N	Fraction of year over which a release may occur	—	1.00	1.00	1.00
43		(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05
44						

09-29-99

DRAFT

A	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N!				
2		As presented in NUREG-0612				
3						
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05
6		Crane Failure				
7	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	1.8E-08
11	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53	
12	CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	2.1E-06
15	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	1.6E-08
20	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	3.4E-07	2.3E-08	1.2E-07
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	2.2E-06
24	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	2.2E-05
26		Rigging failure - Based on NUREG-0612 method				
27	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07	
28	CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07	
29	CR12	Failure of redundant/alternate rigging	/demand	2.5E-01	5.0E-02	
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	7.1E-07
31	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	6.8E-06
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	3.0E-06
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	2.9E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	0.20	0.10	
39	P	Fraction of path near/over pool	---	0.25	0.05	
40	P'	Fraction of path critical for load drop	---	0.25	0.10	
41	LOI-S	(CFCR) * P * P' * RF	/year	1.4E-06	2.2E-10	6.0E-07
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-04	2.0E-07	4.1E-05
45	RF	Fraction of year over which a release may occur	---	0.20	0.10	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	3.0E-05	2.0E-08	9.2E-06
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	22	90	48

09-29-99

DRAFT

A	G	H	I	J
1		mu	sigma	std dev
2				
3				
4	Median			
5	3.9E-05	-10.16	0.82	5.3E-05
6				
7				
8				
9				
10	5.7E-09	-18.98	1.52	5.5E-08
11				
12				
13				
14	6.6E-07	-14.24	1.52	6.3E-06
15				
16				
17				
18				
19	1.4E-09	-20.42	2.22	1.9E-07
20				
21				
22	8.8E-08	-16.25	0.82	1.2E-07
23	8.1E-07	-14.03	1.43	5.8E-06
24				
25	5.1E-06	-12.19	1.71	9.2E-05
26				
27				
28				
29				
30	3.0E-07	-15.01	1.31	1.5E-06
31				
32	1.9E-06	-13.17	1.59	2.3E-05
33				
34	1.1E-06	-13.71	1.40	7.3E-06
35	7.0E-06	-11.86	1.68	1.1E-04
36				
37				
38				
39				
40				
41	1.8E-08	-17.86	2.66	2.0E-05
42				
43				
44	5.5E-06	-12.11	2.01	3.1E-04
45				
46	7.7E-07	-14.07	2.22	1.1E-04
47				
48	44	3.78	-0.43	22

09-29-99

DRAFT

B	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1				
2		Based on release fraction of 1 for current storage configuration				
3						
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05
6		Crane Failure				
7	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	7.0E-06	4.7E-07	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	7.0E-08	4.7E-10	1.8E-08
11	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53	
12	CF21	Failure of single component with a backup (N0*F2)	/year	8.0E-05	5.3E-06	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-06	5.3E-08	2.1E-06
15	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	5.2E-05	3.5E-06	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-08	3.5E-11	1.6E-08
20	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	3.4E-07	2.3E-08	1.2E-07
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-06	7.7E-08	2.2E-06
24	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	8.5E-05	3.1E-07	2.2E-05
26		Rigging failure - Based on NUREG-0612 method				
27	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07	
28	CR11	Failure due to improper rigging (N0*F5)	/year	1.0E-05	7.0E-07	
29	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05	
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	2.6E-06	3.5E-08	7.1E-07
31	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	2.6E-05	1.4E-07	6.8E-06
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.1E-07	3.0E-06
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	2.9E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	
39	P	Fraction of path near/over pool	---	0.25	0.05	
40	P'	Fraction of path critical for load drop	---	0.25	0.10	
41	LOI-S	(CFCR) * P * P' * RF	/year	6.9E-06	2.2E-09	2.5E-06
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-04	2.0E-07	4.1E-05
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	1.5E-04	2.0E-07	4.1E-05
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	22	90	48

09-29-99

DRAFT

B	G	H	I	J
1		mu	sigma	std dev
2				
3				
4	Median			
5	3.9E-05	-10.16	0.82	5.3E-05
6				
7				
8				
9				
10	5.7E-09	-18.98	1.52	5.5E-08
11				
12				
13				
14	6.6E-07	-14.24	1.52	6.3E-06
15				
16				
17				
18				
19	1.4E-09	-20.42	2.22	1.9E-07
20				
21				
22	8.8E-08	-16.25	0.82	1.2E-07
23	8.1E-07	-14.03	1.43	5.8E-06
24				
25	5.1E-06	-12.19	1.71	9.2E-05
26				
27				
28				
29				
30	3.0E-07	-15.01	1.31	1.5E-06
31				
32	1.9E-06	-13.17	1.59	2.3E-05
33				
34	1.1E-06	-13.71	1.40	7.3E-06
35	7.0E-06	-11.86	1.68	1.1E-04
36				
37				
38				
39				
40				
41	1.2E-07	-15.90	2.44	4.9E-05
42				
43				
44	5.5E-06	-12.11	2.01	3.1E-04
45				
46	5.5E-06	-12.11	2.01	3.1E-04
47				
48	44	3.78	-0.43	22

09-29-99

DRAFT

C	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N!				
2		(Based on new Navy Data)				
3						
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05
6		Crane Failure				
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	5.3E-08
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	
12	CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	2.4E-06
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	2.1E-09
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-07	1.5E-08	8.1E-08
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	2.5E-06
24	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	7.6E-06
26		Rigging failure - Based on NUREG-0612 method				
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	
28	CR11	Failure due to improper rigging (N0*F5)	/year	3.2E-05	2.1E-06	
29	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05	
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.0E-06	1.1E-07	2.2E-06
31	D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	4.8E-05	6.4E-07	1.3E-05
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.7E-05	1.8E-07	4.7E-06
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	7.7E-05	8.8E-07	2.1E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	
39	P	Fraction of path near/over pool	---	0.25	0.05	
40	P'	Fraction of path critical for load drop	---	0.25	0.10	
41	LOI-S	(CFCR) * P * P' * RF	/year	4.8E-06	4.4E-09	1.4E-06
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.1E-05
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	16	23	19

DRAFT

C	G	H	I	J
1		mu	sigma	std dev
2				
3				
4	Median			
5	3.9E-05	-10.16	0.82	5.3E-05
6				
7				
8				
9				
10	1.7E-08	-17.91	1.52	1.6E-07
11				
12				
13				
14	7.4E-07	-14.11	1.52	7.2E-06
15				
16				
17				
18				
19	1.8E-10	-22.46	2.22	2.5E-08
20				
21				
22	5.8E-08	-16.67	0.82	8.0E-08
23	8.6E-07	-13.97	1.46	6.9E-06
24				
25	2.6E-06	-12.86	1.46	2.1E-05
26				
27				
28				
29				
30	9.2E-07	-13.90	1.31	4.7E-06
31				
32	5.6E-06	-12.10	1.31	2.8E-05
33				
34	1.8E-06	-13.23	1.39	1.1E-05
35	8.2E-06	-11.71	1.36	4.8E-05
36				
37				
38				
39				
40				
41	1.5E-07	-15.74	2.13	1.3E-05
42				
43				
44	2.7E-06	-12.81	2.01	1.6E-04
45				
46	2.7E-06	-12.81	2.01	1.6E-04
47				
48	19	2.94	-0.12	2

09-29-99

DRAFT

D	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N!				
2		(Based on new Navy Data AND WIPP Rigging Evaluation)				
3						
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	5.4E-05
6		Crane Failure				
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	2.0E-05	1.4E-06	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	2.0E-07	1.4E-09	5.3E-08
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	
12	CF21	Failure of single component with a backup (N0*F2)	/year	9.1E-05	6.1E-06	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	9.1E-06	6.1E-08	2.4E-06
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	6.8E-06	4.5E-07	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	6.8E-09	4.5E-12	2.1E-09
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.2E-07	1.5E-08	8.1E-08
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	9.5E-06	7.7E-08	2.5E-06
24	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	2.9E-05	2.3E-07	7.6E-06
26		Rigging failure - Based on WIPP method				
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	
28	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	
29	CR12	Failure of redundant/alternate rigging	N/A			
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07
31	D2	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	5.3E-06	5.3E-06	5.3E-06
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.0E-05	9.5E-07	4.1E-06
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	3.4E-05	5.5E-06	1.6E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	
39	P	Fraction of path near/over pool	---	0.25	0.05	
40	P'	Fraction of path critical for load drop	---	0.25	0.10	
41	LOI-S	(CFCR) * P * P' * RF	/year	2.1E-06	2.8E-08	5.8E-07
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.1E-05
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	35	4	14

09-29-99

DRAFT

D	G	H	I	J
1		mu	sigma	std dev
2				
3				
4	Median			
5	3.9E-05	-10.16	0.82	5.3E-05
6				
7				
8				
9				
10	1.7E-08	-17.91	1.52	1.6E-07
11				
12				
13				
14	7.4E-07	-14.11	1.52	7.2E-06
15				
16				
17				
18				
19	1.8E-10	-22.46	2.22	2.5E-08
20				
21				
22	5.8E-08	-16.67	0.82	8.0E-08
23	8.6E-07	-13.97	1.46	6.9E-06
24				
25	2.6E-06	-12.86	1.46	2.1E-05
26				
27				
28				
29				
30	8.7E-07	-13.95	0.00	0.0E+00
31				
32	5.3E-06	-12.15	0.00	0.0E+00
33				
34	3.1E-06	-12.67	0.73	3.4E-06
35	1.4E-05	-11.20	0.55	9.6E-06
36				
37				
38				
39				
40				
41	2.4E-07	-15.23	1.32	1.3E-06
42				
43				
44	2.7E-06	-12.81	2.01	1.6E-04
45				
46	2.7E-06	-12.81	2.01	1.6E-04
47				
48	11	2.42	0.69	11

09-29-99

DRAFT

E	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N!		7.1E-04	2.7E-04	
2		(Based on new Navy Data AND WIPP Rigging Evaluation)				
3		NEI 95% C-level				
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	7.1E-04	2.7E-04	4.6E-04
6		Crane Failure				
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	9.7E-05	3.7E-05	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	9.7E-07	3.7E-08	3.1E-07
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	
12	CF21	Failure of single component with a backup (N0*F2)	/year	4.3E-04	1.6E-04	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	4.3E-05	1.6E-06	1.4E-05
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	3.2E-05	1.2E-05	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	3.2E-08	1.2E-10	8.4E-09
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	1.1E-06	4.0E-07	6.8E-07
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	4.5E-05	2.1E-06	1.5E-05
24	D1	Lifts per year leading to drop set to 1	No.	1	1	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	4.5E-05	2.1E-06	1.5E-05
26		Rigging failure - Based on WIPP method				
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	
28	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	
29	CR12	Failure of redundant/alternate rigging	N/A			
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07
31	D2	Lifts per year leading to drop set to 1	No.	1	1	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	8.7E-07	8.7E-07	8.7E-07
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	4.6E-05	2.9E-06	1.7E-05
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	4.6E-05	2.9E-06	1.7E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	
39	P	Fraction of path near/over pool	---	0.25	0.05	
40	P'	Fraction of path critical for load drop	---	0.25	0.10	
41	LOI-S	(CFCR) * P * P' * RF	/year	2.9E-06	1.5E-08	7.5E-07
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.1E-05
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	26	7	14

DRAFT

E	G	H	I	J
1		mu	sigma	std dev
2				
3				
4	Median			
5	4.4E-04	-7.73	0.30	1.4E-04
6				
7				
8				
9				
10	1.9E-07	-15.48	1.00	4.1E-07
11				
12				
13				
14	8.4E-06	-11.69	1.00	1.8E-05
15				
16				
17				
18				
19	2.0E-09	-20.04	1.70	3.5E-08
20				
21				
22	6.5E-07	-14.24	0.30	2.1E-07
23	9.7E-06	-11.55	0.94	1.8E-05
24				
25	9.7E-06	-11.55	0.94	1.8E-05
26				
27				
28				
29				
30	8.7E-07	-13.95	0.00	0.0E+00
31				
32	8.7E-07	-13.95	0.00	0.0E+00
33				
34	1.2E-05	-11.36	0.84	1.7E-05
35	1.2E-05	-11.36	0.84	1.7E-05
36				
37				
38				
39				
40				
41	2.1E-07	-15.40	1.61	2.6E-06
42				
43				
44	2.7E-06	-12.81	2.01	1.6E-04
45				
46	2.7E-06	-12.81	2.01	1.6E-04
47				
48	13	2.59	0.41	6

09-29-99

DRAFT

F	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N!				
2		(Based on new Navy Data AND WIPP Rigging Evaluation)				
3		NEI 50% C-level				
4	Event	Description	Units	High	Low	Mean
5	N0	Base range of failure of handling system	/year	1.6E-04	6.2E-05	1.0E-04
6		Crane Failure				
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	2.2E-05	8.5E-06	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	2.2E-07	8.5E-09	7.0E-08
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	
12	CF21	Failure of single component with a backup (N0*F2)	/year	9.7E-05	3.8E-05	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	9.7E-06	3.8E-07	3.1E-06
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	7.3E-06	2.8E-06	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	7.3E-09	2.8E-11	1.9E-09
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4')	/year	2.4E-07	9.3E-08	1.5E-07
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	1.0E-05	4.8E-07	3.4E-06
24	D1	Lifts per year leading to drop set to 1	No.	1	1	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	1.0E-05	4.8E-07	3.4E-06
26		Rigging failure - Based on WIPP method				
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	
28	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	
29	CR12	Failure of redundant/alternate rigging	N/A			
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07
31	D2	Lifts per year leading to drop set to 1	No.	1	1	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	8.7E-07	8.7E-07	8.7E-07
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	1.1E-05	1.3E-06	4.7E-06
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-05	1.3E-06	4.7E-06
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	
39	P	Fraction of path near/over pool	---	0.25	0.05	
40	P'	Fraction of path critical for load drop	---	0.25	0.10	
41	LOI-S	(CFCR) * P * P' * RF	/year	6.9E-07	6.7E-09	1.8E-07
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.1E-05
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.1E-05
47						
48		Risk reduction for a single-failure proof crane (LOI-N/LOI-S)	---	109	15	48

09-29-99

DRAFT

F	G	H	I	J
1		mu	sigma	std dev
2				
3				
4	Median			
5	1.0E-04	-9.21	0.29	3.1E-05
6				
7				
8				
9				
10	4.3E-08	-16.96	0.99	9.0E-08
11				
12				
13				
14	1.9E-06	-13.17	0.99	4.0E-06
15				
16				
17				
18				
19	4.5E-10	-21.52	1.69	7.6E-09
20				
21				
22	1.5E-07	-15.72	0.29	4.6E-08
23	2.2E-06	-13.03	0.93	4.0E-06
24				
25	2.2E-06	-13.03	0.93	4.0E-06
26				
27				
28				
29				
30	8.7E-07	-13.95	0.00	0.0E+00
31				
32	8.7E-07	-13.95	0.00	0.0E+00
33				
34	3.9E-06	-12.47	0.64	3.4E-06
35	3.9E-06	-12.47	0.64	3.4E-06
36				
37				
38				
39				
40				
41	6.8E-08	-16.50	1.41	4.6E-07
42				
43				
44	2.7E-06	-12.81	2.01	1.6E-04
45				
46	2.7E-06	-12.81	2.01	1.6E-04
47				
48	40	3.69	0.61	32

09-29-99

DRAFT

G	A	B	C	D	E	F	G	H																									
1		*****	7.7E-07	*****		Non-single failure estimate																											
2		*****	1.8E-08	*****		Base NUREG-0612 with reduced critical time																											
3		High	Median	Low	Mean	Case	High	Median																									
4	Case 1	*****	1.2E-07	*****	3.5E-06	NUREG-0612	6.9E-06	*****																									
5	Case 2	*****	1.5E-07	*****	2.4E-06	New Navy data, NUREG rigging model	4.8E-06	*****																									
6	Case 3	*****	2.4E-07	*****	1.1E-06	New Navy data, WIPP rigging model	2.1E-06	*****																									
7	Case 4	*****	1.7E-07	*****	1.1E-06	NEI 95% (new Navy/WIPP rigging) (09/99)	2.2E-06	*****																									
8	Case 5	*****	6.8E-08	*****	3.5E-07	5 - NEI 50% (new Navy/WIPP rigging)	6.9E-07	*****																									
9	Case 6	*****	1.4E-06	*****	1.6E-05	6 - NEI 95%, NUREG-0612	3.3E-05	*****																									
10	Case 7	*****	3.2E-07	*****	3.7E-06	7 - NEI 50%, NUREG-0612	7.4E-06	*****																									
11	Median	5E-06	1.7E-07	1E-08	2.4E-06	Median - All cases	4.8E-06	*****																									
12	GMean	4E-06	2.2E-07	1E-08	2.1E-06	Mean - All cases	7.7E-06	*****																									
13	High	*****	2.2E-09			<div>Probability of Loss-of-Inventory from a Heavy Load Drop</div> <table><thead><tr><th></th><th>High</th><th>Mean</th><th>Median</th><th>Low</th></tr></thead><tbody><tr><td>NUREG-0612</td><td>6.9E-06</td><td>2.2E-06</td><td>1.2E-07</td><td>2.2E-09</td></tr><tr><td>New Navy data, NUREG rigging model</td><td>4.8E-06</td><td>1.4E-06</td><td>1.5E-07</td><td>4.4E-09</td></tr><tr><td>New Navy data, WIPP rigging model</td><td>2.1E-06</td><td>5.8E-07</td><td>2.4E-07</td><td>2.3E-08</td></tr><tr><td>NEI 95% (new Navy/WIPP rigging)</td><td>2.9E-06</td><td>7.5E-07</td><td>2.1E-07</td><td>1.5E-08</td></tr></tbody></table>		High	Mean	Median	Low	NUREG-0612	6.9E-06	2.2E-06	1.2E-07	2.2E-09	New Navy data, NUREG rigging model	4.8E-06	1.4E-06	1.5E-07	4.4E-09	New Navy data, WIPP rigging model	2.1E-06	5.8E-07	2.4E-07	2.3E-08	NEI 95% (new Navy/WIPP rigging)	2.9E-06	7.5E-07	2.1E-07	1.5E-08	4.4E-06	2.2E-07
	High	Mean	Median	Low																													
NUREG-0612	6.9E-06	2.2E-06	1.2E-07	2.2E-09																													
New Navy data, NUREG rigging model	4.8E-06	1.4E-06	1.5E-07	4.4E-09																													
New Navy data, WIPP rigging model	2.1E-06	5.8E-07	2.4E-07	2.3E-08																													
NEI 95% (new Navy/WIPP rigging)	2.9E-06	7.5E-07	2.1E-07	1.5E-08																													
14	Median	*****	4.4E-09				4.4E-06	2.2E-07																									
15	Low	*****	2.8E-08				4.8E-06	2.1E-07																									
16	4	*****	1.5E-08				3.7E-07	-1.8E-08																									
17							7.71	-8.53																									
18																																	
19	1	*****																															
20	1	*****																															
21	2	*****																															
22	2	*****																															
23	3	*****																															
24	3	*****																															
25	4	*****																															
26	4	*****																															
27	1																																
28																																	
29																																	
30																																	
31																																	
32							High	Mean																									
33						NUREG-0612	6.9E-06	*****																									
34						New Navy data, NUREG rigging model	4.8E-06	*****																									
35						New Navy data, WIPP rigging model	2.1E-06	*****																									
36						NEI 95% (new Navy/WIPP rigging)	2.9E-06	*****																									
37																																	
38							High	Mean																									

09-29-99

DRAFT

G	I	J	K	L
1				
2				
3	Low	Average		
4	2.2E-09	3.5E-06		
5	4.4E-09	2.4E-06		
6	2.8E-08	1.1E-06		
7	1.4E-08	1.2E-06		
8	6.7E-09	3.5E-07		
9	6.0E-08	1.6E-05		
10	1.4E-08	3.7E-06		
11	1.4E-08	2.4E-06		
12	1.8E-08	3.9E-06		
13	1.1E-08	7.8E-06	3.4E-07	1.8E-08
14				
15				
16		7.8E-06	3.4E-07	1.8E-08
17				
18				
19	1.1E-08	7.8E-06	3.4E-07	1.8E-08
20	1.1E-08			
21	1.4E-08			
22	2.6E-09			
23	18.99			
24				
25				
26				
27				
28				
29				
30				
31				
32	Median	Low		
33	1.2E-07	2.2E-09		
34	1.5E-07	4.4E-09		
35	2.4E-07	2.8E-08		
36	2.1E-07	1.5E-08		
37				
38	Median	Low		

09-29-99

DRAFT

H	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1				
2		(Based on new Navy Data AND WIPP Rigging Evaluation)				
3		Based on 1 incident and 1-in-1,000 lift results in a drop				
4	Event	Description	Units	High	Low	Median
5	N0	Base range of failure of handling system	/year	1	1	1
6		Crane Failure				
7	F1	Fraction of load hangup events (new 1990s Navy data)	---	0.14	0.14	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	1.4E-01	1.4E-01	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	1.4E-03	1.4E-04	4.3E-04
11	F2	Fraction of component failure events (new 1990s Navy data)	---	0.61	0.61	
12	CF21	Failure of single component with a backup (N0*F2)	/year	6.1E-01	6.1E-01	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	6.1E-02	6.1E-03	1.9E-02
15	F3	Fraction of two-blocking events (new 1990s Navy data)	---	0.05	0.05	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	4.5E-02	4.5E-02	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	4.5E-05	4.5E-07	4.5E-06
20	F4	Fraction of single component failure (new 1990s Navy data)	---	0.01	0.01	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	1.5E-03	1.5E-03	1.5E-03
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	6.4E-02	7.7E-03	2.1E-02
24	D1	Lifts per year leading to drop (1-in1,000)	No.	1.0E-03	1.0E-03	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	6.4E-05	7.7E-06	2.2E-05
26		Rigging failure - Based on WIPP method				
27	F5	Fraction of improper rigging events (new 1990s Navy data)	---	0.21	0.21	
28	CR11	Failure due to improper rigging (N0*F5)	/year	8.7E-07	8.7E-07	
29	CR12	Failure of redundant/alternate rigging	N/A			
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	8.7E-07	8.7E-07	8.7E-07
31	D2	Lifts per year leading to drop (1-in1,000)	No.	1.0E-03	1.0E-03	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	8.7E-10	8.7E-10	8.7E-10
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	6.4E-02	7.7E-03	2.1E-02
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	6.4E-05	7.7E-06	2.2E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	
39	P	Fraction of path near/over pool	---	0.25	0.05	
40	P'	Fraction of path critical for load drop	---	0.25	0.10	
41	LOI-S	(CFCR) * P * P' * RF	/year	4.0E-06	3.8E-08	3.9E-07
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	7.5E-05	1.0E-07	2.7E-06
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	7.5E-05	1.0E-07	2.7E-06
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	19	3	7
I	A	B	C	D	E	F
1	Heavy Loads	NUREG-0612 Evaluation Data Sheet 2(B-1) Rev 9/1/99 Sheet N1				
2		Based on release fraction of 1 for current storage configuration				
3		NEI 95% confidence interval				
4	Event	Description	Units	High	Low	Median
5	N0	Base range of failure of handling system	/year	7.1E-04	2.7E-04	4.4E-04

09-29-99

DRAFT

I	A	B	C	D	E	F
6		Crane Failure				
7	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05	
8	CF11	Operator error leading to load hangup (N0*F1)	/year	3.3E-05	1.3E-05	
9	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03	
10	CF1	Load hangup event (CF11*CF12)	/year	3.3E-07	1.3E-08	6.4E-08
11	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53	
12	CF21	Failure of single component with a backup (N0*F2)	/year	3.8E-04	1.4E-04	
13	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02	
14	CF2	Failure due to random component failure (CF21*CF22)	/year	3.8E-05	1.4E-06	7.4E-06
15	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35	
16	CF31	Operator error leading to Two-blocking (N0*F3)	/year	2.5E-04	9.4E-05	
17	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03	
18	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02	
19	CF3	Two-blocking event (CF31*CF32*CF33)	/year	2.5E-07	9.4E-10	1.5E-08
20	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02	
21	F4'	Credit for NUREG-0554	/demand	1.0E-01	1.0E-01	
22	CF4	Failure of component that doesn't have backup (N0*F4*F4)	/year	1.6E-06	6.1E-07	1.0E-06
23	CRANE	Failure of crane (CF1+CF2+CF3+CF4)	/year	4.0E-05	2.1E-06	8.5E-06
24	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
25	CF	Failure of crane leading to load drop (CRANE*D1)	/year	4.0E-04	8.3E-06	5.8E-05
26		Rigging failure - Based on NUREG-0612 method				
27	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07	
28	CR11	Failure due to improper rigging (N0*F5)	/year	5.0E-05	1.9E-05	
29	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05	
30	RIGGING	Failure due to improper rigging (CR11*CR12)	/year	1.2E-05	9.4E-07	3.4E-06
31	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4	
32	CR	Failure of rigging leading to a load drop (RIGGING*D2)	/year	1.2E-04	3.8E-06	2.2E-05
33						
34	FHLS	Failure of heavy load (crane and rigging) system (CRANE+RIGGING)	/year	5.3E-05	3.0E-06	1.2E-05
35	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	5.3E-04	1.2E-05	7.9E-05
36						
37		Loss-of-inventory for a single-failure proof crane				
38	RF	Fraction of year over which a release may occur	---	1.00	1.00	
39	P	Fraction of path near/over pool	---	0.25	0.05	
40	P'	Fraction of path critical for load drop	---	0.25	0.10	
41	LOI-S	(CFCR) * P * P' * RF	/year	3.3E-05	6.0E-08	1.4E-06
42						
43		Loss-of-inventory for a non single-failure proof crane				
44	CFCRNON	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-04	2.0E-07	5.5E-06
45	RF	Fraction of year over which a release may occur	---	1.00	1.00	
46	LOI-N	(CFCRNON) * P * P' * RF	/year	1.5E-04	2.0E-07	5.5E-06
47						
48		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	5	3	4

09-29-99

A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Heavy Loads	NUREG-0612 Evaluation															
2	Data Sheet 2(B-1)	As presented in NURE-0612															
3																	
4	Event	Description	Units	High	Low	Mean	LogMean	GeoMean	High	Low	Mean	LogMean	GeoMean	MeanHL	MeanM	MeanL	MeanG
5	Crane Failure																
6	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	8.0E-05	8.0E-05	5.2E-05	3.9E-05
7																	
8	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05				0.05	0.05							
9	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
10	CF11	Operator error leading to load hangup (N0*F1*D1)	/year	7.0E-05	1.9E-06	3.6E-05	1.9E-05	1.1E-05	2.8E-05	4.7E-06	1.6E-05	1.3E-05	1.1E-05	2.6E-05	2.6E-05	1.6E-05	1.1E-05
11	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
12	CF1	Load hangup event (CF11*CF12)	/year	7.0E-07	1.9E-09	3.5E-07	1.2E-07	3.6E-08	2.8E-08	4.7E-08	3.7E-08	3.6E-08	3.6E-08	1.9E-07	1.9E-07	7.7E-08	3.6E-08
13																	
14	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53				0.53	0.53							
15	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
16	CF21	Failure of single component with a backup (N0*F2*D2)	/year	8.0E-04	2.1E-05	4.1E-04	2.2E-04	1.3E-04	3.2E-04	5.3E-05	1.9E-04	1.5E-04	1.3E-04	3.0E-04	3.0E-04	1.8E-04	1.3E-04
17	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
18	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-05	2.1E-07	4.0E-05	1.4E-05	4.1E-06	3.2E-06	5.3E-06	4.3E-06	4.2E-06	4.1E-06	2.2E-05	2.2E-05	8.8E-06	4.1E-06
19																	
20	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35				0.35	0.35							
21	D3	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
22	CF31	Operator error leading to Two-blocking (N0*F3*D3)	/year	5.2E-04	1.4E-05	2.7E-04	1.4E-04	8.5E-05	2.1E-04	3.5E-05	1.2E-04	9.7E-05	8.5E-05	2.0E-04	2.0E-04	1.2E-04	8.5E-05
23	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
24	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
25	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-07	1.4E-10	2.6E-07	6.4E-08	8.5E-09	2.1E-09	3.5E-08	1.8E-08	1.2E-08	8.5E-09	1.4E-07	1.4E-07	3.8E-08	8.5E-09
26																	
27	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02				0.02	0.02							
28	D4	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
29	F4'	Credit for NUREG-0554	/demand	0.10	0.10				0.10	0.10							
30	CF4	Failure of component that doesn't have backup (N0*F4*F4'D4)	/year	3.4E-06	9.1E-08	1.7E-06	9.2E-07	5.6E-07	1.4E-06	2.3E-07	8.0E-07	6.3E-07	5.6E-07	1.3E-06	1.3E-06	7.7E-07	5.6E-07
31																	
32	CF	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-05	3.1E-07	4.3E-05	1.5E-05	5.1E-06	4.6E-06	5.7E-06	5.1E-06	5.1E-06	5.1E-06	2.4E-05	2.4E-05	1.0E-05	5.1E-06
33																	
34	Rigging failure	Based on NUREG-0612 method															
35	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07				0.07	0.07							
36	D5	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
37	CR11	Failure due to improper rigging (N0*F5'D5)	/year	1.0E-04	2.8E-06	5.4E-05	2.8E-05	1.7E-05	4.2E-05	7.0E-06	2.4E-05	1.9E-05	1.7E-05	3.9E-05	3.9E-05	2.4E-05	1.7E-05
38	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05				0.05	0.25							
39																	
40	CR	Failure due to improper rigging (CR11*CR12)	/year	2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06	2.1E-06	1.7E-06	1.9E-06	1.9E-06	1.9E-06	7.5E-06	7.5E-06	3.4E-06	1.9E-06
41																	
42	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	5.6E-05	2.0E-05	7.0E-06	6.7E-06	7.4E-06	7.0E-06	7.0E-06	7.0E-06	3.1E-05	3.1E-05	1.4E-05	7.0E-06
43																	
44		Loss-of-inventory for a single-failure proof crane															
45	RF	Fraction of year over which a release may occur	---	0.20	0.10				0.10	0.20							
46	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
47	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
48	LOI-S	(CFCR) * P * P' * RF	/year	1.4E-06	2.2E-10	6.9E-07	1.6E-07	1.8E-08	3.3E-09	9.3E-08	4.8E-08	2.7E-08	1.8E-08	3.7E-07	3.7E-07	9.3E-08	1.8E-08
49																	
50		Loss-of-inventory for a non single-failure proof crane															
51	CF + CR	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-03	4.1E-05	7.9E-04	4.1E-04	2.5E-04	6.1E-04	1.0E-04	3.6E-04	2.9E-04	2.5E-04	5.7E-04	5.7E-04	3.5E-04	2.5E-04
52	RF	Fraction of year over which a release may occur	---	0.20	0.10				0.10	0.20							
53	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
54	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
55	LOI-N	(CF + CR) * P * P' * RF	/year	1.9E-05	2.0E-08	9.6E-06	2.8E-06	6.3E-07	3.1E-07	1.3E-06	7.9E-07	6.8E-07	6.3E-07	5.2E-06	5.2E-06	1.7E-06	6.3E-07
56																	
57		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	14	92	14	18	36	92	14	17	25	36	14	14	19	36

A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
58	Heavy Loads	NUREG-0612 Evaluation															
59	Data Sheet 2(B-1)	Based on release fraction of 1 for current storage configuration															
60																	
61	Event	Description	Units	High	Low	Mean	LogMean	GeoMean	High	Low	Mean	LogMean	GeoMean	MeanHL	MeanM	MeanL	MeanG
62	Crane Failure																
63	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	8.0E-05	8.0E-05	5.2E-05	3.9E-05
64																	
65	F1	Fraction of load hangup events (2/43 1970s Navy data)	---	0.05	0.05				0.05	0.05							
66	D1	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
67	CF11	Operator error leading to load hangup (N0*F1*D1)	/year	7.0E-05	1.9E-06	3.6E-05	1.9E-05	1.1E-05	2.8E-05	4.7E-06	1.6E-05	1.3E-05	1.1E-05	2.6E-05	2.6E-05	1.6E-05	1.1E-05
68	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
69	CF1	Load hangup event (CF11*CF12)	/year	7.0E-07	1.9E-09	3.5E-07	1.2E-07	3.6E-08	2.8E-08	4.7E-08	3.7E-08	3.6E-08	3.6E-08	1.9E-07	1.9E-07	7.7E-08	3.6E-08
70																	
71	F2	Fraction of component failure events (23/43 1970s Navy data)	---	0.53	0.53				0.53	0.53							
72	D2	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
73	CF21	Failure of single component with a backup (N0*F2*D2)	/year	8.0E-04	2.1E-05	4.1E-04	2.2E-04	1.3E-04	3.2E-04	5.3E-05	1.9E-04	1.5E-04	1.3E-04	3.0E-04	3.0E-04	1.8E-04	1.3E-04
74	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
75	CF2	Failure due to random component failure (CF21*CF22)	/year	8.0E-05	2.1E-07	4.0E-05	1.4E-05	4.1E-06	3.2E-06	5.3E-06	4.3E-06	4.2E-06	4.1E-06	2.2E-05	2.2E-05	8.8E-06	4.1E-06
76																	
77	F3	Fraction of two-blocking events (15/43 1970s Navy data)	---	0.35	0.35				0.35	0.35							
78	D3	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
79	CF31	Operator error leading to Two-blocking (N0*F3*D3)	/year	5.2E-04	1.4E-05	2.7E-04	1.4E-04	8.5E-05	2.1E-04	3.5E-05	1.2E-04	9.7E-05	8.5E-05	2.0E-04	2.0E-04	1.2E-04	8.5E-05
80	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
81	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
82	CF3	Two-blocking event (CF31*CF32*CF33)	/year	5.2E-07	1.4E-10	2.6E-07	6.4E-08	8.5E-09	2.1E-09	3.5E-08	1.8E-08	1.2E-08	8.5E-09	1.4E-07	1.4E-07	3.8E-08	8.5E-09
83																	
84	F4	Fraction of single component failure (1/44 1970s Navy data)	---	0.02	0.02				0.02	0.02							
85	D4	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
86	F4'	Credit for NUREG-0554	/demand	0.10	0.10				0.10	0.10							
87	CF4	Failure of component that doesn't have backup (N0*F4*D4)	/year	3.4E-06	9.1E-08	1.7E-06	9.2E-07	5.6E-07	1.4E-06	2.3E-07	8.0E-07	6.3E-07	5.6E-07	1.3E-06	1.3E-06	7.7E-07	5.6E-07
88																	
89	CF	Failure of crane (CF1+CF2+CF3+CF4)	/year	8.5E-05	3.1E-07	4.3E-05	1.5E-05	5.1E-06	4.6E-06	5.7E-08	5.1E-06	6.1E-06	5.1E-06	2.4E-05	2.4E-05	1.0E-05	5.1E-06
90																	
91	Rigging failure	Based on NUREG-0612 method															
92	F5	Fraction of improper rigging events (3/43 1970s Navy data)	---	0.07	0.07				0.07	0.07							
93	D5	Lifts per year leading to drop (200 lifts per year, 5% to 2% are dropped)	No.	10	4				4	10							
94	CR11	Failure due to improper rigging (N0*F5*D5)	/year	1.0E-04	2.8E-06	5.4E-05	2.8E-05	1.7E-05	4.2E-05	7.0E-06	2.4E-05	1.9E-05	1.7E-05	3.9E-05	3.9E-05	2.4E-05	1.7E-05
95	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05				0.05	0.25							
96																	
97	CR	Failure due to improper rigging (CR11*CR12)	/year	2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06	2.1E-06	1.7E-06	1.9E-06	1.9E-06	1.9E-06	7.5E-06	7.5E-06	3.4E-06	1.9E-06
98																	
99	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	1.1E-04	4.5E-07	5.6E-05	2.0E-05	7.0E-06	6.7E-06	7.4E-06	7.0E-06	7.0E-06	7.0E-06	3.1E-05	3.1E-05	1.4E-05	7.0E-06
100																	
101		Loss-of-inventory fo a single-failure proof crane															
102	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
103	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
104	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
105	LOI-S	(CFCR) * P * P' * RF	/year	6.9E-06	2.2E-09	3.5E-06	8.6E-07	1.2E-07	3.3E-08	4.6E-07	2.5E-07	1.6E-07	1.2E-07	1.9E-06	1.9E-06	5.1E-07	1.2E-07
106																	
107		Loss-of-inventory for a non single-failure proof crane															
108	CF + CR	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	1.5E-03	4.1E-05	7.9E-04	4.1E-04	2.5E-04	6.1E-04	1.0E-04	3.6E-04	2.9E-04	2.5E-04	5.7E-04	5.7E-04	3.5E-04	2.5E-04
109	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
110	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
111	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
112	LOI-N	(CF + CR) * P * P' * RF	/year	9.6E-05	2.0E-07	4.8E-05	1.6E-05	4.4E-06	3.1E-06	6.4E-06	4.7E-06	4.5E-06	4.4E-06	2.6E-05	2.6E-05	1.0E-05	4.4E-06
113																	
114		Risk reduction for a single-failure proof crane (LOI-N/LOI-S)	---	14	92	14	18	36	92	14	19	28	36	14	14	20	36

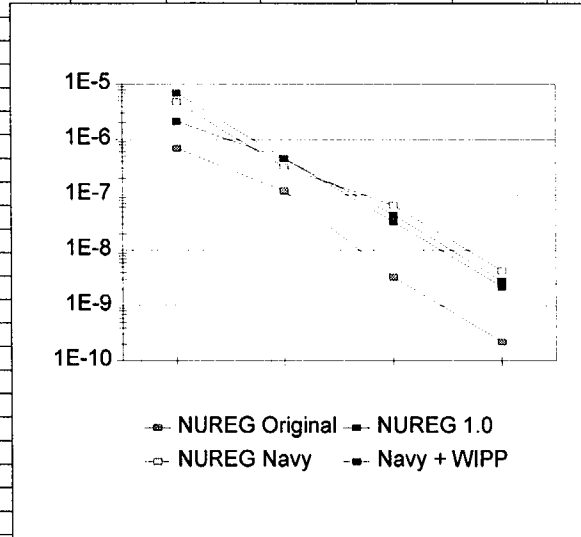
A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
115	Heavy Loads	NUREG-0612 Evaluation															
116	Data Sheet 2(B-1)	(Based on new Navy Data)															
117																	
118	Event	Description	Units	High	Low	Mean	LogMean	GeoMean	High	Low	Mean	LogMean	GeoMean	MeanHL	MeanM	MeanL	MeanG
119	Crane Failure																
120	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	8.0E-05	8.0E-05	5.2E-05	3.9E-05
121																	
122	F1	Fraction of load hangup events (1990s Navy data)	---	0.14	0.14				0.14	0.14							
123	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3				3	3							
124	CF11	Operator error leading to load hangup (N0*F1*D1)	/year	6.2E-05	4.1E-06	3.3E-05	2.1E-05	1.6E-05	6.2E-05	4.1E-06	3.3E-05	2.1E-05	1.6E-05	3.3E-05	3.3E-05	2.1E-05	1.6E-05
125	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
126	CF1	Load hangup event (CF11*CF12)	/year	6.2E-07	4.1E-09	3.1E-07	1.2E-07	5.1E-08	6.2E-08	4.1E-08	5.2E-08	5.1E-08	5.1E-08	1.8E-07	1.8E-07	8.7E-08	5.1E-08
127																	
128	F2	Fraction of component failure events (1990s Navy data)	---	0.61	0.61				0.61	0.61							
129	D2	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3				3	3							
130	CF21	Failure of single component with a backup (N0*F2*D2)	/year	2.8E-04	1.8E-05	1.5E-04	9.5E-05	7.1E-05	2.8E-04	1.8E-05	1.5E-04	9.5E-05	7.1E-05	1.5E-04	1.5E-04	9.5E-05	7.1E-05
131	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
132	CF2	Failure due to random component failure (CF21*CF22)	/year	2.8E-05	1.8E-07	1.4E-05	5.5E-06	2.2E-06	2.8E-06	1.8E-06	2.3E-06	2.3E-06	2.2E-06	8.1E-06	8.1E-06	3.9E-06	2.2E-06
133																	
134	F3	Fraction of two-blocking events (1990s Navy data)	---	0.05	0.05				0.05	0.05							
135	D3	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3				3	3							
136	CF31	Operator error leading to Two-blocking (N0*F3*D3)	/year	2.1E-05	1.4E-06	1.1E-05	7.1E-06	5.3E-06	2.1E-05	1.4E-06	1.1E-05	7.1E-06	5.3E-06	1.1E-05	1.1E-05	7.1E-06	5.3E-06
137	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
138	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
139	CF3	Two-blocking event (CF31*CF32*CF33)	/year	2.1E-08	1.4E-11	1.0E-08	2.8E-09	5.3E-10	2.1E-10	1.4E-09	7.9E-10	6.2E-10	5.3E-10	5.6E-09	5.6E-09	1.7E-09	5.3E-10
140																	
141	F4	Fraction of single component failure (1990s Navy data)	---	0.01	0.01				0.01	0.01							
142	D4	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3				3	3							
143	F4'	Credit for NUREG-0554	/demand	0.10	0.10				0.10	0.10							
144	CF4	Failure of component that doesn't have backup (N0*F4*D4)	/year	6.8E-07	4.5E-08	3.6E-07	2.3E-07	1.8E-07	6.8E-07	4.5E-08	3.6E-07	2.3E-07	1.8E-07	3.6E-07	3.6E-07	2.3E-07	1.8E-07
145																	
146	CF	Failure of crane (CF1+CF2+CF3+CF4)	/year	2.9E-05	2.3E-07	1.5E-05	5.9E-06	2.6E-06	3.5E-06	1.9E-06	2.7E-06	2.6E-06	2.6E-06	8.6E-06	8.6E-06	4.3E-06	2.6E-06
147																	
148	Rigging failure	Based on NUREG-0612 method															
149	F5	Fraction of improper rigging events (1990s Navy data)	---	0.21	0.21				0.21	0.21							
150	D5	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6				6	6							
151	CR11	Failure due to improper rigging (N0*F5*D5)	/year	1.9E-04	1.3E-05	1.0E-04	6.6E-05	5.0E-05	1.9E-04	1.3E-05	1.0E-04	6.6E-05	5.0E-05	1.0E-04	1.0E-04	6.6E-05	5.0E-05
152	CR12	Failure of redundant/alternate rigging	/demand	0.25	0.05				0.05	0.25							
153																	
154	CR	Failure due to improper rigging (CR11*CR12)	/year	4.8E-05	6.4E-07	2.4E-05	1.1E-05	5.6E-06	9.6E-06	3.2E-06	6.4E-06	5.9E-06	5.6E-06	1.5E-05	1.5E-05	8.4E-06	5.6E-06
155																	
156	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)		7.7E-05	8.8E-07	3.9E-05	1.7E-05	8.2E-06	1.3E-05	5.1E-06	9.1E-06	8.5E-06	8.2E-06	2.4E-05	2.4E-05	1.3E-05	8.2E-06
157																	
158		Loss-of-inventory for a single-failure proof crane															
159	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
160	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
161	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
162	LOI-S	(CFCR) * P * P' * RF	/year	4.8E-06	4.4E-09	2.4E-06	6.9E-07	1.5E-07	6.6E-08	3.2E-07	1.9E-07	1.6E-07	1.5E-07	1.3E-06	1.3E-06	4.2E-07	1.5E-07
163																	
164		Loss-of-inventory for a non single-failure proof crane															
165	CF + CR	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	5.6E-04	3.7E-05	3.0E-04	1.9E-04	1.4E-04	5.6E-04	3.7E-05	3.0E-04	1.9E-04	1.4E-04	3.0E-04	3.0E-04	1.9E-04	1.4E-04
166	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
167	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
168	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
169	LOI-N	(CF + CR) * P * P' * RF	/year	3.5E-05	1.9E-07	1.8E-05	6.8E-06	2.5E-06	2.8E-06	2.3E-06	2.6E-06	2.5E-06	2.5E-06	1.0E-05	1.0E-05	4.6E-06	2.5E-06
170																	
171		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	7	42	7	10	18	42	7	13	16	18	8	8	11	18

A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
172	Heavy Loads	NUREG-0612 Evaluation															
173	Data Sheet 2(B-1)	(Based on new Navy Data AND WIPP Rigging Evaluation)															
174																	
175	Event	Description	Units	High	Low	Mean	LogMean	GeoMean	High	Low	Mean	LogMean	GeoMean	MeanHL	MeanM	MeanL	MeanG
176	Crane Failure																
177	N0	Base range of failure of handling system	/year	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	1.5E-04	1.0E-05	8.0E-05	5.2E-05	3.9E-05	8.0E-05	8.0E-05	5.2E-05	3.9E-05
178																	
179	F1	Fraction of load hangup events (1990s Navy data)	---	0.14	0.14				0.14	0.14							
180	D1	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3				3	3							
181	CF11	Operator error leading to load hangup (N0*F1*D1)	/year	6.2E-05	4.1E-06	3.3E-05	2.1E-05	1.6E-05	6.2E-05	4.1E-06	3.3E-05	2.1E-05	1.6E-05	3.3E-05	3.3E-05	2.1E-05	1.6E-05
182	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
183	CF1	Load hangup event (CF11*CF12)	/year	6.2E-07	4.1E-09	3.1E-07	1.2E-07	5.1E-08	6.2E-08	4.1E-08	5.2E-08	5.1E-08	5.1E-08	1.8E-07	1.8E-07	8.7E-08	5.1E-08
184																	
185	F2	Fraction of component failure events (1990s Navy data)	---	0.61	0.61				0.61	0.61							
186	D2	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3				3	3							
187	CF21	Failure of single component with a backup (N0*F2*D2)	/year	2.8E-04	1.8E-05	1.5E-04	9.5E-05	7.1E-05	2.8E-04	1.8E-05	1.5E-04	9.5E-05	7.1E-05	1.5E-04	1.5E-04	9.5E-05	7.1E-05
188	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
189	CF2	Failure due to random component failure (CF21*CF22)	/year	2.8E-05	1.8E-07	1.4E-05	5.5E-06	2.2E-06	2.8E-06	1.8E-06	2.3E-06	2.3E-06	2.2E-06	8.1E-06	8.1E-06	3.9E-06	2.2E-06
190																	
191	F3	Fraction of two-blocking events (3/66 1990s Navy data)	---	0.05	0.05				0.05	0.05							
192	D3	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	3				3	3							
193	CF31	Operator error leading to Two-blocking (N0*F3*D3)	/year	2.1E-05	1.4E-06	1.1E-05	7.1E-06	5.3E-06	2.1E-05	1.4E-06	1.1E-05	7.1E-06	5.3E-06	1.1E-05	1.1E-05	7.1E-06	5.3E-06
194	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03				1.0E-03	1.0E-02							
195	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02				1.0E-02	1.0E-01							
196	CF3	Two-blocking event (CF31*CF32*CF33)	/year	2.1E-08	1.4E-11	1.0E-08	2.8E-09	5.3E-10	2.1E-10	1.4E-09	7.9E-10	6.2E-10	5.3E-10	5.6E-09	5.6E-09	1.7E-09	5.3E-10
197																	
198	F4	Fraction of single component failure (1990s Navy data)	---	0.01	0.01				0.01	0.01							
199	D4	Lifts per year leading to drop (100 lifts per year, drops from non-rigging)	No.	3	2				3	3							
200	F4'	Credit for NUREG-0554	/demand	0.10	0.10				0.10	0.10							
201	CF4	Failure of component that doesn't have backup (N0*F4*D4)	/year	6.8E-07	2.3E-08	3.5E-07	1.9E-07	1.2E-07	6.8E-07	4.5E-08	3.6E-07	2.3E-07	1.8E-07	3.6E-07	3.6E-07	2.1E-07	1.5E-07
202																	
203	CF	Failure of crane (CF1+CF2+CF3+CF4)	/year	2.9E-05	2.1E-07	1.5E-05	5.8E-06	2.5E-06	3.5E-06	1.9E-06	2.7E-06	2.6E-06	2.6E-06	8.6E-06	8.6E-06	4.2E-06	2.5E-06
204																	
205	Rigging failure	Based on WIPP "Trudock" crane evaluation															
206	F5	Fraction of improper rigging events (1990s Navy data)	---	0.21	0.21				0.21	0.21							
207	D5	Lifts per year leading to drop (100 lifts per year, drops from rigging)	No.	6	6				6	6							
208	CR11	WIPP mean human error probability	/demand	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07	8.7E-07
209	CR12	Failure of redundant/alternate rigging embedded in CR11															
210																	
211	CR	Failure due to improper rigging (CR11*D5)	/year	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06
212																	
213	CFCR	Total failures (crane and rigging) leading to a load drop (CF+CR)	/year	3.4E-05	5.5E-06	2.0E-05	1.6E-05	1.4E-05	8.8E-06	7.2E-06	8.0E-06	8.0E-06	7.9E-06	1.4E-05	1.4E-05	1.2E-05	1.0E-05
214																	
215		Loss-of-inventory for a single-failure proof crane															
216	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
217	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
218	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
219	LOI-S	(CFCR) * P * P' * RF	/year	2.1E-06	2.7E-08	1.1E-06	4.8E-07	2.4E-07	4.4E-08	4.5E-07	2.5E-07	1.7E-07	1.4E-07	6.6E-07	6.6E-07	3.3E-07	1.8E-07
220																	
221		Loss-of-inventory for a non single-failure proof crane															
222	CF + CR	Total failures leading to a dropped load (CF11+CF21+CF31+10*CF4+CR)	No.	3.7E-04	2.5E-05	2.0E-04	1.3E-04	9.6E-05	3.7E-04	2.5E-05	2.0E-04	1.3E-04	9.6E-05	2.0E-04	2.0E-04	1.3E-04	9.6E-05
223	RF	Fraction of year over which a release may occur	---	1.00	1.00				1.00	1.00							
224	P	Fraction of path near/over pool	---	0.25	0.05				0.05	0.25							
225	P'	Fraction of path critical for load drop	---	0.25	0.10				0.10	0.25							
226	LOI-N	(CF + CR) * P * P' * RF	/year	2.3E-05	1.2E-07	1.1E-05	4.4E-06	1.7E-06	1.8E-06	1.6E-06	1.7E-06	1.7E-06	1.7E-06	6.6E-06	6.6E-06	3.0E-06	1.7E-06
227																	
228		Risk reduction for a single-failure proof crane (LOI-N /LOI-S)	---	11	5	11	9	7	42	4	7	10	12	10	10	9	9

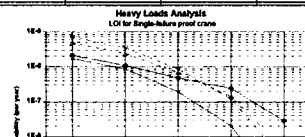
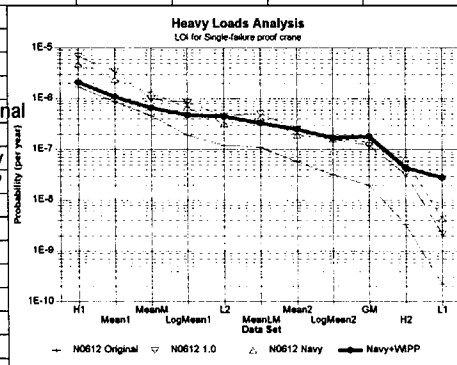
A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
229		Summary of 1990s Navy Data															
230			ID	Non-rig	Rig	Total											
231		Data summary by count															
232		Crane collision	CC	11	0	11											
233		Damaged crane	DC	13	5	18											
234		Damaged load	DL	1	2	3											
235		Dropped load	DD	2	4	6											
236		Load collision	LC	7	2	9											
237		Other	OO	1	0	1											
238		Overload	OL	5	3	8											
239		Personnel injury	PI	2	3	5											
240		Shock	SK	0	1	1											
241		Two-blocking	TB	3	0	3											
242		Unidentified	UD	1	0	1											
243		Totals		46	20	66											
244			Fraction														
245	F1	$OL + 0.5*(DL+LC)$		0.14	9												
246	F2	$CC + DC + 0.5*(DL+LC) + DD + OO + PI + SK + UD$		0.52	34												
247	F3	TB		0.05	3												
248	F4	1/67 events (assume none in 66)															
249	F5	Rigging		0.30	20												
250																	
251		Totals		1.00	46	20	66										
252																	
253		Summary of 1990s Navy Data															
254			ID	Non-rig	Rigging	Total											
255		Summary by Accident Type (fraction of events)															
256		Crane collision	CC	0.17	0.00	0.17											
257		Damaged crane	DC	0.20	0.08	0.27											
258		Damaged load	DL	0.02	0.03	0.05											
259		Dropped load	DD	0.03	0.06	0.09											
260		Load collision	LC	0.11	0.03	0.14											
261		Other	OO	0.02	0.00	0.02											
262		Overload	OL	0.08	0.05	0.12											
263		Personnel injury	PI	0.03	0.05	0.08											
264		Shock	SK	0.00	0.02	0.02											
265		Two-blocking	TB	0.05	0.00	0.05											
266		Unidentified	UD	0.02	0.00	0.02											
267		Totals		0.70	0.30	1.00											
268																	
269		Summary by Accident Cause (fraction of total events)															
270		Improper operation	IO	0.38													
271		Procedures	PROC	0.20													
272		Equipment failure	EQ	0.05													
273		Improper rigging	IR	0.30													
274		Others	OTHER	0.08													
275		Totals		1.00													
276																	
277		Application of new Navy data to heavy load drop evaluation				-612											
278	F1	$OL + 0.5*(DL+LC)$		0.14	0.05												
279	F2	$CC + DC + 0.5*(DL+LC) + DD + OO + PI + SK + UD + 0.3*IR$		0.61	0.53												
280	F3	TB		0.05	0.35												
281	F4	1/67 events (assume none in 66)		(.01)	(1/44)												
282																	
283	F5	Rigging 0.7*IR		0.21	0.07												
284																	
285		Totals		1.00	1.00												

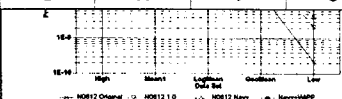
B	A	B	C	D	E	F	G	H	I	J	K
1											
2											
3	6.90E-07	1.20E-07	3.30E-09	2.20E-10		2.00E-08	2.00E-07				
4	6.90E-06	4.60E-07	3.30E-08	2.20E-09		1.20E-07	1.90E-06				

B	A	B	C	D	E	F	G	H	I	J	K
5	4.80E-06	3.20E-07	6.50E-08	4.30E-09		1.40E-07	1.30E-06				
6	2.10E-06	4.50E-07	4.40E-08	2.80E-09		1.80E-07	6.60E-07				
7											
8		1 NUREG Original									
9		2 NUREG 1.0									
10		3 NUREG Navy									
11		4 Navy + WIPP									
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											



C	A	B	C	D	E	F	G	H	I	J	K	L
1												
2		1	2		3	4						
3		4.60E-07	1.90E-06		1.30E-06	6.60E-07						
4		1.10E-07	5.10E-07		4.20E-07	3.30E-07						
5		2.00E-08	1.20E-07		1.40E-07	1.80E-07						
6												
7												
8												
9	8.70E-07	4.60E-07	1.10E-07	5.90E-08	2.00E-08	N0612 Original						
10	3.50E-06	1.90E-06	5.10E-07	2.50E-07	1.20E-07	N0612 1.0						
11	2.40E-06	1.30E-06	4.20E-07	1.90E-07	1.40E-07	N0612 Navy						
12	1.10E-06	6.60E-07	3.30E-07	2.50E-07	1.80E-07	Navy+WIPP						
13												
14	Mean Base											
15	Mean Mean											
16	Mean Log-mean											
17	Mean Reverse											
18	Geo-mean											
19												
20												
21	H1	Mean1	MeanM	LogMean	L2	MeanLM	Mean2	LogMean2	GM	H2	L1	
22	1.70E-06	8.70E-07	4.60E-07	1.90E-07	1.20E-07	1.10E-07	5.80E-08	3.20E-08	2.00E-08	3.30E-09	2.20E-10	
23	6.90E-06	3.50E-06	1.00E-06	8.60E-07	4.60E-07	5.10E-07	2.50E-07	1.60E-07	1.20E-07	3.30E-08	2.20E-09	
24	4.80E-06	2.40E-06	1.30E-06	6.80E-07	3.20E-07	4.20E-07	1.90E-07	1.60E-07	1.40E-07	6.50E-08	4.30E-09	
25	2.10E-06	1.10E-06	6.60E-07	4.80E-07	4.50E-07	3.30E-07	2.50E-07	1.70E-07	1.80E-07	4.40E-08	2.80E-08	
26												
27												
28	High	Mean1	LogMean	GeoMean	Low							
29	1.70E-06	8.70E-07	1.90E-07	2.00E-08	2.20E-10							
30	6.90E-06	3.50E-06	8.60E-07	1.20E-07	2.20E-09							
31	4.80E-06	2.40E-06	6.80E-07	1.40E-07	4.30E-09							
32	2.10E-06	1.10E-06	4.80E-07	2.40E-07	2.80E-08							
33												



C	A	B	C	D	E	F	G	H	I	J	K	L
34												
35												
36												
37												
38												
D	A	B	C	D	E	F						
1	NUREG	Original										
2		Log Hangup		A	B							
3												
4			N0	1.5E-04	1.0E-05							
5			F1	0.05	0.05							
6			D1	10	4							
7			R1	1.0E-02	1.0E-03							
8												
9		N0A*F1A*D1A*R1A		7.0E-07	1.9E-09	3.5E-07						
10		N0A*F1A*D1A*R1B		7.0E-08	1.9E-08	4.4E-08						
11		N0A*F1A*D1B*R1A		2.8E-07	4.7E-09	1.4E-07						
12		N0A*F1A*D1B*R1B		2.8E-08	4.7E-08	3.7E-08						
13		N0A*F1B*D1A*R1A		7.0E-07	1.9E-09	3.5E-07						
14		N0A*F1B*D1A*R1B		7.0E-08	1.9E-08	4.4E-08						
15		N0A*F1B*D1B*R1A		2.8E-07	4.7E-09	1.4E-07						
16		N0A*F1B*D1B*R1B		2.8E-08	4.7E-08	3.7E-08						
17												
18		Mean		2.7E-07	1.8E-08	1.4E-07						
19		GeoMen		1.4E-07	9.3E-09	7.4E-08						
20												
21		Random failure		A	B							
22												
23			N0	1.5E-04	1.0E-05							
24			F1	0.53	0.53							
25			D1	10	4							
26			R1	1.0E-01	1.0E-02							
27												
28		N0A*F1A*D1A*R1A		8.0E-05	2.1E-07	4.0E-05						
29		N0A*F1A*D1A*R1B		8.0E-06	2.1E-06	5.1E-06						
30		N0A*F1A*D1B*R1A		3.2E-05	5.3E-07	1.6E-05						
31		N0A*F1A*D1B*R1B		3.2E-06	5.3E-06	4.3E-06						
32		N0A*F1B*D1A*R1A		8.0E-05	2.1E-07	4.0E-05						
33		N0A*F1B*D1A*R1B		8.0E-06	2.1E-06	5.1E-06						
34		N0A*F1B*D1B*R1A		3.2E-05	5.3E-07	1.6E-05						
35		N0A*F1B*D1B*R1B		3.2E-06	5.3E-06	4.3E-06						
36												
37		Mean		3.1E-05	2.1E-06	1.6E-05						
38		GeoMen		1.6E-05	1.1E-06	8.6E-06						
39												
40		Two-blocking		A	B							
41												
42			N0	1.5E-04	1.0E-05							
43			F1	0.35	0.35							
44			D1	10	4							
45			R1	1.0E-03	1.0E-05							
46												
47		N0A*F1A*D1A*R1A		5.2E-07	1.4E-10	2.6E-07						
48		N0A*F1A*D1A*R1B		5.2E-09	1.4E-08	9.6E-09						
49		N0A*F1A*D1B*R1A		2.1E-07	3.5E-10	1.0E-07						
50		N0A*F1A*D1B*R1B		2.1E-09	3.5E-08	1.8E-08						
51		N0A*F1B*D1A*R1A		5.2E-07	1.4E-10	2.6E-07						
52		N0A*F1B*D1A*R1B		5.2E-09	1.4E-08	9.6E-09						
53		N0A*F1B*D1B*R1A		2.1E-07	3.5E-10	1.0E-07						
54		N0A*F1B*D1B*R1B		2.1E-09	3.5E-08	1.8E-08						
55												
56		Mean		1.8E-07	1.2E-08	9.9E-08						

D	A	B	C	D	E	F
57		GeoMen		3.3E-08	2.2E-09	1.8E-08
58						
59		Single failure		A	B	
60						
61			N0	1.5E-04	1.0E-05	
62			F1	0.02	0.02	
63			D1	10	4	
64			R1	1.0E-01	1.0E-01	
65						
66		N0A*F1A*D1A*R1A		3.4E-06	9.1E-08	1.7E-06
67		N0A*F1A*D1A*R1B		3.4E-06	9.1E-08	1.7E-06
68		N0A*F1A*D1B*R1A		1.4E-06	2.3E-07	8.0E-07
69		N0A*F1A*D1B*R1B		1.4E-06	2.3E-07	8.0E-07
70		N0A*F1B*D1A*R1A		3.4E-06	9.1E-08	1.7E-06
71		N0A*F1B*D1A*R1B		3.4E-06	9.1E-08	1.7E-06
72		N0A*F1B*D1B*R1A		1.4E-06	2.3E-07	8.0E-07
73		N0A*F1B*D1B*R1B		1.4E-06	2.3E-07	8.0E-07
74						
75		Mean		2.4E-06	1.6E-07	1.3E-06
76		GeoMen		2.2E-06	1.4E-07	1.1E-06
77						
78		Rigging		A	B	
79						
80			N0	1.5E-04	1.0E-05	
81			F1	0.07	0.07	
82			D1	10	4	
83			R1	2.5E-01	5.0E-02	
84						
85		N0A*F1A*D1A*R1A		2.6E-05	1.4E-07	1.3E-05
86		N0A*F1A*D1A*R1B		5.2E-06	7.0E-07	3.0E-06
87		N0A*F1A*D1B*R1A		1.0E-05	3.5E-07	5.4E-06
88		N0A*F1A*D1B*R1B		2.1E-06	1.7E-06	1.9E-06
89		N0A*F1B*D1A*R1A		2.6E-05	1.4E-07	1.3E-05
90		N0A*F1B*D1A*R1B		5.2E-06	7.0E-07	3.0E-06
91		N0A*F1B*D1B*R1A		1.0E-05	3.5E-07	5.4E-06
92		N0A*F1B*D1B*R1B		2.1E-06	1.7E-06	1.9E-06
93						
94		Mean		1.1E-05	7.3E-07	5.9E-06
95		GeoMen		7.4E-06	4.9E-07	3.9E-06
96						
97		Totals		1.1E-04	4.5E-07	5.6E-05
98		Mean Total		4.5E-05	3.0E-06	2.4E-05
99		GeoMean		2.6E-05	1.7E-06	1.4E-05

NUREG	0612	Original	Two-blocking			Mean	LogMean	GeoMean	QP funs	
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	5.2E-08	3.5E-11	2.6E-08	7.2E-09	1.4E-09		64
0.348837	0.348837									
1	1		a1*b2*a3*a4*a5	5.2E-08	3.5E-09					
0.01	0.001		a1*b2*a3*b4*a5	5.2E-09	3.5E-10					
0.1	0.01		a1*b2*a3*a4*b5	5.2E-09	3.5E-10					
			a1*b2*a3*b4*b5	5.2E-10	3.5E-11					
			a1*b2*b3*a4*a5	5.2E-08	3.5E-09					
			a1*b2*b3*b4*a5	5.2E-09	3.5E-10					
			a1*b2*b3*a4*b5	5.2E-09	3.5E-11					
			a1*b2*b3*b4*b5	5.2E-10	3.5E-11					
			a1*a2*b3*a4*a5	5.2E-08	3.5E-09					
			a1*a2*b3*a4*b5	5.2E-09	3.5E-10					
			a1*a2*b3*b4*b5	5.2E-10	3.5E-11					
			a1*a2*b3*b4*a5	5.2E-09	3.5E-10					
			a1*a2*a3*b4*a5	5.2E-09	3.5E-10					
			a1*a2*a3*b4*b5	5.2E-10	3.5E-11					
			a1*a2*a3*a4*b5	5.2E-09	3.5E-10					
			Median	5.2E-09	3.5E-10	2.8E-09	1.8E-09	1.4E-09	5.2E-10	
			Mean	1.6E-08	8.2E-10	8.3E-09	5.1E-09	3.6E-09	8.3E-09	
			Load hangup							
1.50E-04	1.00E-05		a1*a2*a3*a4	7.0E-08	4.7E-10	3.5E-08	1.4E-08	5.7E-09		
0.046512	0.046512									
1	1		a1*b2*a3*a4	7.0E-08	4.7E-09					
0.01	0.001		a1*b2*a3*b4	7.0E-09	4.7E-10					
			a1*b2*b3*a4	7.0E-08	4.7E-09					
			a1*b2*b3*b4	7.0E-09	4.7E-10					
			a1*a2*b3*a4	7.0E-08	4.7E-09					
			a1*a2*b3*b4	7.0E-09	4.7E-10					
			a1*a2*a3*b4	7.0E-09	4.7E-10					
			Median	3.8E-08	4.7E-10	1.9E-08	8.6E-09	4.2E-09	5.8E-09	
			Mean	3.8E-08	2.0E-09	2.0E-08	1.2E-08	8.8E-09	2.0E-08	
			Random component							
1.50E-04	1.00E-05		a1*a2*a3*a4	8.0E-06	5.3E-08	4.0E-06	1.6E-06	6.6E-07		
0.534884	0.534884									
1	1		a1*b2*a3*a4	8.0E-06	5.3E-07					
0.1	0.01		a1*b2*a3*b4	8.0E-07	5.3E-08					
			a1*b2*b3*a4	8.0E-06	5.3E-07					
			a1*b2*b3*b4	8.0E-07	5.3E-08					
			a1*a2*b3*a4	8.0E-06	5.3E-07					
			a1*a2*b3*b4	8.0E-07	5.3E-08					
			a1*a2*a3*b4	8.0E-07	5.3E-08					
			Median	4.4E-06	5.3E-08	2.2E-06	9.9E-07	4.9E-07	6.7E-07	
			Mean	4.4E-06	2.3E-07	2.3E-06	1.4E-06	1.0E-06	2.3E-06	

		Single component								
1.50E-04	1.00E-05		a1*a2*a3*a4	3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08		
0.022727	0.022727									
1	1		a1*b2*a3*a4	3.4E-07	2.3E-08					
0.1	0.1		a1*b2*a3*b4	3.4E-07	2.3E-08					
			a1*b2*b3*a4	3.4E-07	2.3E-08					
			a1*b2*b3*b4	3.4E-07	2.3E-08					
			a1*a2*b3*a4	3.4E-07	2.3E-08					
			a1*a2*b3*b4	3.4E-07	2.3E-08					
Crane	Failure		a1*a2*a3*b4	3.4E-07	2.3E-08					
			Median	3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	1.8E-07	
			Mean	3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	1.8E-07	
		Range	Total	8.5E-06	7.7E-08	4.3E-06	1.8E-06	8.1E-07		
		Mean	Total	4.8E-06	2.6E-07	2.5E-06	1.6E-06	1.1E-06	2.5E-06	
		Median	Total	4.8E-06	7.7E-08	2.4E-06	1.1E-06	6.1E-07	8.6E-07	
		Rigging								
			a1*a2*a3*a4	2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07		
			a1*b2*a3*a4	2.6E-06	1.7E-07					
			a1*b2*a3*b4	5.2E-07	3.5E-08					
			a1*b2*b3*a4	2.6E-06	1.7E-07					
			a1*b2*b3*b4	5.2E-07	3.5E-08					
			a1*a2*b3*a4	2.6E-06	1.7E-07					
			a1*a2*b3*b4	5.2E-07	3.5E-08					
Rigging	Failure		a1*a2*a3*b4	5.2E-07	3.5E-08					
			Median	1.6E-06	3.5E-08	8.0E-07	4.0E-07	2.3E-07	3.5E-07	
			Mean	1.6E-06	8.7E-08	8.3E-07	5.1E-07	3.7E-07	8.3E-07	
		Range	Total	2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07		
		Mean	Total	1.6E-06	8.7E-08	8.3E-07	5.1E-07	3.7E-07	8.3E-07	
		Median	Total	1.6E-06	3.5E-08	8.0E-07	4.0E-07	2.3E-07	3.5E-07	
		Rigging								
			a1*a2*a3*a4	2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07		
			a1*b2*a3*a4	2.6E-06	1.7E-07					
			a1*b2*a3*b4	5.2E-07	3.5E-08					
			a1*b2*b3*a4	2.6E-06	1.7E-07					
			a1*b2*b3*b4	5.2E-07	3.5E-08					
			a1*a2*b3*a4	2.6E-06	1.7E-07					
			a1*a2*b3*b4	5.2E-07	3.5E-08					

Total	Failure									
		Range	Total	1.1E-05	1.1E-07	5.6E-06	2.4E-06	1.1E-06		
		Mean	Total	6.4E-06	3.5E-07	3.4E-06	2.1E-06	1.5E-06	3.4E-06	
		Median	Total	6.4E-06	1.1E-07	3.2E-06	1.5E-06	8.4E-07	1.2E-06	
		Range	Loss-of-inventory							QP funs
1.11E-04	4.46E-07		a1*a2*a3*a4	1.4E-06	2.2E-10	6.9E-07	1.6E-07	1.8E-08		
0.2	0.1									
0.25	0.05		a1*b2*a3*a4	6.9E-07	2.8E-09					
0.25	0.1		a1*b2*a3*b4	2.8E-07	1.1E-09					
			a1*b2*b3*a4	1.4E-07	5.6E-10					
			a1*b2*b3*b4	5.6E-08	2.2E-10					
			a1*a2*b3*a4	2.8E-07	1.1E-09					
			a1*a2*b3*b4	1.1E-07	4.5E-10					
			a1*a2*a3*b4	5.6E-07	2.2E-09					
			Median	2.8E-07	8.4E-10	1.4E-07	4.8E-08	1.5E-08	2.9E-08	
			Mean	4.4E-07	1.1E-09	2.2E-07	7.3E-08	2.2E-08	2.2E-07	
		Mean	Loss-of-inventory							
6.38E-05	1.39E-06		a1*a2*a3*a4	8.0E-07	6.9E-10	4.0E-07	1.1E-07	2.4E-08		
0.2	0.1									
0.25	0.05		a1*b2*a3*a4	4.0E-07	8.7E-09					
0.25	0.1		a1*b2*a3*b4	1.6E-07	3.5E-09					
			a1*b2*b3*a4	8.0E-08	1.7E-09					
			a1*b2*b3*b4	3.2E-08	6.9E-10					
			a1*a2*b3*a4	1.6E-07	3.5E-09					
			a1*a2*b3*b4	6.4E-08	1.4E-09					
			a1*a2*a3*b4	3.2E-07	6.9E-09					
			Median	1.6E-07	2.6E-09	8.1E-08	3.8E-08	2.0E-08	2.0E-08	
			Mean	2.5E-07	3.4E-09	1.3E-07	5.8E-08	2.9E-08	1.3E-07	
		Median	Loss-of-inventory							
6.37E-05	4.48E-07		a1*a2*a3*a4	8.0E-07	2.2E-10	4.0E-07	9.7E-08	1.3E-08		
0.2	0.1									
0.25	0.05		a1*b2*a3*a4	4.0E-07	2.8E-09					
0.25	0.1		a1*b2*a3*b4	1.6E-07	1.1E-09					
			a1*b2*b3*a4	8.0E-08	5.6E-10					
			a1*b2*b3*b4	3.2E-08	2.2E-10					
			a1*a2*b3*a4	1.6E-07	1.1E-09					
			a1*a2*b3*b4	6.4E-08	4.5E-10					
			a1*a2*a3*b4	3.2E-07	2.2E-09					
			Median	1.6E-07	8.4E-10	8.0E-08	3.0E-08	1.2E-08	1.7E-08	
			Mean	2.5E-07	1.1E-09	1.3E-07	4.6E-08	1.7E-08	1.3E-07	

		Mean	Loss-of-inventory	QP funs					
2.35E-05	2.35E-05	Point	a1*a2*a3*a4	2.9E-07	1.2E-08	1.5E-07	8.8E-08	5.9E-08	
0.2	0.1								
0.25	0.05		a1*b2*a3*a4	1.5E-07	1.5E-07				
0.25	0.1		a1*b2*a3*b4	5.9E-08	5.9E-08				
			a1*b2*b3*a4	2.9E-08	2.9E-08				
			a1*b2*b3*b4	1.2E-08	1.2E-08				
			a1*a2*b3*a4	5.9E-08	5.9E-08				
			a1*a2*b3*b4	2.4E-08	2.4E-08				
			a1*a2*a3*b4	1.2E-07	1.2E-07				
			Median	5.9E-08	4.4E-08	5.1E-08	5.1E-08	5.1E-08	5.9E-08
			Mean	9.3E-08	5.7E-08	7.5E-08	7.4E-08	7.3E-08	7.5E-08
8.44E-06	8.44E-06	Median	Loss-of-inventory						
0.2	0.1	Point	a1*a2*a3*a4	1.1E-07	4.2E-09	5.5E-08	3.1E-08	2.1E-08	
0.25	0.05		a1*b2*a3*a4	5.3E-08	5.3E-08				
0.25	0.1		a1*b2*a3*b4	2.1E-08	2.1E-08				
			a1*b2*b3*a4	1.1E-08	1.1E-08				
			a1*b2*b3*b4	4.2E-09	4.2E-09				
			a1*a2*b3*a4	2.1E-08	2.1E-08				
			a1*a2*b3*b4	8.4E-09	8.4E-09				
			a1*a2*a3*b4	4.2E-08	4.2E-08				
			Median	2.1E-08	1.6E-08	1.8E-08	1.8E-08	1.8E-08	2.1E-08
			Mean	3.3E-08	2.1E-08	2.7E-08	2.6E-08	2.6E-08	2.7E-08
NUREG	0612	1.0 RF	Two-blocking			Mean	LogMean	GeoMean	
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	5.2E-08	3.5E-11	2.6E-08	7.2E-09	1.4E-09	
0.348837	0.348837								
1	1		a1*b2*a3*a4*a5	5.2E-08	3.5E-09				
0.01	0.001		a1*b2*a3*b4*a5	5.2E-09	3.5E-10				
0.1	0.01		a1*b2*a3*a4*b5	5.2E-09	3.5E-10				
			a1*b2*a3*b4*b5	5.2E-10	3.5E-11				
			a1*b2*b3*a4*a5	5.2E-08	3.5E-09				
			a1*b2*b3*b4*a5	5.2E-09	3.5E-10				
			a1*b2*b3*a4*b5	5.2E-09	3.5E-11				
			a1*b2*b3*b4*b5	5.2E-10	3.5E-11				
			a1*a2*b3*a4*a5	5.2E-08	3.5E-09				
			a1*a2*b3*a4*b5	5.2E-09	3.5E-10				
			a1*a2*b3*b4*b5	5.2E-10	3.5E-11				
			a1*a2*b3*b4*a5	5.2E-09	3.5E-10				
			a1*a2*a3*b4*a5	5.2E-09	3.5E-10				
			a1*a2*a3*b4*b5	5.2E-10	3.5E-11				
			a1*a2*a3*a4*b5	5.2E-09	3.5E-10				
			Median	5.2E-09	3.5E-10	2.8E-09	1.8E-09	1.4E-09	5.2E-10
			Mean	1.6E-08	8.2E-10	8.3E-09	5.1E-09	3.6E-09	8.3E-09
			Load hangup						
1.50E-04	1.00E-05		a1*a2*a3*a4	7.0E-08	4.7E-10	3.5E-08	1.4E-08	5.7E-09	
0.046512	0.046512								

1	1	a1*b2*a3*a4	7.0E-08	4.7E-09				
0.01	0.001	a1*b2*a3*b4	7.0E-09	4.7E-10				
		a1*b2*b3*a4	7.0E-08	4.7E-09				
		a1*b2*b3*b4	7.0E-09	4.7E-10				
		a1*a2*b3*a4	7.0E-08	4.7E-09				
		a1*a2*b3*b4	7.0E-09	4.7E-10				
		a1*a2*a3*b4	7.0E-09	4.7E-10				
		Median	3.8E-08	4.7E-10	1.9E-08	8.6E-09	4.2E-09	5.8E-09
		Mean	3.8E-08	2.0E-09	2.0E-08	1.2E-08	8.8E-09	2.0E-08
		Random component						
1.50E-04	1.00E-05	a1*a2*a3*a4	8.0E-06	5.3E-08	4.0E-06	1.6E-06	6.6E-07	
0.534884	0.534884							
1	1	a1*b2*a3*a4	8.0E-06	5.3E-07				
0.1	0.01	a1*b2*a3*b4	8.0E-07	5.3E-08				
		a1*b2*b3*a4	8.0E-06	5.3E-07				
		a1*b2*b3*b4	8.0E-07	5.3E-08				
		a1*a2*b3*a4	8.0E-06	5.3E-07	4.3E-06	2.8E-06	2.1E-06	
		a1*a2*b3*b4	8.0E-07	5.3E-08				
		a1*a2*a3*b4	8.0E-07	5.3E-08				
		Median	4.4E-06	5.3E-08	2.2E-06	9.9E-07	4.9E-07	6.7E-07
		Mean	4.4E-06	2.3E-07	2.3E-06	1.4E-06	1.0E-06	2.3E-06

		Single component							
1.50E-04	1.00E-05	a1*a2*a3*a4		3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	
0.022727	0.022727								
1	1	a1*b2*a3*a4		3.4E-07	2.3E-08				
0.1	0.1	a1*b2*a3*b4		3.4E-07	2.3E-08				
		a1*b2*b3*a4		3.4E-07	2.3E-08				
		a1*b2*b3*b4		3.4E-07	2.3E-08				
		a1*a2*b3*a4		3.4E-07	2.3E-08				
		a1*a2*b3*b4		3.4E-07	2.3E-08				
		a1*a2*a3*b4		3.4E-07	2.3E-08				
Crane	Failure	Median		3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	1.8E-07
		Mean		3.4E-07	2.3E-08	1.8E-07	1.2E-07	8.8E-08	1.8E-07
		Range	Total	8.5E-06	7.7E-08	4.3E-06	1.8E-06	8.1E-07	
			Mean	4.8E-06	2.6E-07	2.5E-06	1.6E-06	1.1E-06	2.5E-06
			Median	4.8E-06	7.7E-08	2.4E-06	1.1E-06	6.1E-07	8.6E-07
		Rigging							
		a1*a2*a3*a4		2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07	
		a1*b2*a3*a4		2.6E-06	1.7E-07				
		a1*b2*a3*b4		5.2E-07	3.5E-08				
		a1*b2*b3*a4		2.6E-06	1.7E-07				
		a1*b2*b3*b4		5.2E-07	3.5E-08				
		a1*a2*b3*a4		2.6E-06	1.7E-07				
		a1*a2*b3*b4		5.2E-07	3.5E-08				
		a1*a2*a3*b4		5.2E-07	3.5E-08				
		Median		1.6E-06	3.5E-08	8.0E-07	4.0E-07	2.3E-07	3.5E-07
		Mean		1.6E-06	8.7E-08	8.3E-07	5.1E-07	3.7E-07	8.3E-07
Rigging	Failure	Range	Total	2.6E-06	3.5E-08	1.3E-06	6.0E-07	3.0E-07	
			Mean	1.6E-06	8.7E-08	8.3E-07	5.1E-07	3.7E-07	8.3E-07
			Median	1.6E-06	3.5E-08	8.0E-07	4.0E-07	2.3E-07	3.5E-07
			Total	1.6E-06	3.5E-08	8.0E-07	4.0E-07	2.3E-07	3.5E-07

Total	Failure									
		Range	Total	1.1E-05	1.1E-07	5.6E-06	2.4E-06	1.1E-06		
		Mean	Total	6.4E-06	3.5E-07	3.4E-06	2.1E-06	1.5E-06	3.4E-06	
		Median	Total	6.4E-06	1.1E-07	3.2E-06	1.5E-06	8.4E-07	1.2E-06	
		Range	Loss-of-inventory							QP funs
1.11E-04	4.46E-07		a1*a2*a3*a4	6.9E-06	2.2E-09	3.5E-06	8.6E-07	1.2E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	6.9E-06	2.8E-08					
0.25	0.1		a1*b2*a3*b4	2.8E-06	1.1E-08					
			a1*b2*b3*a4	1.4E-06	5.6E-09					
			a1*b2*b3*b4	5.6E-07	2.2E-09					
			a1*a2*b3*a4	1.4E-06	5.6E-09					
			a1*a2*b3*b4	5.6E-07	2.2E-09					
			a1*a2*a3*b4	2.8E-06	1.1E-08					
			Median	2.1E-06	5.6E-09	1.0E-06	3.5E-07	1.1E-07	2.9E-07	
			Mean	2.9E-06	8.5E-09	1.5E-06	5.0E-07	1.6E-07	1.5E-06	
		Mean	Loss-of-inventory							
6.38E-05	1.39E-06		a1*a2*a3*a4	4.0E-06	6.9E-09	2.0E-06	6.3E-07	1.7E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	4.0E-06	8.7E-08					
0.25	0.1		a1*b2*a3*b4	1.6E-06	3.5E-08					
			a1*b2*b3*a4	8.0E-07	1.7E-08					
			a1*b2*b3*b4	3.2E-07	6.9E-09					
			a1*a2*b3*a4	8.0E-07	1.7E-08					
			a1*a2*b3*b4	3.2E-07	6.9E-09					
			a1*a2*a3*b4	1.6E-06	3.5E-08					
			Median	1.2E-06	1.7E-08	6.1E-07	2.8E-07	1.4E-07	2.0E-07	
			Mean	1.7E-06	2.6E-08	8.5E-07	4.0E-07	2.1E-07	8.5E-07	
		Median	Loss-of-inventory							
6.37E-05	4.48E-07		a1*a2*a3*a4	4.0E-06	2.2E-09	2.0E-06	5.3E-07	9.4E-08		
1	1									
0.25	0.05		a1*b2*a3*a4	4.0E-06	2.8E-08					
0.25	0.1		a1*b2*a3*b4	1.6E-06	1.1E-08					
			a1*b2*b3*a4	8.0E-07	5.6E-09					
			a1*b2*b3*b4	3.2E-07	2.2E-09					
			a1*a2*b3*a4	8.0E-07	5.6E-09					
			a1*a2*b3*b4	3.2E-07	2.2E-09					
			a1*a2*a3*b4	1.6E-06	1.1E-08					
			Median	1.2E-06	5.6E-09	6.0E-07	2.2E-07	8.2E-08	1.7E-07	
			Mean	1.7E-06	8.5E-09	8.4E-07	3.2E-07	1.2E-07	8.4E-07	

		Mean	Loss-of-inventory	QP funs					
2.35E-05	2.35E-05	Point	a1*a2*a3*a4	1.5E-06	1.2E-07	7.9E-07	5.4E-07	4.2E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	1.5E-06	1.5E-06				
0.25	0.1		a1*b2*a3*b4	5.9E-07	5.9E-07				
			a1*b2*b3*a4	2.9E-07	2.9E-07				
			a1*b2*b3*b4	1.2E-07	1.2E-07				
			a1*a2*b3*a4	2.9E-07	2.9E-07				
			a1*a2*b3*b4	1.2E-07	1.2E-07				
			a1*a2*a3*b4	5.9E-07	5.9E-07				
			Median	4.4E-07	2.9E-07	3.7E-07	3.6E-07	3.6E-07	2.9E-07
			Mean	6.2E-07	4.5E-07	5.3E-07	5.3E-07	5.3E-07	5.3E-07
		Median	Loss-of-inventory						
8.44E-06	8.44E-06	Point	a1*a2*a3*a4	5.3E-07	4.2E-08	2.8E-07	1.9E-07	1.5E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	5.3E-07	5.3E-07				
0.25	0.1		a1*b2*a3*b4	2.1E-07	2.1E-07				
			a1*b2*b3*a4	1.1E-07	1.1E-07				
			a1*b2*b3*b4	4.2E-08	4.2E-08				
			a1*a2*b3*a4	1.1E-07	1.1E-07				
			a1*a2*b3*b4	4.2E-08	4.2E-08				
			a1*a2*a3*b4	2.1E-07	2.1E-07				
			Median	1.6E-07	1.1E-07	1.3E-07	1.3E-07	1.3E-07	1.1E-07
			Mean	2.2E-07	1.6E-07	1.9E-07	1.9E-07	1.9E-07	1.9E-07
NUREG	0612	Navy	Two-blocking						
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	6.8E-09	4.5E-12	Mean	LogMean	GeoMean	
0.04545	0.04545					3.4E-09	9.3E-10	1.8E-10	
1	1		a1*b2*a3*a4*a5	6.8E-09	4.5E-10				
0.01	0.001		a1*b2*a3*b4*a5	6.8E-10	4.5E-11				
0.1	0.01		a1*b2*a3*a4*b5	6.8E-10	4.5E-11				
			a1*b2*a3*b4*b5	6.8E-11	4.5E-12				
			a1*b2*b3*a4*a5	6.8E-09	4.5E-10				
			a1*b2*b3*b4*a5	6.8E-10	4.5E-11				
			a1*b2*b3*a4*b5	6.8E-10	4.5E-12				
			a1*b2*b3*b4*b5	6.8E-11	4.5E-12				
			a1*a2*b3*a4*a5	6.8E-09	4.5E-10				
			a1*a2*b3*a4*b5	6.8E-10	4.5E-11				
			a1*a2*b3*b4*b5	6.8E-11	4.5E-12				
			a1*a2*b3*b4*a5	6.8E-10	4.5E-11				
			a1*a2*a3*b4*a5	6.8E-10	4.5E-11				
			a1*a2*a3*b4*b5	6.8E-11	4.5E-12				
			a1*a2*a3*a4*b5	6.8E-10	4.5E-11				
			Median	6.8E-10	4.5E-11	3.6E-10	2.3E-10	1.8E-10	6.8E-11
			Mean	2.1E-09	1.1E-10	1.1E-09	6.6E-10	4.7E-10	1.1E-09
			Load hangup						
1.50E-04	1.00E-05		a1*a2*a3*a4	2.0E-07	1.4E-09	1.0E-07	4.1E-08	1.7E-08	
0.13636	0.13636								

1	1	a1*b2*a3*a4	2.0E-07	1.4E-08				
0.01	0.001	a1*b2*a3*b4	2.0E-08	1.4E-09				
		a1*b2*b3*a4	2.0E-07	1.4E-08				
		a1*b2*b3*b4	2.0E-08	1.4E-09				
		a1*a2*b3*a4	2.0E-07	1.4E-08				
		a1*a2*b3*b4	2.0E-08	1.4E-09				
		a1*a2*a3*b4	2.0E-08	1.4E-09				
		Median	1.1E-07	1.4E-09	5.7E-08	2.5E-08	1.2E-08	1.7E-08
		Mean	1.1E-07	6.0E-09	5.9E-08	3.6E-08	2.6E-08	5.9E-08
		Random component						
1.50E-04	1.00E-05	a1*a2*a3*a4	9.1E-06	6.1E-08	4.6E-06	1.8E-06	7.4E-07	
0.60606	0.60606							
1	1	a1*b2*a3*a4	9.1E-06	6.1E-07				
0.1	0.01	a1*b2*a3*b4	9.1E-07	6.1E-08				
		a1*b2*b3*a4	9.1E-06	6.1E-07				
		a1*b2*b3*b4	9.1E-07	6.1E-08				
		a1*a2*b3*a4	9.1E-06	6.1E-07	4.8E-06	3.1E-06	2.3E-06	
		a1*a2*b3*b4	9.1E-07	6.1E-08				
		a1*a2*a3*b4	9.1E-07	6.1E-08				
		Median	5.0E-06	6.1E-08	2.5E-06	1.1E-06	5.5E-07	7.6E-07
		Mean	5.0E-06	2.7E-07	2.6E-06	1.6E-06	1.2E-06	2.6E-06

		Single component								
1.50E-04	1.00E-05	a1*a2*a3*a4		2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08		
0.014925	0.014925									
1	1	a1*b2*a3*a4		2.2E-07	1.5E-08					
0.1	0.1	a1*b2*a3*b4		2.2E-07	1.5E-08					
		a1*b2*b3*a4		2.2E-07	1.5E-08					
		a1*b2*b3*b4		2.2E-07	1.5E-08					
		a1*a2*b3*a4		2.2E-07	1.5E-08					
		a1*a2*b3*b4		2.2E-07	1.5E-08					
		a1*a2*a3*b4		2.2E-07	1.5E-08					
Crane	Failure		Median	2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	1.2E-07	
			Mean	2.2E-07	1.5E-08	1.2E-07	7.7E-08	5.8E-08	1.2E-07	
		Range	Total	9.5E-06	7.7E-08	4.8E-06	2.0E-06	8.6E-07		
			Mean	5.3E-06	2.9E-07	2.8E-06	1.7E-06	1.2E-06	2.8E-06	
			Median	5.3E-06	7.7E-08	2.7E-06	1.2E-06	6.4E-07	8.9E-07	
		Rigging								
		a1*a2*a3*a4		8.0E-06	1.1E-07	4.0E-06	1.8E-06	9.2E-07		
		a1*b2*a3*a4		8.0E-06	5.3E-07					
		a1*b2*a3*b4		1.6E-06	1.1E-07					
		a1*b2*b3*a4		8.0E-06	5.3E-07					
		a1*b2*b3*b4		1.6E-06	1.1E-07					
		a1*a2*b3*a4		8.0E-06	5.3E-07					
		a1*a2*b3*b4		1.6E-06	1.1E-07					
		a1*a2*a3*b4		1.6E-06	1.1E-07					
		Median		4.8E-06	1.1E-07	2.4E-06	1.2E-06	7.1E-07	1.1E-06	
		Mean		4.8E-06	2.7E-07	2.5E-06	1.6E-06	1.1E-06	2.5E-06	
Rigging	Failure	Range	Total	8.0E-06	1.1E-07	4.0E-06	1.8E-06	9.2E-07		
			Mean	4.8E-06	2.7E-07	2.5E-06	1.6E-06	1.1E-06	2.5E-06	
			Median	4.8E-06	1.1E-07	2.4E-06	1.2E-06	7.1E-07	1.1E-06	
			Total	4.8E-06	1.1E-07	2.4E-06	1.2E-06	7.1E-07	1.1E-06	

Total	Failure									
		Range	Total	1.7E-05	1.8E-07	8.8E-06	3.8E-06	1.8E-06		
		Mean	Total	1.0E-05	5.5E-07	5.3E-06	3.3E-06	2.4E-06	5.3E-06	
		Median	Total	1.0E-05	1.8E-07	5.1E-06	2.5E-06	1.4E-06	2.0E-06	
		Range	Loss-of-inventory							QP funs
7.71E-05	8.76E-07		a1*a2*a3*a4	4.8E-06	4.4E-09	2.4E-06	6.9E-07	1.5E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	4.8E-06	5.5E-08					
0.25	0.1		a1*b2*a3*b4	1.9E-06	2.2E-08					
			a1*b2*b3*a4	9.6E-07	1.1E-08					
			a1*b2*b3*b4	3.9E-07	4.4E-09					
			a1*a2*b3*a4	9.6E-07	1.1E-08					
			a1*a2*b3*b4	3.9E-07	4.4E-09					
			a1*a2*a3*b4	1.9E-06	2.2E-08					
			Median	1.4E-06	1.1E-08	7.3E-07	2.9E-07	1.3E-07	2.2E-07	
			Mean	2.0E-06	1.7E-08	1.0E-06	4.2E-07	1.8E-07	1.0E-06	
		Mean	Loss-of-inventory							
4.51E-05	2.47E-06		a1*a2*a3*a4	2.8E-06	1.2E-08	1.4E-06	5.2E-07	1.9E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	2.8E-06	1.5E-07					
0.25	0.1		a1*b2*a3*b4	1.1E-06	6.2E-08					
			a1*b2*b3*a4	5.6E-07	3.1E-08					
			a1*b2*b3*b4	2.3E-07	1.2E-08					
			a1*a2*b3*a4	5.6E-07	3.1E-08					
			a1*a2*b3*b4	2.3E-07	1.2E-08					
			a1*a2*a3*b4	1.1E-06	6.2E-08					
			Median	8.5E-07	3.1E-08	4.4E-07	2.5E-07	1.6E-07	1.9E-07	
			Mean	1.2E-06	4.7E-08	6.2E-07	3.5E-07	2.4E-07	6.2E-07	
		Median	Loss-of-inventory							
4.51E-05	8.76E-07		a1*a2*a3*a4	2.8E-06	4.4E-09	1.4E-06	4.4E-07	1.1E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	2.8E-06	5.5E-08					
0.25	0.1		a1*b2*a3*b4	1.1E-06	2.2E-08					
			a1*b2*b3*a4	5.6E-07	1.1E-08					
			a1*b2*b3*b4	2.3E-07	4.4E-09					
			a1*a2*b3*a4	5.6E-07	1.1E-08					
			a1*a2*b3*b4	2.3E-07	4.4E-09					
			a1*a2*a3*b4	1.1E-06	2.2E-08					
			Median	8.5E-07	1.1E-08	4.3E-07	1.9E-07	9.6E-08	1.4E-07	
			Mean	1.2E-06	1.7E-08	6.0E-07	2.7E-07	1.4E-07	6.0E-07	

		Mean	Loss-of-inventory	QP funs					
2.38E-05	2.38E-05	Point	a1*a2*a3*a4	1.5E-06	1.2E-07	8.0E-07	5.4E-07	4.2E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	1.5E-06	1.5E-06				
0.25	0.1		a1*b2*a3*b4	5.9E-07	5.9E-07				
			a1*b2*b3*a4	3.0E-07	3.0E-07				
			a1*b2*b3*b4	1.2E-07	1.2E-07				
			a1*a2*b3*a4	3.0E-07	3.0E-07				
			a1*a2*b3*b4	1.2E-07	1.2E-07				
			a1*a2*a3*b4	5.9E-07	5.9E-07				
			Median	4.5E-07	3.0E-07	3.7E-07	3.7E-07	3.6E-07	3.0E-07
			Mean	6.2E-07	4.5E-07	5.4E-07	5.3E-07	5.3E-07	5.4E-07
		Median	Loss-of-inventory						
9.14E-06	9.14E-06	Point	a1*a2*a3*a4	5.7E-07	4.6E-08	3.1E-07	2.1E-07	1.6E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	5.7E-07	5.7E-07				
0.25	0.1		a1*b2*a3*b4	2.3E-07	2.3E-07				
			a1*b2*b3*a4	1.1E-07	1.1E-07				
			a1*b2*b3*b4	4.6E-08	4.6E-08				
			a1*a2*b3*a4	1.1E-07	1.1E-07				
			a1*a2*b3*b4	4.6E-08	4.6E-08				
			a1*a2*a3*b4	2.3E-07	2.3E-07				
			Median	1.7E-07	1.1E-07	1.4E-07	1.4E-07	1.4E-07	1.1E-07
			Mean	2.4E-07	1.7E-07	2.1E-07	2.1E-07	2.0E-07	2.1E-07
NUREG	0612	N/WIPP	Two-blocking	Mean LogMean GeoMean QP funs					
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	6.8E-09	4.5E-12	3.4E-09	9.3E-10	1.8E-10	
0.04545	0.04545								
1	1		a1*b2*a3*a4*a5	6.8E-09	4.5E-10				
0.01	0.001		a1*b2*a3*b4*a5	6.8E-10	4.5E-11				
0.1	0.01		a1*b2*a3*a4*b5	6.8E-10	4.5E-11				
			a1*b2*a3*b4*b5	6.8E-11	4.5E-12				
			a1*b2*b3*a4*a5	6.8E-09	4.5E-10				
			a1*b2*b3*b4*a5	6.8E-10	4.5E-11				
			a1*b2*b3*a4*b5	6.8E-10	4.5E-12				
			a1*b2*b3*b4*b5	6.8E-11	4.5E-12				
			a1*a2*b3*a4*a5	6.8E-09	4.5E-10				
			a1*a2*b3*a4*b5	6.8E-10	4.5E-11				
			a1*a2*b3*b4*b5	6.8E-11	4.5E-12				
			a1*a2*b3*b4*a5	6.8E-10	4.5E-11				
			a1*a2*a3*b4*a5	6.8E-10	4.5E-11				
			a1*a2*a3*b4*b5	6.8E-11	4.5E-12				
			a1*a2*a3*a4*b5	6.8E-10	4.5E-11				
			Median	6.8E-10	4.5E-11	3.6E-10	2.3E-10	1.8E-10	6.8E-11
			Mean	2.1E-09	1.1E-10	1.1E-09	6.6E-10	4.7E-10	1.1E-09
			Load hangup						
1.50E-04	1.00E-05		a1*a2*a3*a4	2.0E-07	1.4E-09	1.0E-07	4.1E-08	1.7E-08	
0.13636	0.13636								

1	1	a1*b2*a3*a4	2.0E-07	1.4E-08				
0.01	0.001	a1*b2*a3*b4	2.0E-08	1.4E-09				
		a1*b2*b3*a4	2.0E-07	1.4E-08				
		a1*b2*b3*b4	2.0E-08	1.4E-09				
		a1*a2*b3*a4	2.0E-07	1.4E-08				
		a1*a2*b3*b4	2.0E-08	1.4E-09				
		a1*a2*a3*b4	2.0E-08	1.4E-09				
		Median	1.1E-07	1.4E-09	5.7E-08	2.5E-08	1.2E-08	1.7E-08
		Mean	1.1E-07	6.0E-09	5.9E-08	3.6E-08	2.6E-08	5.9E-08
		Random component						
1.50E-04	1.00E-05	a1*a2*a3*a4	9.1E-06	6.1E-08	4.6E-06	1.8E-06	7.4E-07	
0.60606	0.60606							
1	1	a1*b2*a3*a4	9.1E-06	6.1E-07				
0.1	0.01	a1*b2*a3*b4	9.1E-07	6.1E-08				
		a1*b2*b3*a4	9.1E-06	6.1E-07				
		a1*b2*b3*b4	9.1E-07	6.1E-08				
		a1*a2*b3*a4	9.1E-06	6.1E-07	4.8E-06	3.1E-06	2.3E-06	
		a1*a2*b3*b4	9.1E-07	6.1E-08				
		a1*a2*a3*b4	9.1E-07	6.1E-08				
		Median	5.0E-06	6.1E-08	2.5E-06	1.1E-06	5.5E-07	7.6E-07
		Mean	5.0E-06	2.7E-07	2.6E-06	1.6E-06	1.2E-06	2.6E-06

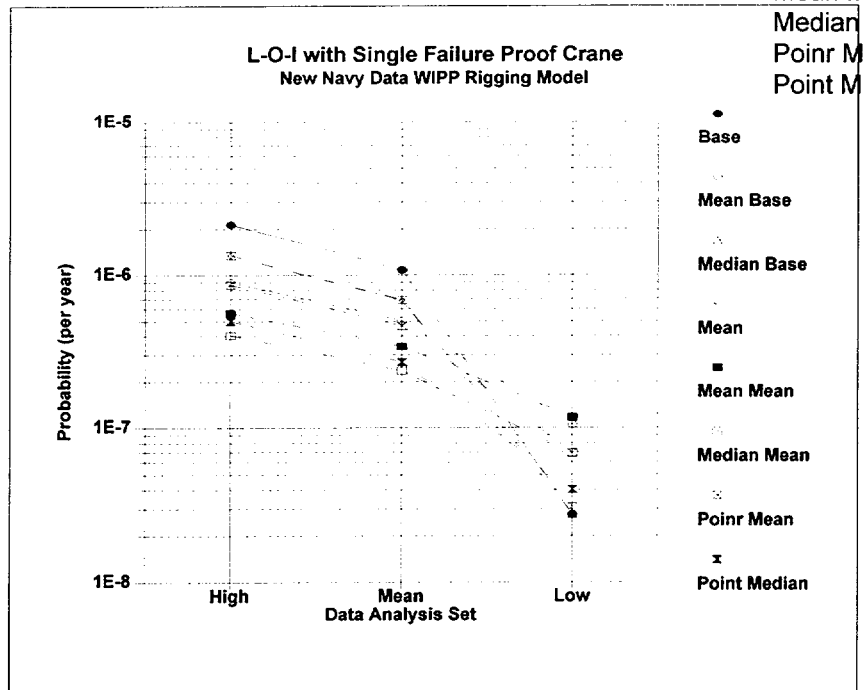
[illegible]

Total	Failure	Range	Total	1.0E-05	9.5E-07	5.7E-06	3.9E-06	3.1E-06	
		Mean	Total	6.2E-06	1.2E-06	3.7E-06	3.0E-06	2.7E-06	3.7E-06
		Median	Total	6.2E-06	9.5E-07	3.6E-06	2.8E-06	2.4E-06	1.8E-06
		Range	Loss-of-inventory						QP funs
3.41E-05	5.51E-06		a1*a2*a3*a4	2.1E-06	2.8E-08	1.1E-06	4.8E-07	2.4E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	2.1E-06	3.4E-07				
0.25	0.1		a1*b2*a3*b4	8.5E-07	1.4E-07				
			a1*b2*b3*a4	4.3E-07	6.9E-08				
			a1*b2*b3*b4	1.7E-07	2.8E-08				
			a1*a2*b3*a4	4.3E-07	6.9E-08				
			a1*a2*b3*b4	1.7E-07	2.8E-08				
			a1*a2*a3*b4	8.5E-07	1.4E-07				
			Median	6.4E-07	6.9E-08	3.5E-07	2.6E-07	2.1E-07	1.7E-07
			Mean	9.0E-07	1.0E-07	5.0E-07	3.7E-07	3.1E-07	5.0E-07
		Mean	Loss-of-inventory						
2.14E-05	6.14E-06		a1*a2*a3*a4	1.3E-06	3.1E-08	6.9E-07	3.5E-07	2.0E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	1.3E-06	3.8E-07				
0.25	0.1		a1*b2*a3*b4	5.4E-07	1.5E-07				
			a1*b2*b3*a4	2.7E-07	7.7E-08				
			a1*b2*b3*b4	1.1E-07	3.1E-08				
			a1*a2*b3*a4	2.7E-07	7.7E-08				
			a1*a2*b3*b4	1.1E-07	3.1E-08				
			a1*a2*a3*b4	5.4E-07	1.5E-07				
			Median	4.0E-07	7.7E-08	2.4E-07	2.0E-07	1.8E-07	1.5E-07
			Mean	5.6E-07	1.2E-07	3.4E-07	2.8E-07	2.6E-07	3.4E-07
		Median	Loss-of-inventory						
2.14E-05	5.51E-06		a1*a2*a3*a4	1.3E-06	2.8E-08	6.8E-07	3.4E-07	1.9E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	1.3E-06	3.4E-07				
0.25	0.1		a1*b2*a3*b4	5.4E-07	1.4E-07				
			a1*b2*b3*a4	2.7E-07	6.9E-08				
			a1*b2*b3*b4	1.1E-07	2.8E-08				
			a1*a2*b3*a4	2.7E-07	6.9E-08				
			a1*a2*b3*b4	1.1E-07	2.8E-08				
			a1*a2*a3*b4	5.4E-07	1.4E-07				
			Median	4.0E-07	6.9E-08	2.4E-07	1.9E-07	1.7E-07	1.4E-07
			Mean	5.6E-07	1.0E-07	3.3E-07	2.7E-07	2.4E-07	3.3E-07

		Mean	Loss-of-inventory	QP funs					
1.38E-05	1.38E-05	Point	a1*a2*a3*a4	8.6E-07	6.9E-08	4.7E-07	3.1E-07	2.4E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	8.6E-07	8.6E-07				
0.25	0.1		a1*b2*a3*b4	3.4E-07	3.4E-07				
			a1*b2*b3*a4	1.7E-07	1.7E-07				
			a1*b2*b3*b4	6.9E-08	6.9E-08				
			a1*a2*b3*a4	1.7E-07	1.7E-07				
			a1*a2*b3*b4	6.9E-08	6.9E-08				
			a1*a2*a3*b4	3.4E-07	3.4E-07				
			Median	2.6E-07	1.7E-07	2.2E-07	2.1E-07	2.1E-07	1.7E-07
			Mean	3.6E-07	2.6E-07	3.1E-07	3.1E-07	3.1E-07	3.1E-07

		Median	Loss-of-inventory						
7.98E-06	7.98E-06	Point	a1*a2*a3*a4	5.0E-07	4.0E-08	2.7E-07	1.8E-07	1.4E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	5.0E-07	5.0E-07				
0.25	0.1		a1*b2*a3*b4	2.0E-07	2.0E-07				
			a1*b2*b3*a4	1.0E-07	1.0E-07				
			a1*b2*b3*b4	4.0E-08	4.0E-08				
			a1*a2*b3*a4	1.0E-07	1.0E-07				
			a1*a2*b3*b4	4.0E-08	4.0E-08				
			a1*a2*a3*b4	2.0E-07	2.0E-07				
			Median	1.5E-07	1.0E-07	1.2E-07	1.2E-07	1.2E-07	1.0E-07
			Mean	2.1E-07	1.5E-07	1.8E-07	1.8E-07	1.8E-07	1.8E-07

High	Mean	Low	Original NUREG-0612 Base						Base
w/1.0			NUREG-0612 1.0 Re MBase						Mean Base
6.9E-06	3.5E-06	2.2E-09	New Navy Data NUR Mean						Median Ba
2.9E-06	1.5E-06	8.5E-09	New Navy Data WIPPM Mean						Mean
4.0E-06	2.0E-06	2.2E-09							Mean Mea
4.0E-06	2.0E-06	6.9E-09							Median Me
1.7E-06	8.5E-07	2.6E-08							Point Mean
1.2E-06	6.0E-07	5.6E-09							Point Medi
1.5E-06	7.9E-07	1.2E-07							
5.3E-07	2.8E-07	4.2E-08							
Orig									
1.4E-06	6.9E-07	2.2E-10	Base						Base
4.4E-07	2.2E-07	1.1E-09	Mean Base						Mean Base
8.0E-07	4.0E-07	2.2E-10	Median Base						Median Base
8.0E-07	4.0E-07	6.9E-10	Mean						Mean
2.5E-07	1.3E-07	3.4E-09	Mean Mean						Mean Mean
1.6E-07	8.0E-08	8.4E-10	Median Mean						Median Mean
2.9E-07	1.5E-07	1.2E-08	Point Mean						Point Mean
1.1E-07	5.5E-08	4.2E-09	Point Median						Point Median
New Navy									
4.8E-06	2.4E-06	4.4E-09	Base						Base
2.0E-06	1.0E-06	1.7E-08	Mean Base						Mean Base
2.8E-06	1.4E-06	4.4E-09	Median Base						Median Base
2.8E-06	1.4E-06	1.2E-08	Mean						Mean
1.2E-06	6.2E-07	4.7E-08	Mean Mean						Mean Mean
8.5E-07	4.3E-07	1.1E-08	Median Mean						Median Mean
1.5E-06	8.0E-07	1.2E-07	Point Mean						Point Mean
5.7E-07	3.1E-07	4.6E-08	Point Median						Point Median
Navy/WIPP									
2.1E-06	1.1E-06	2.8E-08	Base						Base

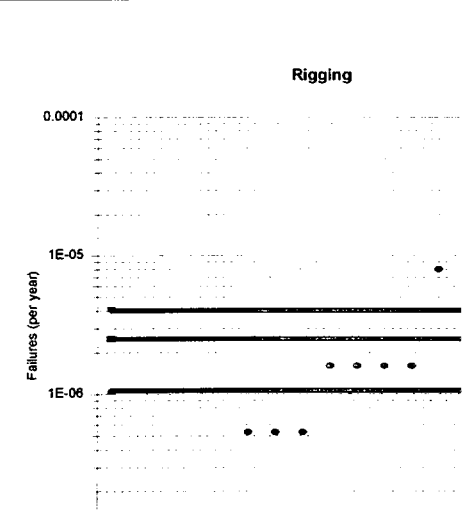
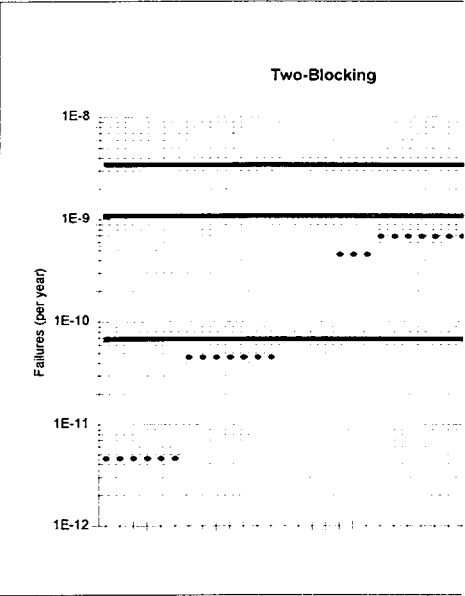
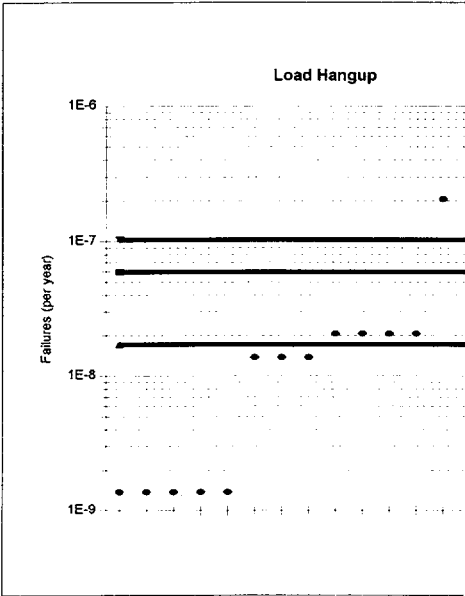


9.0E-07	5.0E-07	1.0E-07	Mean Base
1.3E-06	6.8E-07	2.8E-08	Median Base
1.3E-06	6.9E-07	3.1E-08	Mean
5.6E-07	3.4E-07	1.2E-07	Mean Mean
4.0E-07	2.4E-07	6.9E-08	Median Mean
8.6E-07	4.7E-07	6.9E-08	Point Mean
5.0E-07	2.7E-07	4.0E-08	Point Median

4.5E-12	3.41E-09	1.08E-09	6.82E-11
4.5E-12			
4.5E-12			
4.5E-12			
4.5E-12			
4.5E-12			
4.5E-11			
4.5E-11			
4.5E-11			
4.5E-11			
4.5E-11			
4.5E-11			
6.8E-11			
6.8E-11			
6.8E-11			
6.8E-11			
4.5E-10			
4.5E-10			
4.5E-10			
6.8E-10			
6.8E-10			
6.8E-10			
6.8E-10			
6.8E-10			
6.8E-10			
6.8E-10			
6.8E-10			
6.8E-10			
6.8E-09			
6.8E-09			
6.8E-09	3.41E-09	1.08E-09	6.82E-11

Load	1.4E-09	1.03E-07	5.92E-08	1.70E-08
	1.4E-09			
	1.4E-09			
	1.4E-09			
	1.4E-09			
	1.4E-08			
	1.4E-08			
	1.4E-08			
	2.0E-08			
	2.0E-08			
	2.0E-08			
	2.0E-08			
	2.0E-07			
	2.0E-07			
	2.0E-07			
	2.0E-07	1.03E-07	5.92E-08	1.70E-08

Random	6.1E-08	4.58E-06	2.63E-06	7.58E-07
	6.1E-08			
	6.1E-08			
	6.1E-08			
	6.1E-07			
	6.1E-07			
	6.1E-07			
	9.1E-07			
	9.1E-07			



9.1E-07
 9.1E-07
 9.1E-06
 9.1E-06
 9.1E-06
 9.1E-06
 9.1E-06 4.58E-06 2.63E-06 7.58E-07

1E-07

New Nav

Single

1.5E-08 1.19E-07 1.19E-07 1.19E-07
 1.5E-08
 1.5E-08
 1.5E-08
 1.5E-08
 1.5E-08
 1.5E-08
 1.5E-08
 2.2E-07
 2.2E-07
 2.2E-07
 2.2E-07
 2.2E-07
 2.2E-07
 2.2E-07
 2.2E-07 1.19E-07 1.19E-07 1.19E-07

Rigging

1.1E-07 4.03E-06 2.52E-06 1.06E-06
 1.1E-07
 1.1E-07
 1.1E-07
 1.1E-07
 5.3E-07
 5.3E-07
 5.3E-07
 1.6E-06
 1.6E-06
 1.6E-06
 1.6E-06
 8.0E-06
 8.0E-06
 8.0E-06
 8.0E-06 4.03E-06 2.52E-06 1.06E-06

LOI

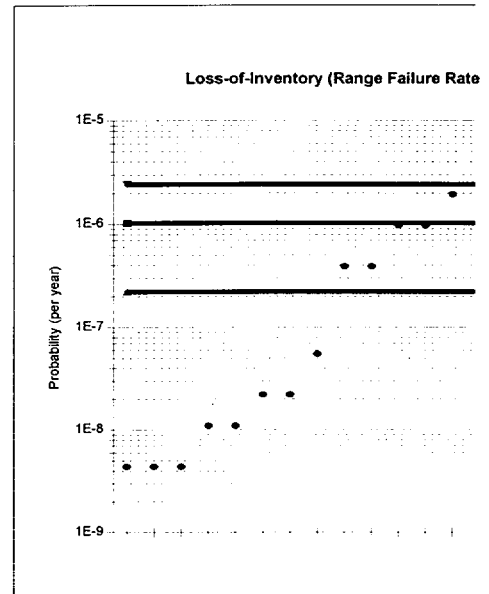
Range

4.4E-09 2.41E-06 1.02E-06 2.20E-07
 4.4E-09
 4.4E-09
 1.1E-08
 1.1E-08
 2.2E-08
 2.2E-08
 5.5E-08
 3.9E-07
 3.9E-07
 9.6E-07
 9.6E-07
 1.9E-06
 1.9E-06
 4.8E-06
 4.8E-06 2.41E-06 1.02E-06 2.20E-07

LOI

Mean

1.2E-08 1.42E-06 6.16E-07 1.90E-07



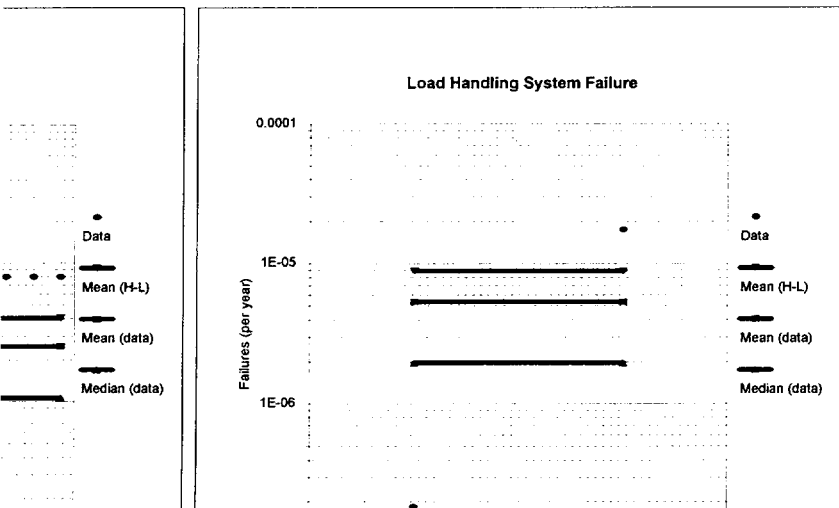
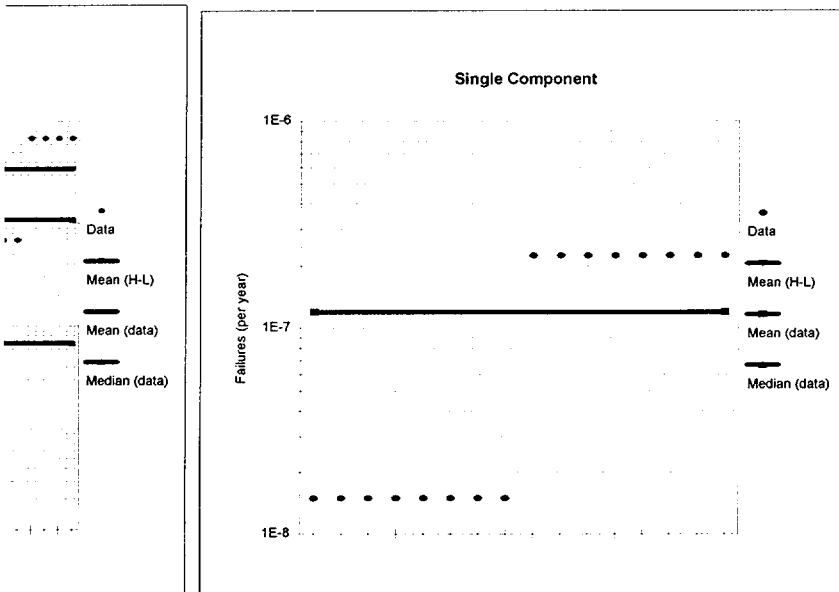
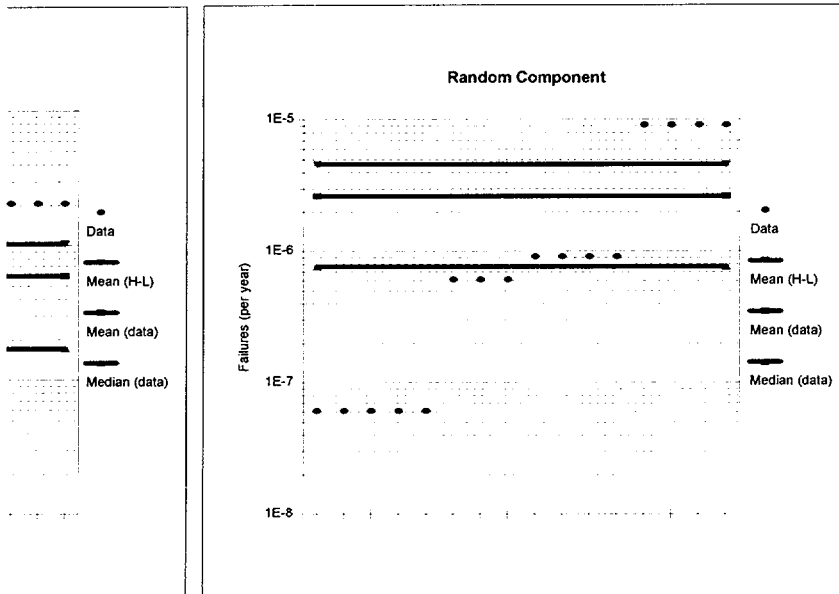
1.2E-08			
1.2E-08			
3.1E-08			
3.1E-08			
6.2E-08			
6.2E-08			
1.5E-07			
2.3E-07			
2.3E-07			
5.6E-07			
5.6E-07			
1.1E-06			
1.1E-06			
2.8E-06			
2.8E-06	1.42E-06	6.16E-07	1.90E-07

Total Failures

1.83E-07	8.8E-06	5.3E-06	2E-06
1.7E-05	8.8E-06	5.3E-06	2E-06

New Navy Data and NUREG Rigging Model

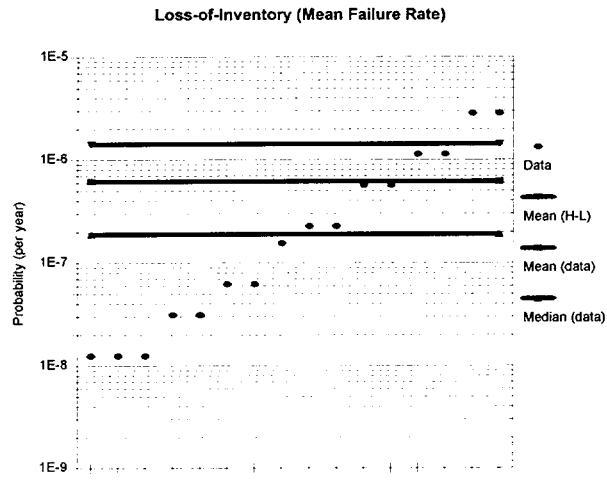
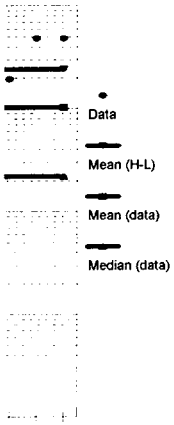
y Data and NUREG Rigging Model



1E-07

y Data and NUREG Rigging Model

)



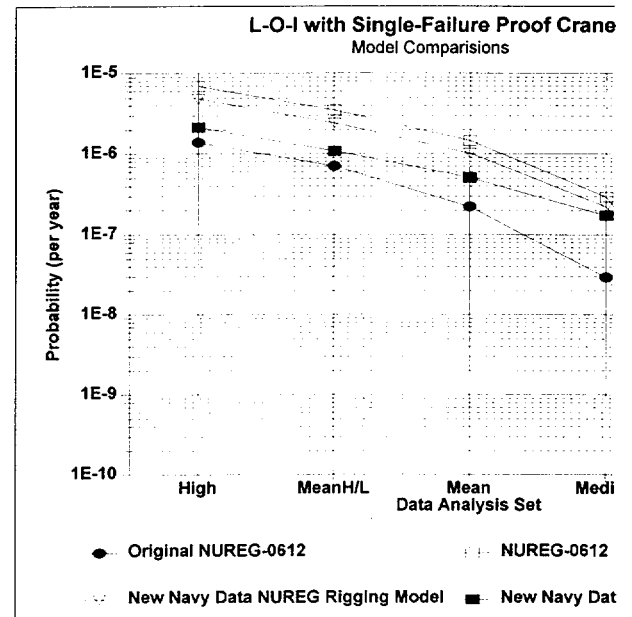
High	Mean	LogMean	GeoMean	Low	
w/1.0					
6.9E-06	3.5E-06	8.6E-07	1.2E-07	2.2E-09	Base
2.9E-06	1.5E-06	5.0E-07	1.6E-07	8.5E-09	Mean Base
4.0E-06	2.0E-06	5.3E-07	9.4E-08	2.2E-09	Median Base
					Point Mean
4.0E-06	2.0E-06	6.3E-07	1.7E-07	6.9E-09	Mean
1.7E-06	8.5E-07	4.0E-07	2.1E-07	2.6E-08	Mean Mean
1.2E-06	6.0E-07	2.2E-07	8.2E-08	5.6E-09	Median Mean
					Point Median

Orig					
1.4E-06	6.9E-07	1.6E-07	1.8E-08	2.2E-10	Base
4.4E-07	2.2E-07	7.3E-08	2.2E-08	1.1E-09	Mean Base
8.0E-07	4.0E-07	9.7E-08	1.3E-08	2.2E-10	Median Base
2.9E-07	1.5E-07	8.8E-08	5.9E-08	1.2E-08	Point Mean
8.0E-07	4.0E-07	1.1E-07	2.4E-08	6.9E-10	Mean
2.5E-07	1.3E-07	5.8E-08	2.9E-08	3.4E-09	Mean Mean
1.6E-07	8.0E-08	3.0E-08	1.2E-08	8.4E-10	Median Mean
9.3E-08	7.5E-08	7.4E-08	7.3E-08	5.7E-08	Point Median

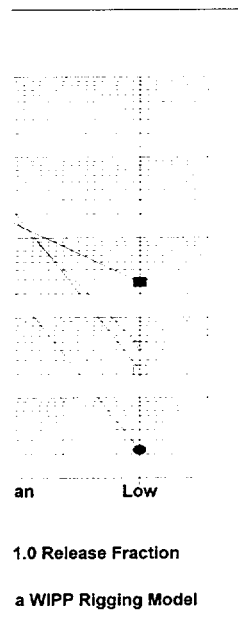
New Navy					
4.8E-06	2.4E-06	6.9E-07	1.5E-07	4.4E-09	Base
2.0E-06	1.0E-06	4.2E-07	1.8E-07	1.7E-08	Mean Base
2.8E-06	1.4E-06	4.4E-07	1.1E-07	4.4E-09	Median Base
					Point Mean
2.8E-06	1.4E-06	5.2E-07	1.9E-07	1.2E-08	Mean
1.2E-06	6.2E-07	3.5E-07	2.4E-07	4.7E-08	Mean Mean
8.5E-07	4.3E-07	1.9E-07	9.6E-08	1.1E-08	Median Mean
					Point Median

Navy/WIPP					
2.1E-06	1.1E-06	4.8E-07	2.4E-07	2.8E-08	Base
9.0E-07	5.0E-07	3.7E-07	3.1E-07	1.0E-07	Mean Base
1.3E-06	6.8E-07	3.4E-07	1.9E-07	2.8E-08	Median Base
8.6E-07	4.7E-07	3.1E-07	2.4E-07	6.9E-08	Point Mean
1.3E-06	6.9E-07	3.5E-07	2.0E-07	3.1E-08	Mean
5.6E-07	3.4E-07	2.8E-07	2.6E-07	1.2E-07	Mean Mean
4.0E-07	2.4E-07	1.9E-07	1.7E-07	6.9E-08	Median Mean
3.6E-07	3.1E-07	3.1E-07	3.1E-07	2.6E-07	Point Median

High	MeanH/L	Mean	Median	Low		GMeanHL	LMeanHL	LM/GM
1.4E-06	6.9E-07	2.2E-07	2.9E-08	2.2E-10	Original	1.8E-08	1.6E-07	9.03
6.9E-06	3.5E-06	1.5E-06	2.9E-07	2.2E-09	1.0 Release	1.2E-07	8.6E-07	6.93
4.8E-06	2.4E-06	1.0E-06	2.2E-07	4.4E-09	Navy/NUREG	1.5E-07	6.9E-07	4.73
2.1E-06	1.1E-06	5.0E-07	1.7E-07	2.8E-08	Navy/WIPP	2.4E-07	4.8E-07	2.00
1.0E-05	5.0E-06		2.0E-07	3.0E-09	Chp 5	1.7E-07	1.2E-06	7.12



d Table 5.2-1
lease Fraction
EG Rigging Model
12 1.0 Release Fract



	NUREG	Original						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	7.0E-08	8.0E-06	5.2E-08	3.4E-07	8.5E-06	2.6E-06	1.1E-05	
MeanHL	3.5E-08	4.0E-06	2.6E-08	1.8E-07	4.3E-06	1.3E-06	5.6E-06	
Mean	2.0E-08	2.3E-06	8.3E-09	1.8E-07	2.5E-06	8.3E-07	3.4E-06	
Median	5.8E-09	6.7E-07	5.2E-10	1.8E-07	8.6E-07	3.5E-07	1.2E-06	
Low	4.7E-10	5.3E-08	3.5E-11	2.3E-08	7.7E-08	3.5E-08	1.1E-07	
	Mean	Loss-of-inventory	Range	Loss-of-inventory				
High		8.0E-07		1.4E-06				
MeanHL		4.0E-07		6.9E-07				
Mean		1.3E-07		2.2E-07				
Median		2.0E-08		2.9E-08				
Low		6.9E-10		2.2E-10				

	NUREG	1.0 Release						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	7.0E-08	8.0E-06	5.2E-08	3.4E-07	8.5E-06	2.6E-06	1.1E-05	
MeanHL	3.5E-08	4.0E-06	2.6E-08	1.8E-07	4.3E-06	1.3E-06	5.6E-06	
Mean	2.0E-08	2.3E-06	8.3E-09	1.8E-07	2.5E-06	8.3E-07	3.4E-06	
Median	5.8E-09	6.7E-07	5.2E-10	1.8E-07	8.6E-07	3.5E-07	1.2E-06	
Low	4.7E-10	5.3E-08	3.5E-11	2.3E-08	7.7E-08	3.5E-08	1.1E-07	
	Mean	Loss-of-inventory	Range	Loss-of-inventory				
High		4.0E-06		6.9E-06				
MeanHL		2.0E-06		3.5E-06				
Mean		8.5E-07		1.5E-06				
Median		2.0E-07		2.9E-07				
Low		6.9E-09		2.2E-09				

	New Navy	NUREG Rigging						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	2.0E-07	9.1E-06	6.8E-09	2.2E-07	9.5E-06	8.0E-06	1.7E-05	
MeanHL	1.0E-07	4.6E-06	3.4E-09	1.2E-07	4.8E-06	4.0E-06	8.8E-06	
Mean	5.9E-08	2.6E-06	1.1E-09	1.2E-07	2.8E-06	2.5E-06	5.3E-06	
Median	1.7E-08	7.6E-07	6.8E-11	1.2E-07	8.9E-07	1.1E-06	2.0E-06	
Low	1.4E-09	6.1E-08	4.5E-12	1.5E-08	7.7E-08	1.1E-07	1.8E-07	
	Mean	Loss-of-inventory	Range	Loss-of-inventory				
High		2.8E-06		4.8E-06				
MeanHL		1.4E-06		2.4E-06				
Mean		6.2E-07		1.0E-06				
Median		1.9E-07		2.2E-07				
Low		1.2E-08		4.4E-09				

	New Navy	WIPP Rigging						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	2.0E-07	9.1E-06	6.8E-09	2.2E-07	9.5E-06	8.7E-07	1.0E-05	
MeanHL	1.0E-07	4.6E-06	3.4E-09	1.2E-07	4.8E-06	8.7E-07	5.7E-06	
Mean	5.9E-08	2.6E-06	1.1E-09	1.2E-07	2.8E-06	8.7E-07	3.7E-06	
Median	1.7E-08	7.6E-07	6.8E-11	1.2E-07	8.9E-07	8.7E-07	1.8E-06	
Low	1.4E-09	6.1E-08	4.5E-12	1.5E-08	7.7E-08	8.7E-07	9.5E-07	
	Mean	Loss-of-inventory	Range	Loss-of-inventory				
High		1.3E-06		2.1E-06				
MeanHL		6.9E-07		1.1E-06				
Mean		3.4E-07		5.0E-07				
Median		1.5E-07		1.7E-07				
Low		3.1E-08		2.8E-08				

Two blocking sheet D New Navy WIPP Rigging
4.5E-12 3.41E-09 1.08E-09 6.82E-11
4.5E-12
4.5E-12
4.5E-12
4.5E-12
4.5E-12
4.5E-11

4.5E-11
4.5E-11
4.5E-11
4.5E-11
4.5E-11
4.5E-11
6.8E-11
6.8E-11
6.8E-11
6.8E-11
4.5E-10
4.5E-10
4.5E-10
6.8E-10
6.8E-10
6.8E-10
6.8E-10
6.8E-10
6.8E-10
6.8E-10
6.8E-10
6.8E-09
6.8E-09
6.8E-09
6.8E-09 3.41E-09 1.08E-09 6.82E-11

Load Hangup

1.4E-09 1.03E-07 5.92E-08 1.70E-08
1.4E-09
1.4E-09
1.4E-09
1.4E-09
1.4E-08
1.4E-08
1.4E-08
2.0E-08
2.0E-08
2.0E-08
2.0E-08
2.0E-07
2.0E-07
2.0E-07
2.0E-07 1.03E-07 5.92E-08 1.70E-08

Random

6.1E-08 4.58E-06 2.63E-06 7.58E-07
6.1E-08
6.1E-08
6.1E-08
6.1E-08
6.1E-07
6.1E-07
6.1E-07
9.1E-07
9.1E-07
9.1E-07
9.1E-07
9.1E-06
9.1E-06
9.1E-06
9.1E-06 4.58E-06 2.63E-06 7.58E-07

Single

1.5E-08	1.19E-07	1.19E-07	1.19E-07
1.5E-08			
1.5E-08			
1.5E-08			
1.5E-08			
1.5E-08			
1.5E-08			
1.5E-08			
2.2E-07			
2.2E-07			
2.2E-07			
2.2E-07			
2.2E-07			
2.2E-07			
2.2E-07			
2.2E-07	1.19E-07	1.19E-07	1.19E-07

Rigging

8.7E-07	8.7E-07	8.7E-07	8.7E-07
8.7E-07			
8.7E-07			
8.7E-07	8.7E-07	8.7E-07	8.7E-07

LOI Range

2.8E-08	1.08E-06	5.01E-07	1.71E-07
2.8E-08			
2.8E-08			
6.9E-08			
6.9E-08			
1.4E-07			
1.4E-07			
1.7E-07			
1.7E-07			
3.4E-07			
4.3E-07			
4.3E-07			
8.5E-07			
8.5E-07			
2.1E-06			
2.1E-06	1.08E-06	5.01E-07	1.71E-07

LOI Mean

3.1E-08	6.86E-07	3.40E-07	1.53E-07
3.1E-08			
3.1E-08			
7.7E-08			
7.7E-08			
1.1E-07			
1.1E-07			
1.5E-07			
1.5E-07			
2.7E-07			
2.7E-07			
3.8E-07			
5.4E-07			
5.4E-07			
1.3E-06			
1.3E-06	6.86E-07	3.40E-07	1.53E-07

Two-blocking Sheet A Original NUREG-0612

3.5E-11	2.62E-08	8.32E-09	5.23E-10
3.5E-11			
3.5E-11			
3.5E-11			

3.5E-11
3.5E-11
3.5E-10
3.5E-10
3.5E-10
3.5E-10
3.5E-10
3.5E-10
3.5E-10
5.2E-10
5.2E-10
5.2E-10
5.2E-10
3.5E-09
3.5E-09
3.5E-09
5.2E-09
5.2E-09
5.2E-09
5.2E-09
5.2E-09
5.2E-09
5.2E-09
5.2E-09
5.2E-08
5.2E-08
5.2E-08
5.2E-08 2.62E-08 8.32E-09 5.23E-10

Load Hangup

4.7E-10 3.51E-08 2.02E-08 5.81E-09
4.7E-10
4.7E-10
4.7E-10
4.7E-10
4.7E-09
4.7E-09
4.7E-09
7.0E-09
7.0E-09
7.0E-09
7.0E-09
7.0E-08
7.0E-08
7.0E-08
7.0E-08 3.51E-08 2.02E-08 5.81E-09

Random

5.3E-08 4.04E-06 2.32E-06 6.69E-07
5.3E-08
5.3E-08
5.3E-08
5.3E-08
5.3E-07
5.3E-07
5.3E-07
8.0E-07
8.0E-07
8.0E-07
8.0E-07
8.0E-06
8.0E-06
8.0E-06

8.0E-06	4.04E-06	2.32E-06	6.69E-07
---------	----------	----------	----------

Single

2.3E-08	1.82E-07	1.82E-07	1.82E-07
2.3E-08			
2.3E-08			
2.3E-08			
2.3E-08			
2.3E-08			
2.3E-08			
2.3E-08			
3.4E-07			
3.4E-07			
3.4E-07			
3.4E-07			
3.4E-07			
3.4E-07			
3.4E-07			
3.4E-07			
3.4E-07	1.82E-07	1.82E-07	1.82E-07

Rigging

3.5E-08	1.33E-06	8.28E-07	3.49E-07
3.5E-08			
3.5E-08			
3.5E-08			
3.5E-08			
1.7E-07			
1.7E-07			
1.7E-07			
5.2E-07			
5.2E-07			
5.2E-07			
5.2E-07			
2.6E-06			
2.6E-06			
2.6E-06			
2.6E-06	1.33E-06	8.28E-07	3.49E-07

LOI Range

2.2E-10	6.94E-07	2.19E-07	2.92E-08
2.2E-10			
4.5E-10			
5.6E-10			
1.1E-09			
1.1E-09			
2.2E-09			
2.8E-09			
5.6E-08			
1.1E-07			
1.4E-07			
2.8E-07			
2.8E-07			
5.6E-07			
6.9E-07			
1.4E-06	6.94E-07	2.19E-07	2.92E-08

LOI Mean

6.9E-10	3.99E-07	1.27E-07	2.03E-08
6.9E-10			
1.4E-09			
1.7E-09			
3.5E-09			
3.5E-09			

6.9E-09
8.7E-09
3.2E-08
6.4E-08
8.0E-08
1.6E-07
1.6E-07
3.2E-07
4.0E-07
8.0E-07 3.99E-07 1.27E-07 2.03E-08

Two-blocking Shhet B NUREG-0612 1.0 Release

LOI Range

2.2E-09 3.47E-06 1.46E-06 2.92E-07
2.2E-09
2.2E-09
5.6E-09
5.6E-09
1.1E-08
1.1E-08
2.8E-08
5.6E-07
5.6E-07
1.4E-06
1.4E-06
2.8E-06
2.8E-06
6.9E-06
6.9E-06 3.47E-06 1.46E-06 2.92E-07

LOI Mean

6.9E-09 2.00E-06 8.50E-07 2.03E-07
6.9E-09
6.9E-09
1.7E-08
1.7E-08
3.5E-08
3.5E-08
8.7E-08
3.2E-07
3.2E-07
8.0E-07
8.0E-07
1.6E-06
1.6E-06
4.0E-06
4.0E-06 2.00E-06 8.50E-07 2.03E-07

Two-Blocking Sheet C New Navy data NUREG Rigging

Rigging

1.1E-07 4.03E-06 2.52E-06 1.06E-06
1.1E-07
1.1E-07
1.1E-07
1.1E-07
5.3E-07
5.3E-07
5.3E-07
1.6E-06
1.6E-06
1.6E-06
1.6E-06

8.0E-06			
8.0E-06			
8.0E-06			
8.0E-06	4.03E-06	2.52E-06	1.06E-06

LOI Range

4.4E-09	2.41E-06	1.02E-06	2.20E-07
4.4E-09			
4.4E-09			
1.1E-08			
1.1E-08			
2.2E-08			
2.2E-08			
5.5E-08			
3.9E-07			
3.9E-07			
9.6E-07			
9.6E-07			
1.9E-06			
1.9E-06			
4.8E-06			
4.8E-06	2.41E-06	1.02E-06	2.20E-07

LOI Mean

1.2E-08	1.42E-06	6.16E-07	1.90E-07
1.2E-08			
1.2E-08			
3.1E-08			
3.1E-08			
6.2E-08			
6.2E-08			
1.5E-07			
2.3E-07			
2.3E-07			
5.6E-07			
5.6E-07			
1.1E-06			
1.1E-06			
2.8E-06			
2.8E-06	1.42E-06	6.16E-07	1.90E-07

NUREG	0612	Original	Two-blocking	Mean		LogMean	GeoMean	QP	funcs
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	5.2E-07	1.4E-10	2.6E-07	6.4E-08	8.5E-09	
0.348837	0.348837								
10	4		a1*b2*a3*a4*a5	5.2E-07	3.5E-08				
0.01	0.001		a1*b2*a3*b4*a5	5.2E-08	3.5E-09				
0.1	0.01		a1*b2*a3*a4*b5	5.2E-08	3.5E-09				
			a1*b2*a3*b4*b5	5.2E-09	3.5E-10				
			a1*b2*b3*a4*a5	2.1E-07	1.4E-08				
			a1*b2*b3*b4*a5	2.1E-08	1.4E-09				
			a1*b2*b3*a4*b5	2.1E-08	1.4E-10				
			a1*b2*b3*b4*b5	2.1E-09	1.4E-10				
			a1*a2*b3*a4*a5	2.1E-07	1.4E-08				
			a1*a2*b3*a4*b5	2.1E-08	1.4E-09				
			a1*a2*b3*b4*b5	2.1E-09	1.4E-10				
			a1*a2*b3*b4*a5	2.1E-08	1.4E-09				
			a1*a2*a3*b4*a5	5.2E-08	3.5E-09				
			a1*a2*a3*b4*b5	5.2E-09	3.5E-10				
			a1*a2*a3*a4*b5	5.2E-08	3.5E-09				
			Median	3.7E-08	1.4E-09	1.9E-08	1.1E-08	7.1E-09	5.2E-09
			Mean	1.1E-07	5.1E-09	5.8E-08	3.4E-08	2.4E-08	5.8E-08
			Load hangup						
1.50E-04	1.00E-05		a1*a2*a3*a4	7.0E-07	1.9E-09	3.5E-07	1.2E-07	3.6E-08	
0.046512	0.046512								
10	4		a1*b2*a3*a4	7.0E-07	4.7E-08				
0.01	0.001		a1*b2*a3*b4	7.0E-08	4.7E-09				
			a1*b2*b3*a4	2.8E-07	1.9E-08				
			a1*b2*b3*b4	2.8E-08	1.9E-09				
			a1*a2*b3*a4	2.8E-07	1.9E-08				
			a1*a2*b3*b4	2.8E-08	1.9E-09				
			a1*a2*a3*b4	7.0E-08	4.7E-09				
			Median	1.7E-07	4.7E-09	9.0E-08	4.7E-08	2.8E-08	2.8E-08
			Mean	2.7E-07	1.2E-08	1.4E-07	8.3E-08	5.8E-08	1.4E-07
			Random component						
1.50E-04	1.00E-05		a1*a2*a3*a4	8.0E-05	2.1E-07	4.0E-05	1.4E-05	4.1E-06	
0.534884	0.534884								
10	4		a1*b2*a3*a4	8.0E-05	5.3E-06				
0.1	0.01		a1*b2*a3*b4	8.0E-06	5.3E-07				
			a1*b2*b3*a4	3.2E-05	2.1E-06				
			a1*b2*b3*b4	3.2E-06	2.1E-07				
			a1*a2*b3*a4	3.2E-05	2.1E-06				
			a1*a2*b3*b4	3.2E-06	2.1E-07				
			a1*a2*a3*b4	8.0E-06	5.3E-07				
			Median	2.0E-05	5.3E-07	1.0E-05	5.4E-06	3.3E-06	3.2E-06
			Mean	3.1E-05	1.4E-06	1.6E-05	9.6E-06	6.6E-06	1.6E-05

		Single component							
1.50E-04	1.00E-05	a1*a2*a3*a4		3.4E-06	9.1E-08	1.7E-06	9.2E-07	5.6E-07	
0.022727	0.022727								
10	4	a1*b2*a3*a4		3.4E-06	2.3E-07				
0.1	0.1	a1*b2*a3*b4		3.4E-06	2.3E-07				
		a1*b2*b3*a4		1.4E-06	9.1E-08				
		a1*b2*b3*b4		1.4E-06	9.1E-08				
		a1*a2*b3*a4		1.4E-06	9.1E-08				
		a1*a2*b3*b4		1.4E-06	9.1E-08				
		a1*a2*a3*b4		3.4E-06	2.3E-07				
Crane	Failure	Median		2.4E-06	9.1E-08	1.2E-06	7.0E-07	4.7E-07	8.0E-07
		Mean		2.4E-06	1.4E-07	1.3E-06	8.0E-07	5.8E-07	1.3E-06
		Range	Total	8.5E-05	3.1E-07	4.3E-05	1.5E-05	5.1E-06	
			Mean	3.4E-05	1.6E-06	1.8E-05	1.0E-05	7.3E-06	1.8E-05
			Median	2.3E-05	6.3E-07	1.2E-05	6.2E-06	3.8E-06	4.0E-06
		Rigging							
		a1*a2*a3*a4		2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06	
		a1*b2*a3*a4		2.6E-05	1.7E-06				
		a1*b2*a3*b4		5.2E-06	3.5E-07				
		a1*b2*b3*a4		1.0E-05	7.0E-07				
		a1*b2*b3*b4		2.1E-06	1.4E-07				
		a1*a2*b3*a4		1.0E-05	7.0E-07				
		a1*a2*b3*b4		2.1E-06	1.4E-07				
		a1*a2*a3*b4		5.2E-06	3.5E-07				
		Median		7.8E-06	3.5E-07	4.1E-06	2.4E-06	1.7E-06	1.9E-06
		Mean		1.1E-05	5.3E-07	5.8E-06	3.5E-06	2.4E-06	5.8E-06
Rigging	Failure	Range	Total	2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06	
			Mean	1.1E-05	5.3E-07	5.8E-06	3.5E-06	2.4E-06	5.8E-06
			Median	7.8E-06	3.5E-07	4.1E-06	2.4E-06	1.7E-06	1.9E-06
			Total	7.8E-06	3.5E-07	4.1E-06	2.4E-06	1.7E-06	1.9E-06

Total	Failure									
		Range	Total	1.1E-04	4.5E-07	5.6E-05	2.0E-05	7.0E-06		
		Mean	Total	4.5E-05	2.1E-06	2.3E-05	1.4E-05	9.7E-06	2.3E-05	
		Median	Total	3.1E-05	9.8E-07	1.6E-05	8.6E-06	5.5E-06	6.0E-06	
		Range	Loss-of-inventory							QP funs
1.11E-04	4.46E-07		a1*a2*a3*a4	1.4E-06	2.2E-10	6.9E-07	1.6E-07	1.8E-08		
0.2	0.1									
0.25	0.05		a1*b2*a3*a4	6.9E-07	2.8E-09					
0.25	0.1		a1*b2*a3*b4	2.8E-07	1.1E-09					
			a1*b2*b3*a4	1.4E-07	5.6E-10					
			a1*b2*b3*b4	5.6E-08	2.2E-10					
			a1*a2*b3*a4	2.8E-07	1.1E-09					
			a1*a2*b3*b4	1.1E-07	4.5E-10					
			a1*a2*a3*b4	5.6E-07	2.2E-09					
			Median	2.8E-07	8.4E-10	1.4E-07	4.8E-08	1.5E-08	2.9E-08	
			Mean	4.4E-07	1.1E-09	2.2E-07	7.3E-08	2.2E-08	2.2E-07	
		Mean	Loss-of-inventory							
4.46E-05	2.11E-06		a1*a2*a3*a4	5.6E-07	1.1E-09	2.8E-07	8.9E-08	2.4E-08		
0.2	0.1									
0.25	0.05		a1*b2*a3*a4	2.8E-07	1.3E-08					
0.25	0.1		a1*b2*a3*b4	1.1E-07	5.3E-09					
			a1*b2*b3*a4	5.6E-08	2.6E-09					
			a1*b2*b3*b4	2.2E-08	1.1E-09					
			a1*a2*b3*a4	1.1E-07	5.3E-09					
			a1*a2*b3*b4	4.5E-08	2.1E-09					
			a1*a2*a3*b4	2.2E-07	1.1E-08					
			Median	1.1E-07	4.0E-09	5.8E-08	3.2E-08	2.1E-08	1.8E-08	
			Mean	1.8E-07	5.1E-09	9.0E-08	4.8E-08	3.0E-08	9.0E-08	
		Median	Loss-of-inventory							
3.05E-05	9.81E-07		a1*a2*a3*a4	3.8E-07	4.9E-10	1.9E-07	5.7E-08	1.4E-08		
0.2	0.1									
0.25	0.05		a1*b2*a3*a4	1.9E-07	6.1E-09					
0.25	0.1		a1*b2*a3*b4	7.6E-08	2.5E-09					
			a1*b2*b3*a4	3.8E-08	1.2E-09					
			a1*b2*b3*b4	1.5E-08	4.9E-10					
			a1*a2*b3*a4	7.6E-08	2.5E-09					
			a1*a2*b3*b4	3.1E-08	9.8E-10					
			a1*a2*a3*b4	1.5E-07	4.9E-09					
			Median	7.6E-08	1.8E-09	3.9E-08	2.0E-08	1.2E-08	1.1E-08	
			Mean	1.2E-07	2.4E-09	6.1E-08	3.0E-08	1.7E-08	6.1E-08	

		Mean	Loss-of-inventory	QP funs					
2.34E-05	2.34E-05	Point	a1*a2*a3*a4	2.9E-07	1.2E-08	1.5E-07	8.7E-08	5.8E-08	
0.2	0.1								
0.25	0.05		a1*b2*a3*a4	1.5E-07	1.5E-07				
0.25	0.1		a1*b2*a3*b4	5.8E-08	5.8E-08				
			a1*b2*b3*a4	2.9E-08	2.9E-08				
			a1*b2*b3*b4	1.2E-08	1.2E-08				
			a1*a2*b3*a4	5.8E-08	5.8E-08				
			a1*a2*b3*b4	2.3E-08	2.3E-08				
			a1*a2*a3*b4	1.2E-07	1.2E-07				
			Median	5.8E-08	4.4E-08	5.1E-08	5.1E-08	5.1E-08	5.8E-08
			Mean	9.2E-08	5.7E-08	7.5E-08	7.3E-08	7.2E-08	7.5E-08
		Median	Loss-of-inventory						
5.96E-06	5.96E-06	Point	a1*a2*a3*a4	7.4E-08	3.0E-09	3.9E-08	2.2E-08	1.5E-08	
0.2	0.1								
0.25	0.05		a1*b2*a3*a4	3.7E-08	3.7E-08				
0.25	0.1		a1*b2*a3*b4	1.5E-08	1.5E-08				
			a1*b2*b3*a4	7.4E-09	7.4E-09				
			a1*b2*b3*b4	3.0E-09	3.0E-09				
			a1*a2*b3*a4	1.5E-08	1.5E-08				
			a1*a2*b3*b4	6.0E-09	6.0E-09				
			a1*a2*a3*b4	3.0E-08	3.0E-08				
			Median	1.5E-08	1.1E-08	1.3E-08	1.3E-08	1.3E-08	1.5E-08
			Mean	2.3E-08	1.5E-08	1.9E-08	1.9E-08	1.8E-08	1.9E-08
NUREG	0612	1.0 RF	Two-blocking						
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	5.2E-07	1.4E-10	Mean	LogMean	GeoMean	
0.348837	0.348837					2.6E-07	6.4E-08	8.5E-09	
10	4		a1*b2*a3*a4*a5	5.2E-07	3.5E-08				
0.01	0.001		a1*b2*a3*b4*a5	5.2E-08	3.5E-09				
0.1	0.01		a1*b2*a3*a4*b5	5.2E-08	3.5E-09				
			a1*b2*a3*b4*b5	5.2E-09	3.5E-10				
			a1*b2*b3*a4*a5	2.1E-07	1.4E-08				
			a1*b2*b3*b4*a5	2.1E-08	1.4E-09				
			a1*b2*b3*a4*b5	2.1E-08	1.4E-10				
			a1*b2*b3*b4*b5	2.1E-09	1.4E-10				
			a1*a2*b3*a4*a5	2.1E-07	1.4E-08				
			a1*a2*b3*a4*b5	2.1E-08	1.4E-09				
			a1*a2*b3*b4*b5	2.1E-09	1.4E-10				
			a1*a2*b3*b4*a5	2.1E-08	1.4E-09				
			a1*a2*a3*b4*a5	5.2E-08	3.5E-09				
			a1*a2*a3*b4*b5	5.2E-09	3.5E-10				
			a1*a2*a3*a4*b5	5.2E-08	3.5E-09				
			Median	3.7E-08	1.4E-09	1.9E-08	1.1E-08	7.1E-09	5.2E-09
			Mean	1.1E-07	5.1E-09	5.8E-08	3.4E-08	2.4E-08	5.8E-08
			Load hangup						
1.50E-04	1.00E-05		a1*a2*a3*a4	7.0E-07	1.9E-09	3.5E-07	1.2E-07	3.6E-08	
0.046512	0.046512								

10	4	a1*b2*a3*a4	7.0E-07	4.7E-08					
0.01	0.001	a1*b2*a3*b4	7.0E-08	4.7E-09					
		a1*b2*b3*a4	2.8E-07	1.9E-08					
		a1*b2*b3*b4	2.8E-08	1.9E-09					
		a1*a2*b3*a4	2.8E-07	1.9E-08					
		a1*a2*b3*b4	2.8E-08	1.9E-09					
		a1*a2*a3*b4	7.0E-08	4.7E-09					
		Median	1.7E-07	4.7E-09	9.0E-08	4.7E-08	2.8E-08	2.8E-08	
		Mean	2.7E-07	1.2E-08	1.4E-07	8.3E-08	5.8E-08	1.4E-07	
		Random component							
1.50E-04	1.00E-05	a1*a2*a3*a4	8.0E-05	2.1E-07	4.0E-05	1.4E-05	4.1E-06		
0.534884	0.534884								
10	4	a1*b2*a3*a4	8.0E-05	5.3E-06					
0.1	0.01	a1*b2*a3*b4	8.0E-06	5.3E-07					
		a1*b2*b3*a4	3.2E-05	2.1E-06					
		a1*b2*b3*b4	3.2E-06	2.1E-07					
		a1*a2*b3*a4	3.2E-05	2.1E-06	1.7E-05	1.1E-05	8.3E-06		
		a1*a2*b3*b4	3.2E-06	2.1E-07					
		a1*a2*a3*b4	8.0E-06	5.3E-07					
		Median	2.0E-05	5.3E-07	1.0E-05	5.4E-06	3.3E-06	3.2E-06	
		Mean	3.1E-05	1.4E-06	1.6E-05	9.6E-06	6.6E-06	1.6E-05	

		Single component							
1.50E-04	1.00E-05	a1*a2*a3*a4		3.4E-06	9.1E-08	1.7E-06	9.2E-07	5.6E-07	
0.022727	0.022727								
10	4	a1*b2*a3*a4		3.4E-06	2.3E-07				
0.1	0.1	a1*b2*a3*b4		3.4E-06	2.3E-07				
		a1*b2*b3*a4		1.4E-06	9.1E-08				
		a1*b2*b3*b4		1.4E-06	9.1E-08				
		a1*a2*b3*a4		1.4E-06	9.1E-08				
		a1*a2*b3*b4		1.4E-06	9.1E-08				
		a1*a2*a3*b4		3.4E-06	2.3E-07				
Crane	Failure	Median		2.4E-06	9.1E-08	1.2E-06	7.0E-07	4.7E-07	8.0E-07
		Mean		2.4E-06	1.4E-07	1.3E-06	8.0E-07	5.8E-07	1.3E-06
		Range	Total	8.5E-05	3.1E-07	4.3E-05	1.5E-05	5.1E-06	
			Mean	3.4E-05	1.6E-06	1.8E-05	1.0E-05	7.3E-06	1.8E-05
			Median	2.3E-05	6.3E-07	1.2E-05	6.2E-06	3.8E-06	4.0E-06
		Rigging							
		a1*a2*a3*a4		2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06	
		a1*b2*a3*a4		2.6E-05	1.7E-06				
		a1*b2*a3*b4		5.2E-06	3.5E-07				
		a1*b2*b3*a4		1.0E-05	7.0E-07				
		a1*b2*b3*b4		2.1E-06	1.4E-07				
		a1*a2*b3*a4		1.0E-05	7.0E-07				
		a1*a2*b3*b4		2.1E-06	1.4E-07				
		a1*a2*a3*b4		5.2E-06	3.5E-07				
		Median		7.8E-06	3.5E-07	4.1E-06	2.4E-06	1.7E-06	1.9E-06
		Mean		1.1E-05	5.3E-07	5.8E-06	3.5E-06	2.4E-06	5.8E-06
Rigging	Failure	Range	Total	2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06	
			Mean	1.1E-05	5.3E-07	5.8E-06	3.5E-06	2.4E-06	5.8E-06
			Median	7.8E-06	3.5E-07	4.1E-06	2.4E-06	1.7E-06	1.9E-06
			Total	7.8E-06	3.5E-07	4.1E-06	2.4E-06	1.7E-06	1.9E-06

Total	Failure									
		Range	Total	1.1E-04	4.5E-07	5.6E-05	2.0E-05	7.0E-06		
		Mean	Total	4.5E-05	2.1E-06	2.3E-05	1.4E-05	9.7E-06	2.3E-05	
		Median	Total	3.1E-05	9.8E-07	1.6E-05	8.6E-06	5.5E-06	6.0E-06	
		Range	Loss-of-inventory							QP funs
1.11E-04	4.46E-07		a1*a2*a3*a4	6.9E-06	2.2E-09	3.5E-06	8.6E-07	1.2E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	6.9E-06	2.8E-08					
0.25	0.1		a1*b2*a3*b4	2.8E-06	1.1E-08					
			a1*b2*b3*a4	1.4E-06	5.6E-09					
			a1*b2*b3*b4	5.6E-07	2.2E-09					
			a1*a2*b3*a4	1.4E-06	5.6E-09					
			a1*a2*b3*b4	5.6E-07	2.2E-09					
			a1*a2*a3*b4	2.8E-06	1.1E-08					
			Median	2.1E-06	5.6E-09	1.0E-06	3.5E-07	1.1E-07	2.9E-07	
			Mean	2.9E-06	8.5E-09	1.5E-06	5.0E-07	1.6E-07	1.5E-06	
		Mean	Loss-of-inventory							
4.46E-05	2.11E-06		a1*a2*a3*a4	2.8E-06	1.1E-08	1.4E-06	5.0E-07	1.7E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	2.8E-06	1.3E-07					
0.25	0.1		a1*b2*a3*b4	1.1E-06	5.3E-08					
			a1*b2*b3*a4	5.6E-07	2.6E-08					
			a1*b2*b3*b4	2.2E-07	1.1E-08					
			a1*a2*b3*a4	5.6E-07	2.6E-08					
			a1*a2*b3*b4	2.2E-07	1.1E-08					
			a1*a2*a3*b4	1.1E-06	5.3E-08					
			Median	8.4E-07	2.6E-08	4.3E-07	2.3E-07	1.5E-07	1.8E-07	
			Mean	1.2E-06	4.0E-08	6.1E-07	3.4E-07	2.2E-07	6.1E-07	
		Median	Loss-of-inventory							
3.05E-05	9.81E-07		a1*a2*a3*a4	1.9E-06	4.9E-09	9.6E-07	3.2E-07	9.7E-08		
1	1									
0.25	0.05		a1*b2*a3*a4	1.9E-06	6.1E-08					
0.25	0.1		a1*b2*a3*b4	7.6E-07	2.5E-08					
			a1*b2*b3*a4	3.8E-07	1.2E-08					
			a1*b2*b3*b4	1.5E-07	4.9E-09					
			a1*a2*b3*a4	3.8E-07	1.2E-08					
			a1*a2*b3*b4	1.5E-07	4.9E-09					
			a1*a2*a3*b4	7.6E-07	2.5E-08					
			Median	5.7E-07	1.2E-08	2.9E-07	1.5E-07	8.4E-08	1.1E-07	
			Mean	8.0E-07	1.9E-08	4.1E-07	2.1E-07	1.2E-07	4.1E-07	

		Mean	Loss-of-inventory	QP funs					
2.34E-05	2.34E-05	Point	a1*a2*a3*a4	1.5E-06	1.2E-07	7.9E-07	5.3E-07	4.1E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	1.5E-06	1.5E-06				
0.25	0.1		a1*b2*a3*b4	5.8E-07	5.8E-07				
			a1*b2*b3*a4	2.9E-07	2.9E-07				
			a1*b2*b3*b4	1.2E-07	1.2E-07				
			a1*a2*b3*a4	2.9E-07	2.9E-07				
			a1*a2*b3*b4	1.2E-07	1.2E-07				
			a1*a2*a3*b4	5.8E-07	5.8E-07				
			Median	4.4E-07	2.9E-07	3.7E-07	3.6E-07	3.6E-07	2.9E-07
			Mean	6.1E-07	4.5E-07	5.3E-07	5.3E-07	5.2E-07	5.3E-07
		Median	Loss-of-inventory						
5.96E-06	5.96E-06	Point	a1*a2*a3*a4	3.7E-07	3.0E-08	2.0E-07	1.4E-07	1.1E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	3.7E-07	3.7E-07				
0.25	0.1		a1*b2*a3*b4	1.5E-07	1.5E-07				
			a1*b2*b3*a4	7.4E-08	7.4E-08				
			a1*b2*b3*b4	3.0E-08	3.0E-08				
			a1*a2*b3*a4	7.4E-08	7.4E-08				
			a1*a2*b3*b4	3.0E-08	3.0E-08				
			a1*a2*a3*b4	1.5E-07	1.5E-07				
			Median	1.1E-07	7.4E-08	9.3E-08	9.2E-08	9.1E-08	7.4E-08
			Mean	1.6E-07	1.1E-07	1.3E-07	1.3E-07	1.3E-07	1.3E-07
NUREG	0612	Navy	Two-blocking						
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	2.1E-08	1.4E-11	Mean	LogMean	GeoMean	
0.04545	0.04545					1.0E-08	2.8E-09	5.3E-10	
3.030303	3.030303		a1*b2*a3*a4*a5	2.1E-08	1.4E-09				
0.01	0.001		a1*b2*a3*b4*a5	2.1E-09	1.4E-10				
0.1	0.01		a1*b2*a3*a4*b5	2.1E-09	1.4E-10				
			a1*b2*a3*b4*b5	2.1E-10	1.4E-11				
			a1*b2*b3*a4*a5	2.1E-08	1.4E-09				
			a1*b2*b3*b4*a5	2.1E-09	1.4E-10				
			a1*b2*b3*a4*b5	2.1E-09	1.4E-11				
			a1*b2*b3*b4*b5	2.1E-10	1.4E-11				
			a1*a2*b3*a4*a5	2.1E-08	1.4E-09				
			a1*a2*b3*a4*b5	2.1E-09	1.4E-10				
			a1*a2*b3*b4*b5	2.1E-10	1.4E-11				
			a1*a2*b3*b4*a5	2.1E-09	1.4E-10				
			a1*a2*a3*b4*a5	2.1E-09	1.4E-10				
			a1*a2*a3*b4*b5	2.1E-10	1.4E-11				
			a1*a2*a3*a4*b5	2.1E-09	1.4E-10				
			Median	2.1E-09	1.4E-10	1.1E-09	7.1E-10	5.3E-10	2.1E-10
			Mean	6.2E-09	3.2E-10	3.3E-09	2.0E-09	1.4E-09	3.3E-09
			Load hangup						
1.50E-04	1.00E-05		a1*a2*a3*a4	6.2E-07	4.1E-09	3.1E-07	1.2E-07	5.1E-08	
0.13636	0.13636								

3.030303 0.01	3.030303 0.001	a1*b2*a3*a4	6.2E-07	4.1E-08				
		a1*b2*a3*b4	6.2E-08	4.1E-09				
		a1*b2*b3*a4	6.2E-07	4.1E-08				
		a1*b2*b3*b4	6.2E-08	4.1E-09				
		a1*a2*b3*a4	6.2E-07	4.1E-08				
		a1*a2*b3*b4	6.2E-08	4.1E-09				
		a1*a2*a3*b4	6.2E-08	4.1E-09				
		Median	3.4E-07	4.1E-09	1.7E-07	7.6E-08	3.8E-08	5.2E-08
		Mean	3.4E-07	1.8E-08	1.8E-07	1.1E-07	7.9E-08	1.8E-07
		Random component						
1.50E-04 0.60606	1.00E-05 0.60606	a1*a2*a3*a4	2.8E-05	1.8E-07	1.4E-05	5.5E-06	2.2E-06	
		a1*b2*a3*a4	2.8E-05	1.8E-06				
		a1*b2*a3*b4	2.8E-06	1.8E-07				
		a1*b2*b3*a4	2.8E-05	1.8E-06				
		a1*b2*b3*b4	2.8E-06	1.8E-07				
		a1*a2*b3*a4	2.8E-05	1.8E-06	1.5E-05	9.5E-06	7.1E-06	
		a1*a2*b3*b4	2.8E-06	1.8E-07				
		a1*a2*a3*b4	2.8E-06	1.8E-07				
		Median	1.5E-05	1.8E-07	7.7E-06	3.4E-06	1.7E-06	2.3E-06
		Mean	1.5E-05	8.0E-07	8.0E-06	4.9E-06	3.5E-06	8.0E-06

5.2E-08
1.8E-07

2.3E-06
8.0E-06

Crane	Failure	Range Mean Median	Single component						
			a1*a2*a3*a4	6.8E-07	4.5E-08	3.6E-07	2.3E-07	1.8E-07	
			a1*b2*a3*a4	6.8E-07	4.5E-08				
			a1*b2*a3*b4	6.8E-07	4.5E-08				
			a1*b2*b3*a4	6.8E-07	4.5E-08				
			a1*b2*b3*b4	6.8E-07	4.5E-08				
			a1*a2*b3*a4	6.8E-07	4.5E-08				
			a1*a2*b3*b4	6.8E-07	4.5E-08				
			a1*a2*a3*b4	6.8E-07	4.5E-08				
			Median	6.8E-07	4.5E-08	3.6E-07	2.3E-07	1.8E-07	3.6E-07
			Mean	6.8E-07	4.5E-08	3.6E-07	2.3E-07	1.8E-07	3.6E-07
			Total	2.9E-05	2.3E-07	1.5E-05	5.9E-06	2.6E-06	
			Mean	1.6E-05	8.7E-07	8.5E-06	5.2E-06	3.7E-06	8.5E-06
			Median	1.6E-05	2.3E-07	8.2E-06	3.8E-06	1.9E-06	2.7E-06
Rigging	Failure	Range Mean Median	Rigging						
			a1*a2*a3*a4	4.8E-05	6.4E-07	2.4E-05	1.1E-05	5.6E-06	
			a1*b2*a3*a4	4.8E-05	3.2E-06				
			a1*b2*a3*b4	9.6E-06	6.4E-07				
			a1*b2*b3*a4	4.8E-05	3.2E-06				
			a1*b2*b3*b4	9.6E-06	6.4E-07				
			a1*a2*b3*a4	4.8E-05	3.2E-06				
			a1*a2*b3*b4	9.6E-06	6.4E-07				
			a1*a2*a3*b4	9.6E-06	6.4E-07				
			Median	2.9E-05	6.4E-07	1.5E-05	7.4E-06	4.3E-06	6.4E-06
			Mean	2.9E-05	1.6E-06	1.5E-05	9.5E-06	6.8E-06	1.5E-05
Rigging	Failure	Range Mean Median	Total	4.8E-05	6.4E-07	2.4E-05	1.1E-05	5.6E-06	
			Mean	2.9E-05	1.6E-06	1.5E-05	9.5E-06	6.8E-06	1.5E-05
			Median	2.9E-05	6.4E-07	1.5E-05	7.4E-06	4.3E-06	6.4E-06

Total	Failure	Range	Total	7.7E-05	8.8E-07	3.9E-05	1.7E-05	8.2E-06		
		Mean	Total	4.5E-05	2.5E-06	2.4E-05	1.5E-05	1.1E-05	2.4E-05	
		Median	Total	4.5E-05	8.8E-07	2.3E-05	1.1E-05	6.3E-06	9.1E-06	
		Range	Loss-of-inventory							QP funs
7.71E-05	8.76E-07		a1*a2*a3*a4	4.8E-06	4.4E-09	2.4E-06	6.9E-07	1.5E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	4.8E-06	5.5E-08					
0.25	0.1		a1*b2*a3*b4	1.9E-06	2.2E-08					
			a1*b2*b3*a4	9.6E-07	1.1E-08					
			a1*b2*b3*b4	3.9E-07	4.4E-09					
			a1*a2*b3*a4	9.6E-07	1.1E-08					
			a1*a2*b3*b4	3.9E-07	4.4E-09					
			a1*a2*a3*b4	1.9E-06	2.2E-08					
			Median	1.4E-06	1.1E-08	7.3E-07	2.9E-07	1.3E-07	2.2E-07	
			Mean	2.0E-06	1.7E-08	1.0E-06	4.2E-07	1.8E-07	1.0E-06	
		Mean	Loss-of-inventory							
4.51E-05	2.47E-06		a1*a2*a3*a4	2.8E-06	1.2E-08	1.4E-06	5.2E-07	1.9E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	2.8E-06	1.5E-07					
0.25	0.1		a1*b2*a3*b4	1.1E-06	6.2E-08					
			a1*b2*b3*a4	5.6E-07	3.1E-08					
			a1*b2*b3*b4	2.3E-07	1.2E-08					
			a1*a2*b3*a4	5.6E-07	3.1E-08					
			a1*a2*b3*b4	2.3E-07	1.2E-08					
			a1*a2*a3*b4	1.1E-06	6.2E-08					
			Median	8.5E-07	3.1E-08	4.4E-07	2.5E-07	1.6E-07	1.9E-07	
			Mean	1.2E-06	4.7E-08	6.2E-07	3.5E-07	2.4E-07	6.2E-07	
		Median	Loss-of-inventory							
4.51E-05	9.81E-07		a1*a2*a3*a4	2.8E-06	4.9E-09	1.4E-06	4.4E-07	1.2E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	2.8E-06	6.1E-08					
0.25	0.1		a1*b2*a3*b4	1.1E-06	2.5E-08					
			a1*b2*b3*a4	5.6E-07	1.2E-08					
			a1*b2*b3*b4	2.3E-07	4.9E-09					
			a1*a2*b3*a4	5.6E-07	1.2E-08					
			a1*a2*b3*b4	2.3E-07	4.9E-09					
			a1*a2*a3*b4	1.1E-06	2.5E-08					
			Median	8.5E-07	1.2E-08	4.3E-07	2.0E-07	1.0E-07	1.4E-07	
			Mean	1.2E-06	1.9E-08	6.0E-07	2.8E-07	1.5E-07	6.0E-07	

		Mean	Loss-of-inventory							QP funs
2.38E-05	2.38E-05	Point	a1*a2*a3*a4	1.5E-06	1.2E-07	8.0E-07	5.4E-07	4.2E-07		
1	1									
0.25	0.05		a1*b2*a3*a4	1.5E-06	1.5E-06					
0.25	0.1		a1*b2*a3*b4	5.9E-07	5.9E-07					
			a1*b2*b3*a4	3.0E-07	3.0E-07					
			a1*b2*b3*b4	1.2E-07	1.2E-07					
			a1*a2*b3*a4	3.0E-07	3.0E-07					
			a1*a2*b3*b4	1.2E-07	1.2E-07					
			a1*a2*a3*b4	5.9E-07	5.9E-07					
			Median	4.5E-07	3.0E-07	3.7E-07	3.7E-07	3.6E-07	3.0E-07	
			Mean	6.2E-07	4.5E-07	5.4E-07	5.3E-07	5.3E-07	5.4E-07	
9.14E-06	9.14E-06	Median	Loss-of-inventory							
1	1	Point	a1*a2*a3*a4	5.7E-07	4.6E-08	3.1E-07	2.1E-07	1.6E-07		
0.25	0.05		a1*b2*a3*a4	5.7E-07	5.7E-07					
0.25	0.1		a1*b2*a3*b4	2.3E-07	2.3E-07					
			a1*b2*b3*a4	1.1E-07	1.1E-07					
			a1*b2*b3*b4	4.6E-08	4.6E-08					
			a1*a2*b3*a4	1.1E-07	1.1E-07					
			a1*a2*b3*b4	4.6E-08	4.6E-08					
			a1*a2*a3*b4	2.3E-07	2.3E-07					
			Median	1.7E-07	1.1E-07	1.4E-07	1.4E-07	1.4E-07	1.1E-07	
			Mean	2.4E-07	1.7E-07	2.1E-07	2.1E-07	2.0E-07	2.1E-07	
NUREG	0612	N/WIPP	Two-blocking							
1.50E-04	1.00E-05		a1*a2*a3*a4*a5	2.1E-08	1.4E-11	Mean	LogMean	GeoMean	QP funs	
0.04545	0.04545					1.0E-08	2.8E-09	5.3E-10		
3.030303	3.030303		a1*b2*a3*a4*a5	2.1E-08	1.4E-09					
0.01	0.001		a1*b2*a3*b4*a5	2.1E-09	1.4E-10					
0.1	0.01		a1*b2*a3*a4*b5	2.1E-09	1.4E-10					
			a1*b2*a3*b4*b5	2.1E-10	1.4E-11					
			a1*b2*b3*a4*a5	2.1E-08	1.4E-09					
			a1*b2*b3*b4*a5	2.1E-09	1.4E-10					
			a1*b2*b3*a4*b5	2.1E-09	1.4E-11					
			a1*b2*b3*b4*b5	2.1E-10	1.4E-11					
			a1*a2*b3*a4*a5	2.1E-08	1.4E-09					
			a1*a2*b3*a4*b5	2.1E-09	1.4E-10					
			a1*a2*b3*b4*b5	2.1E-10	1.4E-11					
			a1*a2*b3*b4*a5	2.1E-09	1.4E-10					
			a1*a2*a3*b4*a5	2.1E-09	1.4E-10					
			a1*a2*a3*b4*b5	2.1E-10	1.4E-11					
			a1*a2*a3*a4*b5	2.1E-09	1.4E-10					
			Median	2.1E-09	1.4E-10	1.1E-09	7.1E-10	5.3E-10	2.1E-10	
			Mean	6.2E-09	3.2E-10	3.3E-09	2.0E-09	1.4E-09	3.3E-09	
			Load hangup							
1.50E-04	1.00E-05		a1*a2*a3*a4	6.2E-07	4.1E-09	3.1E-07	1.2E-07	5.1E-08		
0.13636	0.13636									

3.030303	3.030303	a1*b2*a3*a4	6.2E-07	4.1E-08				
0.01	0.001	a1*b2*a3*b4	6.2E-08	4.1E-09				
		a1*b2*b3*a4	6.2E-07	4.1E-08				
		a1*b2*b3*b4	6.2E-08	4.1E-09				
		a1*a2*b3*a4	6.2E-07	4.1E-08				
		a1*a2*b3*b4	6.2E-08	4.1E-09				
		a1*a2*a3*b4	6.2E-08	4.1E-09				
		Median	3.4E-07	4.1E-09	1.7E-07	7.6E-08	3.8E-08	5.2E-08
		Mean	3.4E-07	1.8E-08	1.8E-07	1.1E-07	7.9E-08	1.8E-07
		Random component						
1.50E-04	1.00E-05	a1*a2*a3*a4	2.8E-05	1.8E-07	1.4E-05	5.5E-06	2.2E-06	
0.60606	0.60606	a1*b2*a3*a4	2.8E-05	1.8E-06				
3.030303	3.030303	a1*b2*a3*b4	2.8E-06	1.8E-07				
0.1	0.01	a1*b2*b3*a4	2.8E-05	1.8E-06				
		a1*b2*b3*b4	2.8E-06	1.8E-07				
		a1*a2*b3*a4	2.8E-05	1.8E-06	1.5E-05	9.5E-06	7.1E-06	
		a1*a2*b3*b4	2.8E-06	1.8E-07				
		a1*a2*a3*b4	2.8E-06	1.8E-07				
		Median	1.5E-05	1.8E-07	7.7E-06	3.4E-06	1.7E-06	2.3E-06
		Mean	1.5E-05	8.0E-07	8.0E-06	4.9E-06	3.5E-06	8.0E-06

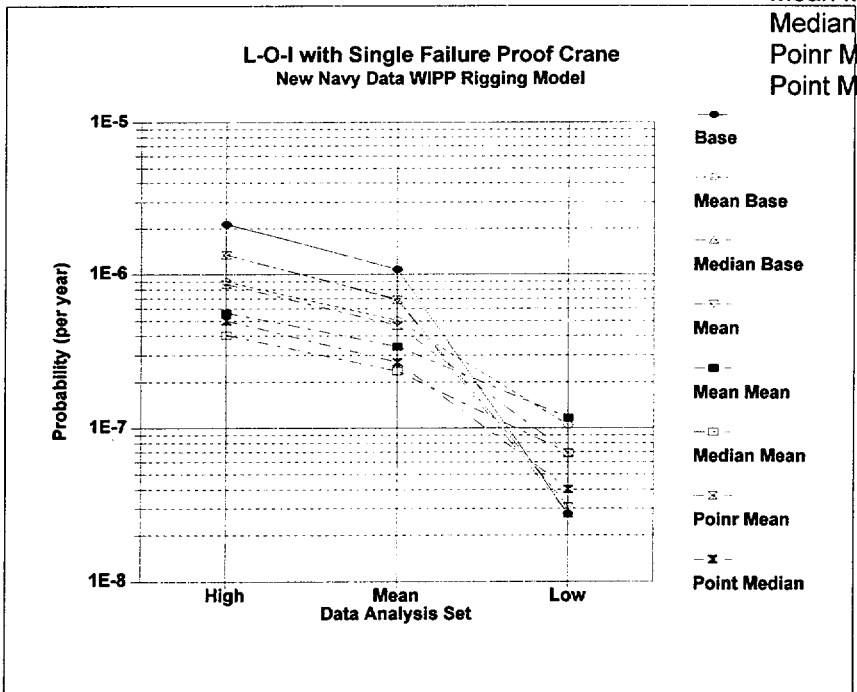
1.50E-04		1.00E-05		Single component								
0.014925		0.014925		a1*a2*a3*a4		6.8E-07	4.5E-08	3.6E-07	2.3E-07	1.8E-07		
3.030303		3.030303		a1*b2*a3*a4		6.8E-07	4.5E-08					
0.1		0.1		a1*b2*a3*b4		6.8E-07	4.5E-08					
				a1*b2*b3*a4		6.8E-07	4.5E-08					
				a1*b2*b3*b4		6.8E-07	4.5E-08					
				a1*a2*b3*a4		6.8E-07	4.5E-08					
				a1*a2*b3*b4		6.8E-07	4.5E-08					
				a1*a2*a3*b4		6.8E-07	4.5E-08					
				Median		6.8E-07	4.5E-08	3.6E-07	2.3E-07	1.8E-07	3.6E-07	
				Mean		6.8E-07	4.5E-08	3.6E-07	2.3E-07	1.8E-07	3.6E-07	
Crane	Failure	Range	Total	2.9E-05	2.3E-07	1.5E-05	5.9E-06	2.6E-06				
		Mean	Total	1.6E-05	8.7E-07	8.5E-06	5.2E-06	3.7E-06	8.5E-06			
		Median	Total	1.6E-05	2.3E-07	8.2E-06	3.8E-06	1.9E-06	2.7E-06			
		Rigging										
		a1*a2		5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06				
8.70E-07		8.70E-07										
6.060606		6.060606		a1*b2		5.3E-06	5.3E-06					
				Mean		5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	
				Median		5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	
Rigging	Failure											
		Range	Total	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06			
		Mean	Total	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06		
		Median	Total	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06	5.3E-06		

Total	Failure	Range	Total	3.4E-05	5.5E-06	2.0E-05	1.6E-05	1.4E-05	
		Mean	Total	2.1E-05	6.1E-06	1.4E-05	1.2E-05	1.1E-05	1.4E-05
		Median	Total	2.1E-05	5.5E-06	1.3E-05	1.2E-05	1.1E-05	8.0E-06
		Range	Loss-of-inventory						QP funs
3.41E-05	5.51E-06		a1*a2*a3*a4	2.1E-06	2.8E-08	1.1E-06	4.8E-07	2.4E-07	
1	1		a1*b2*a3*a4	2.1E-06	3.4E-07				
0.25	0.05		a1*b2*a3*b4	8.5E-07	1.4E-07				
0.25	0.1		a1*b2*b3*a4	4.3E-07	6.9E-08				
			a1*b2*b3*b4	1.7E-07	2.8E-08				
			a1*a2*b3*a4	4.3E-07	6.9E-08				
			a1*a2*b3*b4	1.7E-07	2.8E-08				
			a1*a2*a3*b4	8.5E-07	1.4E-07				
			Median	6.4E-07	6.9E-08	3.5E-07	2.6E-07	2.1E-07	1.7E-07
			Mean	9.0E-07	1.0E-07	5.0E-07	3.7E-07	3.1E-07	5.0E-07
		Mean	Loss-of-inventory						
2.14E-05	6.14E-06		a1*a2*a3*a4	1.3E-06	3.1E-08	6.9E-07	3.5E-07	2.0E-07	
1	1		a1*b2*a3*a4	1.3E-06	3.8E-07				
0.25	0.05		a1*b2*a3*b4	5.4E-07	1.5E-07				
0.25	0.1		a1*b2*b3*a4	2.7E-07	7.7E-08				
			a1*b2*b3*b4	1.1E-07	3.1E-08				
			a1*a2*b3*a4	2.7E-07	7.7E-08				
			a1*a2*b3*b4	1.1E-07	3.1E-08				
			a1*a2*a3*b4	5.4E-07	1.5E-07				
			Median	4.0E-07	7.7E-08	2.4E-07	2.0E-07	1.8E-07	1.5E-07
			Mean	5.6E-07	1.2E-07	3.4E-07	2.8E-07	2.6E-07	3.4E-07
		Median	Loss-of-inventory						
2.14E-05	5.51E-06		a1*a2*a3*a4	1.3E-06	2.8E-08	6.8E-07	3.4E-07	1.9E-07	
1	1		a1*b2*a3*a4	1.3E-06	3.4E-07				
0.25	0.05		a1*b2*a3*b4	5.4E-07	1.4E-07				
0.25	0.1		a1*b2*b3*a4	2.7E-07	6.9E-08				
			a1*b2*b3*b4	1.1E-07	2.8E-08				
			a1*a2*b3*a4	2.7E-07	6.9E-08				
			a1*a2*b3*b4	1.1E-07	2.8E-08				
			a1*a2*a3*b4	5.4E-07	1.4E-07				
			Median	4.0E-07	6.9E-08	2.4E-07	1.9E-07	1.7E-07	1.4E-07
			Mean	5.6E-07	1.0E-07	3.3E-07	2.7E-07	2.4E-07	3.3E-07

1.38E-05	1.38E-05	Mean Point	Loss-of-inventory a1*a2*a3*a4	8.6E-07	6.9E-08	4.7E-07	3.1E-07	2.4E-07	QP funs
1	1								
0.25	0.05		a1*b2*a3*a4	8.6E-07	8.6E-07				
0.25	0.1		a1*b2*a3*b4	3.4E-07	3.4E-07				
			a1*b2*b3*a4	1.7E-07	1.7E-07				
			a1*b2*b3*b4	6.9E-08	6.9E-08				
			a1*a2*b3*a4	1.7E-07	1.7E-07				
			a1*a2*b3*b4	6.9E-08	6.9E-08				
			a1*a2*a3*b4	3.4E-07	3.4E-07				
			Median	2.6E-07	1.7E-07	2.2E-07	2.1E-07	2.1E-07	1.7E-07
			Mean	3.6E-07	2.6E-07	3.1E-07	3.1E-07	3.1E-07	3.1E-07

7.98E-06	7.98E-06	Median Point	Loss-of-inventory a1*a2*a3*a4	5.0E-07	4.0E-08	2.7E-07	1.8E-07	1.4E-07	
1	1								
0.25	0.05		a1*b2*a3*a4	5.0E-07	5.0E-07				
0.25	0.1		a1*b2*a3*b4	2.0E-07	2.0E-07				
			a1*b2*b3*a4	1.0E-07	1.0E-07				
			a1*b2*b3*b4	4.0E-08	4.0E-08				
			a1*a2*b3*a4	1.0E-07	1.0E-07				
			a1*a2*b3*b4	4.0E-08	4.0E-08				
			a1*a2*a3*b4	2.0E-07	2.0E-07				
			Median	1.5E-07	1.0E-07	1.2E-07	1.2E-07	1.2E-07	1.0E-07
			Mean	2.1E-07	1.5E-07	1.8E-07	1.8E-07	1.8E-07	1.8E-07

High w/1.0	Mean	Low		Original NUREG-0612	Base	Base
6.9E-06	3.5E-06	2.2E-09	Base	NUREG-0612 1.0 Re M	Base	Mean Base
2.9E-06	1.5E-06	8.5E-09	Mean Base	New Navy Data NUR	Mean	Median Ba
1.9E-06	9.6E-07	4.9E-09	Median Base	New Navy Data WIPPM	Mean	Mean
2.8E-06	1.4E-06	1.1E-08	Mean			Mean Mea
1.2E-06	6.1E-07	4.0E-08	Mean Mean			Median Me
5.7E-07	2.9E-07	1.2E-08	Median Mean			Point Mean
1.5E-06	7.9E-07	1.2E-07	Point Mean			Point Medi
3.7E-07	2.0E-07	3.0E-08	Point Median			
Orig						
1.4E-06	6.9E-07	2.2E-10	Base			
4.4E-07	2.2E-07	1.1E-09	Mean Base			
3.8E-07	1.9E-07	4.9E-10	Median Base			
5.6E-07	2.8E-07	1.1E-09	Mean			
1.8E-07	9.0E-08	5.1E-09	Mean Mean			
7.6E-08	3.9E-08	1.8E-09	Median Mean			
2.9E-07	1.5E-07	1.2E-08	Point Mean			
7.4E-08	3.9E-08	3.0E-09	Point Median			
New Navy						
4.8E-06	2.4E-06	4.4E-09	Base			
2.0E-06	1.0E-06	1.7E-08	Mean Base			
2.8E-06	1.4E-06	4.9E-09	Median Base			
2.8E-06	1.4E-06	1.2E-08	Mean			
1.2E-06	6.2E-07	4.7E-08	Mean Mean			
8.5E-07	4.3E-07	1.2E-08	Median Mean			
1.5E-06	8.0E-07	1.2E-07	Point Mean			
5.7E-07	3.1E-07	4.6E-08	Point Median			
Navy/WIPP						
2.1E-06	1.1E-06	2.8E-08	Base			



9.0E-07	5.0E-07	1.0E-07	Mean Base
1.3E-06	6.8E-07	2.8E-08	Median Base
1.3E-06	6.9E-07	3.1E-08	Mean
5.6E-07	3.4E-07	1.2E-07	Mean Mean
4.0E-07	2.4E-07	6.9E-08	Median Mean
8.6E-07	4.7E-07	6.9E-08	Point Mean
5.0E-07	2.7E-07	4.0E-08	Point Median

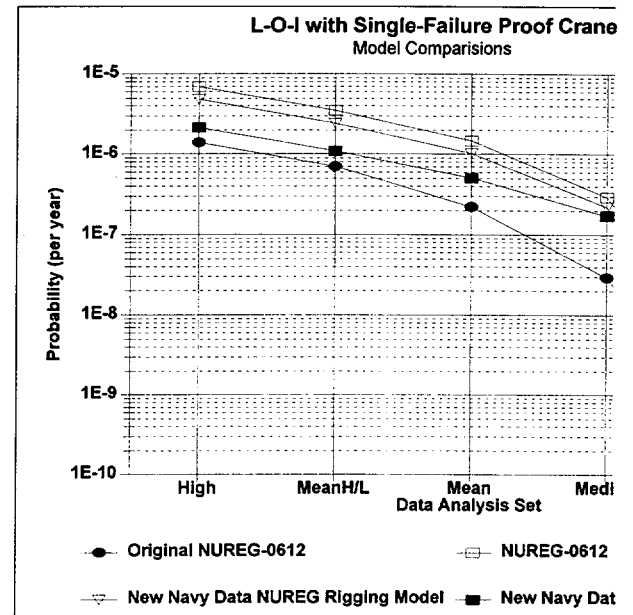
High w/1.0	Mean	LogMean	GeoMean	Low	
6.9E-06	3.5E-06	8.6E-07	1.2E-07	2.2E-09	Base
2.9E-06	1.5E-06	5.0E-07	1.6E-07	8.5E-09	Mean Base
1.9E-06	9.6E-07	3.2E-07	9.7E-08	4.9E-09	Median Base
					Point Mean
2.8E-06	1.4E-06	5.0E-07	1.7E-07	1.1E-08	Mean
1.2E-06	6.1E-07	3.4E-07	2.2E-07	4.0E-08	Mean Mean
5.7E-07	2.9E-07	1.5E-07	8.4E-08	1.2E-08	Median Mean
					Point Median

Orig					
1.4E-06	6.9E-07	1.6E-07	1.8E-08	2.2E-10	Base
4.4E-07	2.2E-07	7.3E-08	2.2E-08	1.1E-09	Mean Base
3.8E-07	1.9E-07	5.7E-08	1.4E-08	4.9E-10	Median Base
2.9E-07	1.5E-07	8.7E-08	5.8E-08	1.2E-08	Point Mean
5.6E-07	2.8E-07	8.9E-08	2.4E-08	1.1E-09	Mean
1.8E-07	9.0E-08	4.8E-08	3.0E-08	5.1E-09	Mean Mean
7.6E-08	3.9E-08	2.0E-08	1.2E-08	1.8E-09	Median Mean
9.2E-08	7.5E-08	7.3E-08	7.2E-08	5.7E-08	Point Median

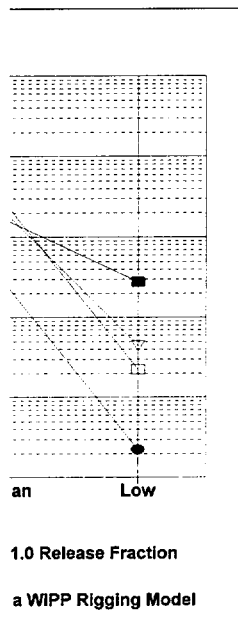
New Navy					
4.8E-06	2.4E-06	6.9E-07	1.5E-07	4.4E-09	Base
2.0E-06	1.0E-06	4.2E-07	1.8E-07	1.7E-08	Mean Base
2.8E-06	1.4E-06	4.4E-07	1.2E-07	4.9E-09	Median Base
					Point Mean
2.8E-06	1.4E-06	5.2E-07	1.9E-07	1.2E-08	Mean
1.2E-06	6.2E-07	3.5E-07	2.4E-07	4.7E-08	Mean Mean
8.5E-07	4.3E-07	2.0E-07	1.0E-07	1.2E-08	Median Mean
					Point Median

Navy/WIPP					
2.1E-06	1.1E-06	4.8E-07	2.4E-07	2.8E-08	Base
9.0E-07	5.0E-07	3.7E-07	3.1E-07	1.0E-07	Mean Base
1.3E-06	6.8E-07	3.4E-07	1.9E-07	2.8E-08	Median Base
8.6E-07	4.7E-07	3.1E-07	2.4E-07	6.9E-08	Point Mean
1.3E-06	6.9E-07	3.5E-07	2.0E-07	3.1E-08	Mean
5.6E-07	3.4E-07	2.8E-07	2.6E-07	1.2E-07	Mean Mean
4.0E-07	2.4E-07	1.9E-07	1.7E-07	6.9E-08	Median Mean
3.6E-07	3.1E-07	3.1E-07	3.1E-07	2.6E-07	Point Median

High	MeanH/L	Mean	Median	Low		GMeanHL	LMeanHL	LM/GM
1.4E-06	6.9E-07	2.2E-07	2.9E-08	2.2E-10	Original	1.8E-08	1.6E-07	9.03
6.9E-06	3.5E-06	1.5E-06	2.9E-07	2.2E-09	1.0 Release	1.2E-07	8.6E-07	6.93
4.8E-06	2.4E-06	1.0E-06	2.2E-07	4.4E-09	Navy/NUREG	1.5E-07	6.9E-07	4.73
2.1E-06	1.1E-06	5.0E-07	1.7E-07	2.8E-08	Navy/WIPP	2.4E-07	4.8E-07	2.00
1.0E-05	5.0E-06		2.0E-07	3.0E-09	Chp 5	1.7E-07	1.2E-06	7.12



d Table 5.2-1
lease Fraction
EG Rigging Model
12 1.0 Release Fract



	NUREG	Original						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	7.0E-07	8.0E-05	5.2E-07	3.4E-06	8.5E-05	2.6E-05	1.1E-04	
Mean	1.4E-07	1.6E-05	5.8E-08	1.3E-06	1.8E-05	5.8E-06	2.3E-05	
Median	2.8E-08	3.2E-06	5.2E-09	8.0E-07	4.0E-06	1.9E-06	6.0E-06	
Low	1.9E-09	2.1E-07	1.4E-10	9.1E-08	3.1E-07	1.4E-07	4.5E-07	

	Loss-of-inventory	Loss-of-inventory
High	1.4E-06	1.4E-06
Mean	7.5E-08	6.9E-07
Median	1.5E-08	1.8E-08
Low	2.2E-10	2.2E-10

	NUREG	1.0 Release						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	7.0E-07	8.0E-05	5.2E-07	3.4E-06	8.5E-05	2.6E-05	1.1E-04	
Mean	1.4E-07	1.6E-05	5.8E-08	1.3E-06	1.8E-05	5.8E-06	2.3E-05	
Median	2.8E-08	3.2E-06	5.2E-09	8.0E-07	4.0E-06	1.9E-06	6.0E-06	
Low	1.9E-09	2.1E-07	1.4E-10	9.1E-08	3.1E-07	1.4E-07	4.5E-07	

	Loss-of-inventory	Loss-of-inventory
High	6.9E-06	6.9E-06
Mean	5.3E-07	3.5E-06
Median	7.4E-08	1.2E-07
Low	2.2E-09	2.2E-09

	New Navy	NUREG Rigging						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	6.2E-07	2.8E-05	2.1E-08	6.8E-07	2.9E-05	4.8E-05	7.7E-05	
Mean	1.8E-07	8.0E-06	3.3E-09	3.6E-07	8.5E-06	1.5E-05	2.4E-05	
Median	5.2E-08	2.3E-06	2.1E-10	3.6E-07	2.7E-06	6.4E-06	9.1E-06	
Low	4.1E-09	1.8E-07	1.4E-11	4.5E-08	2.3E-07	6.4E-07	8.8E-07	

	Loss-of-inventory	Loss-of-inventory
High	4.8E-06	4.8E-06
Mean	5.4E-07	2.4E-06
Median	1.1E-07	1.5E-07
Low	4.4E-09	4.4E-09

	New Navy	WIPP Rigging						
	Load Hangup	Random Component	Two-Blocking	Single Component	Crane Total	Rigging	Total	
High	6.2E-07	2.8E-05	2.1E-08	6.8E-07	2.9E-05	5.3E-06	3.4E-05	
Mean	1.8E-07	8.0E-06	3.3E-09	3.6E-07	8.5E-06	5.3E-06	1.4E-05	
Median	5.2E-08	2.3E-06	2.1E-10	3.6E-07	2.7E-06	5.3E-06	8.0E-06	
Low	4.1E-09	1.8E-07	1.4E-11	4.5E-08	2.3E-07	5.3E-06	5.5E-06	

	Loss-of-inventory	Loss-of-inventory
High	2.1E-06	2.1E-06
Mean	3.1E-07	1.1E-06
Median	1.0E-07	2.4E-07
Low	2.8E-08	2.8E-08

TwoB

Data

Mean (H-L Mean (data)Median (data)

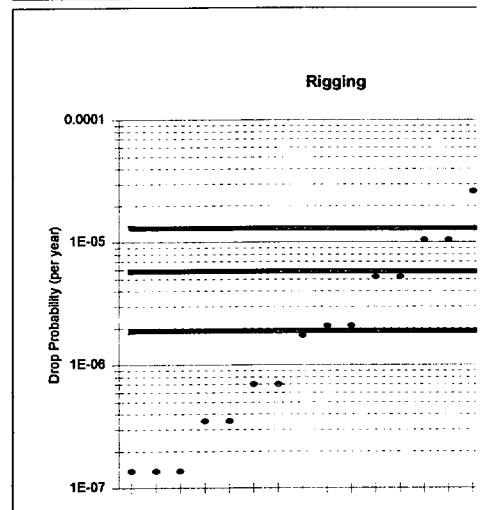
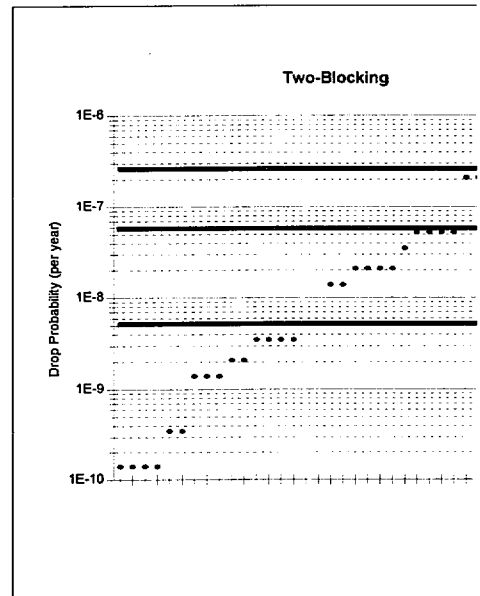
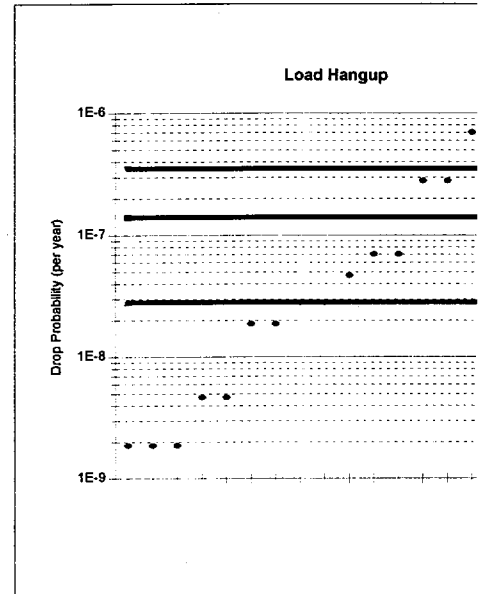
1.4E-10	2.60E-07	5.80E-08	5.20E-09
1.4E-10			
1.4E-10			
1.4E-10			
3.5E-10			
3.5E-10			
1.4E-09			
1.4E-09			
1.4E-09			
2.1E-09			
2.1E-09			
3.5E-09			
3.5E-09			
3.5E-09			
3.5E-09			
5.2E-09			
5.2E-09			
1.4E-08			
1.4E-08			
2.1E-08			
2.1E-08			
2.1E-08			
2.1E-08			
3.5E-08			
5.2E-08			
5.2E-08			
5.2E-08			
5.2E-08			
2.1E-07			
2.1E-07			
5.2E-07			
5.2E-07	2.60E-07	5.80E-08	5.20E-09

Load

1.9E-09	3.50E-07	1.40E-07	2.80E-08
1.9E-09			
1.9E-09			
4.7E-09			
4.7E-09			
1.9E-08			
1.9E-08			
2.8E-08			
2.8E-08			
4.7E-08			
7.0E-08			
7.0E-08			
2.8E-07			
2.8E-07			
7.0E-07			
7.0E-07	3.50E-07	1.40E-07	2.80E-08

Random

2.1E-07	4.00E-05	1.60E-05	3.20E-06
2.1E-07			
2.1E-07			
5.3E-07			
5.3E-07			
2.1E-06			
2.1E-06			
3.2E-06			
3.2E-06			
5.3E-06			



8.0E-06
8.0E-06
3.2E-05
3.2E-05
8.0E-05
8.0E-05 4.00E-05 1.60E-05 3.20E-06

Single

9.1E-08 2.70E-06 1.30E-06 8.00E-07
9.1E-08
9.1E-08
9.1E-08
9.1E-08
2.3E-07
2.3E-07
2.3E-07
1.4E-06
1.4E-06
1.4E-06
1.4E-06
3.4E-06
3.4E-06
3.4E-06
3.4E-06 2.70E-06 1.30E-06 8.00E-07

Rigging

1.4E-07 1.30E-05 5.80E-06 1.90E-06
1.4E-07
1.4E-07
3.5E-07
3.5E-07
7.0E-07
7.0E-07
1.7E-06
2.1E-06
2.1E-06
5.2E-06
5.2E-06
1.0E-05
1.0E-05
2.6E-05
2.6E-05 1.30E-05 5.80E-06 1.90E-06

LOI

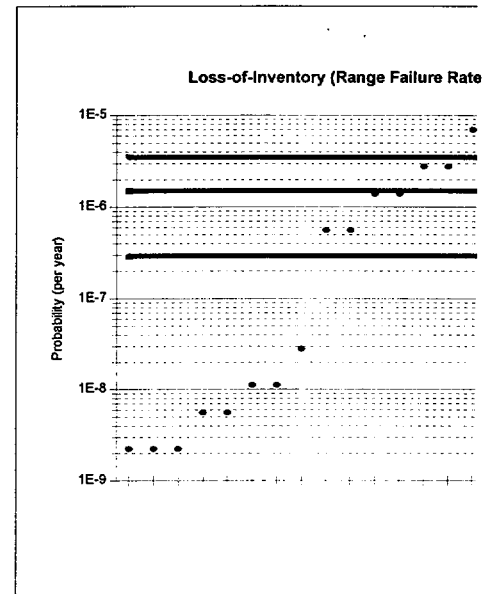
Range

2.2E-09 3.50E-06 1.50E-06 2.90E-07
2.2E-09
2.2E-09
5.6E-09
5.6E-09
1.1E-08
1.1E-08
2.8E-08
5.6E-07
5.6E-07
1.4E-06
1.4E-06
2.8E-06
2.8E-06
6.9E-06
6.9E-06 3.50E-06 1.50E-06 2.90E-07

LOI

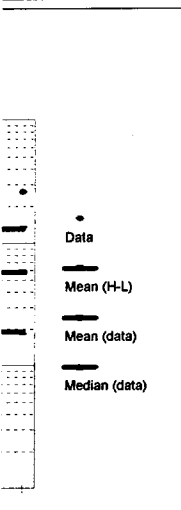
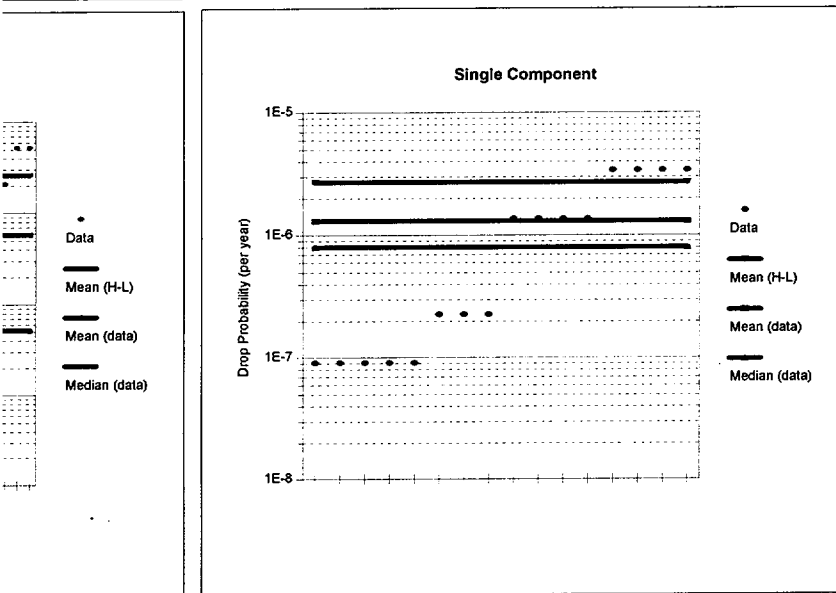
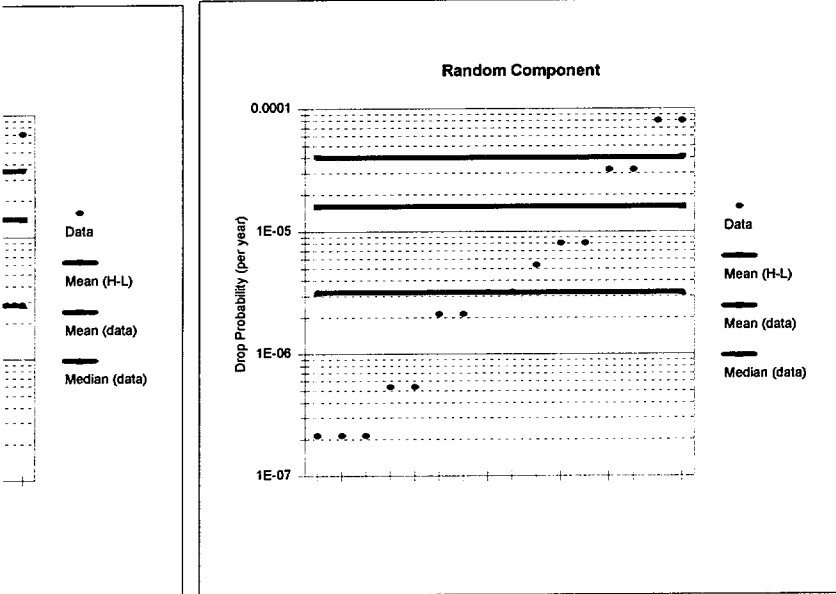
Mean

1.2E-07 7.90E-07 5.30E-07 2.90E-07

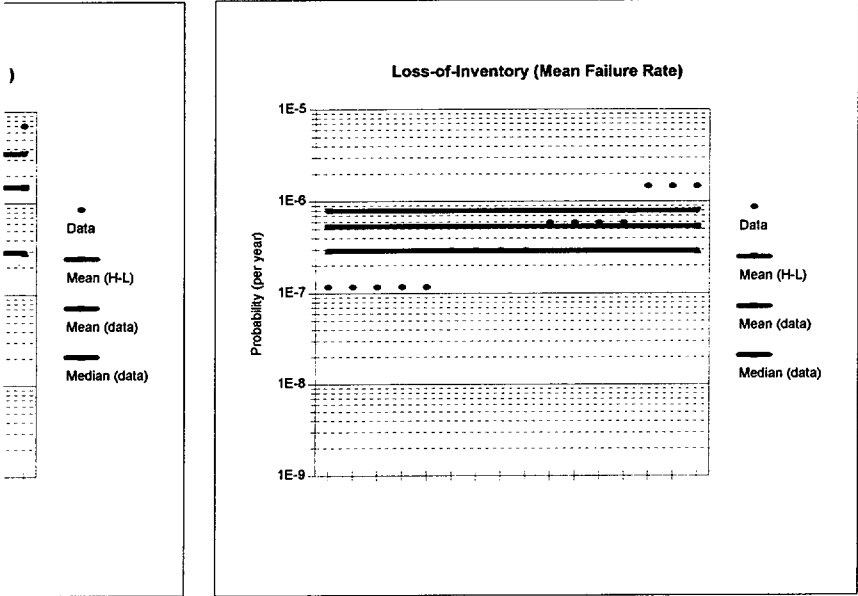


1.2E-07
1.2E-07
1.2E-07
1.2E-07
2.9E-07
2.9E-07
2.9E-07
2.9E-07
5.8E-07
5.8E-07
5.8E-07
5.8E-07
1.5E-06
1.5E-06
1.5E-06 7.90E-07 5.30E-07 2.90E-07

Original NUREG-0612 1.0 Release



Original NUREG-0612 1.0 Release



Two blocking sheet D New Navy WIPP Rigging

1.4E-11	1E-08	3.30E-09	2.10E-10
1.4E-11			
1.4E-11			
1.4E-11			
1.4E-11			
1.4E-11			
1.4E-10			
1.4E-10			
1.4E-10			
1.4E-10			
1.4E-10			
1.4E-10			
1.4E-10			
2.1E-10			
2.1E-10			
2.1E-10			
2.1E-10			
1.4E-09			
1.4E-09			
1.4E-09			
2.1E-09			
2.1E-09			
2.1E-09			
2.1E-09			
2.1E-09			
2.1E-09			
2.1E-09			
2.1E-09			
2.1E-09			
2.1E-08			
2.1E-08			
2.1E-08			
2.1E-08	1E-08	3.30E-09	2.10E-10

Load Hangup

4.1E-09	3.10E-07	1.80E-07	5.20E-08
4.1E-09			
4.1E-09			
4.1E-09			
4.1E-09			
4.1E-08			
4.1E-08			
4.1E-08			
6.2E-08			
6.2E-08			
6.2E-08			
6.2E-08			
6.2E-07			
6.2E-07			
6.2E-07			
6.2E-07	3.10E-07	1.80E-07	5.20E-08

Random

1.8E-07	1.40E-05	8.00E-06	2.30E-06
1.8E-07			
1.8E-07			
1.8E-07			
1.8E-07			
1.8E-06			
1.8E-06			
1.8E-06			
2.8E-06			
2.8E-06			

2.8E-06			
2.8E-06			
2.8E-05			
2.8E-05			
2.8E-05			
2.8E-05	1.40E-05	8.00E-06	2.30E-06

Single

4.5E-08	3.60E-07	3.60E-07	3.60E-07
4.5E-08			
4.5E-08			
4.5E-08			
4.5E-08			
4.5E-08			
4.5E-08			
4.5E-08			
6.8E-07			
6.8E-07			
6.8E-07			
6.8E-07			
6.8E-07			
6.8E-07			
6.8E-07	3.60E-07	3.60E-07	3.60E-07

Rigging

5.3E-06	5.3E-06	5.3E-06	5.3E-06
5.3E-06			
5.3E-06			
5.3E-06	5.3E-06	5.3E-06	5.3E-06

LOI Range

2.8E-08	1.10E-06	5.00E-07	1.70E-07
2.8E-08			
2.8E-08			
6.9E-08			
6.9E-08			
1.4E-07			
1.4E-07			
1.7E-07			
1.7E-07			
3.4E-07			
4.3E-07			
4.3E-07			
8.5E-07			
8.5E-07			
2.1E-06			
2.1E-06	1.10E-06	5.00E-07	1.70E-07

LOI Mean

6.9E-08	4.70E-07	3.10E-07	1.70E-07
6.9E-08			
6.9E-08			
6.9E-08			
6.9E-08			
1.7E-07			
1.7E-07			
1.7E-07			
1.7E-07			
3.4E-07			
3.4E-07			
3.4E-07			
3.4E-07			

8.6E-07
8.6E-07
8.6E-07 4.70E-07 3.10E-07 1.70E-07
Two-blocking Sheet A Original NUREG-0612
1.4E-10 2.60E-07 5.80E-08 5.20E-09
1.4E-10
1.4E-10
1.4E-10
3.5E-10
3.5E-10
1.4E-09
1.4E-09
1.4E-09
2.1E-09
2.1E-09
3.5E-09
3.5E-09
3.5E-09
3.5E-09
5.2E-09
5.2E-09
1.4E-08
1.4E-08
2.1E-08
2.1E-08
2.1E-08
2.1E-08
3.5E-08
5.2E-08
5.2E-08
5.2E-08
5.2E-08
2.1E-07
2.1E-07
5.2E-07
5.2E-07 2.60E-07 5.80E-08 5.20E-09

Load Hangup
1.9E-09 3.50E-07 1.40E-07 2.80E-08
1.9E-09
1.9E-09
4.7E-09
4.7E-09
1.9E-08
1.9E-08
2.8E-08
2.8E-08
4.7E-08
7.0E-08
7.0E-08
2.8E-07
2.8E-07
7.0E-07
7.0E-07 3.50E-07 1.40E-07 2.80E-08

Random
2.1E-07 4.00E-05 1.60E-05 3.20E-06
2.1E-07
2.1E-07
5.3E-07
5.3E-07
2.1E-06
2.1E-06

3.2E-06
3.2E-06
5.3E-06
8.0E-06
8.0E-06
3.2E-05
3.2E-05
8.0E-05
8.0E-05 4.00E-05 1.60E-05 3.20E-06

Single

9.1E-08 2.70E-06 1.30E-06 8.00E-07
9.1E-08
9.1E-08
9.1E-08
9.1E-08
2.3E-07
2.3E-07
2.3E-07
1.4E-06
1.4E-06
1.4E-06
1.4E-06
3.4E-06
3.4E-06
3.4E-06
3.4E-06 2.70E-06 1.30E-06 8.00E-07

Rigging

1.4E-07 1.30E-05 5.80E-06 1.90E-06
1.4E-07
1.4E-07
3.5E-07
3.5E-07
7.0E-07
7.0E-07
1.7E-06
2.1E-06
2.1E-06
5.2E-06
5.2E-06
1.0E-05
1.0E-05
2.6E-05
2.6E-05 1.30E-05 5.80E-06 1.90E-06

LOI Range

2.2E-10 6.60E-07 2.20E-07 2.90E-08
2.2E-10
4.5E-10
5.6E-10
1.1E-09
1.1E-09
2.2E-09
2.8E-09
5.6E-08
1.1E-07
1.4E-07
2.8E-07
2.8E-07
5.6E-07
6.9E-07
1.4E-06 6.60E-07 2.20E-07 2.90E-08

LOI Mean

1.2E-08 1.20E-08 7.50E-08 5.80E-08
1.2E-08
1.2E-08
2.3E-08
2.3E-08
2.9E-08
2.9E-08
5.8E-08
5.8E-08
5.8E-08
5.8E-08
1.2E-07
1.2E-07
1.5E-07
1.5E-07
2.9E-07 1.20E-08 7.50E-08 5.80E-08

Two-blocking Shhet B NUREG-0612 1.0 Release

LOI Range

2.2E-09 3.50E-06 1.50E-06 2.90E-07
2.2E-09
2.2E-09
5.6E-09
5.6E-09
1.1E-08
1.1E-08
2.8E-08
5.6E-07
5.6E-07
1.4E-06
1.4E-06
2.8E-06
2.8E-06
6.9E-06
6.9E-06 3.50E-06 1.50E-06 2.90E-07

LOI Mean

1.2E-07 7.90E-07 5.30E-07 2.90E-07
1.2E-07
1.2E-07
1.2E-07
1.2E-07
2.9E-07
2.9E-07
2.9E-07
2.9E-07
5.8E-07
5.8E-07
5.8E-07
5.8E-07
1.5E-06
1.5E-06
1.5E-06 7.90E-07 5.30E-07 2.90E-07

Two-Blocking Sheet C New Navy data NUREG Rigging

Rigging

6.4E-07 2.40E-05 1.50E-05 6.40E-06
6.4E-07
6.4E-07
6.4E-07

6.4E-07
3.2E-06
3.2E-06
3.2E-06
9.6E-06
9.6E-06
9.6E-06
9.6E-06
4.8E-05
4.8E-05
4.8E-05
4.8E-05 2.40E-05 1.50E-05 6.40E-06

LOI Range

4.4E-09 2.40E-06 1.00E-06 2.20E-07
4.4E-09
4.4E-09
1.1E-08
1.1E-08
2.2E-08
2.2E-08
5.5E-08
3.9E-07
3.9E-07
9.6E-07
9.6E-07
1.9E-06
1.9E-06
4.8E-06
4.8E-06 2.40E-06 1.00E-06 2.20E-07

LOI Mean

1.2E-07 8.00E-07 5.40E-07 3.00E-07
1.2E-07
1.2E-07
1.2E-07
1.2E-07
3.0E-07
3.0E-07
3.0E-07
3.0E-07
5.9E-07
5.9E-07
5.9E-07
5.9E-07
1.5E-06
1.5E-06
1.5E-06 8.00E-07 5.40E-07 3.00E-07

A	A	B	C	D	E	F	G	H	I
63				Single component					
64	1.50E-04	1.00E-05		$a1*a2*a3*a4$	3.4E-06	9.1E-08	1.7E-06	9.2E-07	5.6E-07
65	0.022727	0.022727							
66	10	4		$a1*b2*a3*a4$	3.4E-06	2.3E-07			
67	0.1	0.1		$a1*b2*a3*b4$	3.4E-06	2.3E-07			
68									
69				$a1*b2*b3*a4$	1.4E-06	9.1E-08			
70				$a1*b2*b3*b4$	1.4E-06	9.1E-08			
71									
72				$a1*a2*b3*a4$	1.4E-06	9.1E-08			
73									
74				$a1*a2*b3*b4$	1.4E-06	9.1E-08			
75									
76				$a1*a2*a3*b4$	3.4E-06	2.3E-07			
77									
78				Mean	2.4E-06	1.4E-07	1.3E-06	8.0E-07	5.8E-07
79	Crane	Failure							
80			Range	Total	8.5E-05	3.1E-07	4.3E-05	1.5E-05	5.1E-06
81			Mean	Total	3.4E-05	1.6E-06	1.8E-05	1.0E-05	7.3E-06
82									
83				Rigging					
84	1.50E-04	1.00E-05		$a1*a2*a3*a4$	2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06
85	0.069767	0.069767							
86	10	4		$a1*b2*a3*a4$	2.6E-05	1.7E-06			
87	0.25	0.05		$a1*b2*a3*b4$	5.2E-06	3.5E-07			
88									
89				$a1*b2*b3*a4$	1.0E-05	7.0E-07			
90				$a1*b2*b3*b4$	2.1E-06	1.4E-07			
91									
92				$a1*a2*b3*a4$	1.0E-05	7.0E-07			
93									
94				$a1*a2*b3*b4$	2.1E-06	1.4E-07			
95									
96				$a1*a2*a3*b4$	5.2E-06	3.5E-07			
97									
98				Mean	1.1E-05	5.3E-07	5.8E-06	3.5E-06	2.4E-06
99									
100	Rigging	Failure							
101			Range	Total	2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06
102			Mean	Total	1.1E-05	5.3E-07	5.8E-06	3.5E-06	2.4E-06
103									
104	Total	Failure							
105			Range	Total	1.1E-04	4.5E-07	5.6E-05	2.0E-05	7.0E-06
106			Mean	Total	4.5E-05	2.1E-06	2.3E-05	1.4E-05	9.7E-06
107									
108									
109			Range	Loss-of-inventory					
110	1.11E-04	4.46E-07		$a1*a2*a3*a4$	1.7E-06	2.2E-10	8.7E-07	1.9E-07	2.0E-08
111	0.25	0.1							
112	0.25	0.05		$a1*b2*a3*a4$	6.9E-07	2.8E-09			
113	0.25	0.1		$a1*b2*a3*b4$	2.8E-07	1.1E-09			
114									
115				$a1*b2*b3*a4$	1.4E-07	5.6E-10			
116				$a1*b2*b3*b4$	5.6E-08	2.2E-10			
117									
118				$a1*a2*b3*a4$	3.5E-07	1.4E-09			
119									
120				$a1*a2*b3*b4$	1.4E-07	5.6E-10			
121									
122				$a1*a2*a3*b4$	6.9E-07	2.8E-09			
123									
124				Mean	5.1E-07	1.2E-09	2.6E-07	8.4E-08	2.5E-08

A	A	B	C	D	E	F	G	H	I
125									
126									
127			Mean	Loss-of-inventory					
128	4.46E-05	2.11E-06		$a1*a2*a3*a4$	7.0E-07	1.1E-09	3.5E-07	1.1E-07	2.7E-08
129	0.25	0.1							
130	0.25	0.05		$a1*b2*a3*a4$	2.8E-07	1.3E-08			
131	0.25	0.1		$a1*b2*a3*b4$	1.1E-07	5.3E-09			
132									
133				$a1*b2*b3*a4$	5.6E-08	2.6E-09			
134				$a1*b2*b3*b4$	2.2E-08	1.1E-09			
135									
136				$a1*a2*b3*a4$	1.4E-07	6.6E-09			
137									
138				$a1*a2*b3*b4$	5.6E-08	2.6E-09			
139									
140				$a1*a2*a3*b4$	2.8E-07	1.3E-08			
141									
142				Mean	2.0E-07	5.7E-09	1.1E-07	5.6E-08	3.4E-08
B	A	B	C	D	E	F	G	H	I
1	NUREG	0612	1.0 RF	Two-blocking			Mean	LogMean	GeoMean
2	1.50E-04	1.00E-05		$a1*a2*a3*a4*a5$	5.2E-07	1.4E-10	2.6E-07	6.4E-08	8.5E-09
3	0.348837	0.348837							
4	10	4		$a1*b2*a3*a4*a5$	5.2E-07	3.5E-08			
5	0.01	0.001		$a1*b2*a3*b4*a5$	5.2E-08	3.5E-09			
6	0.1	0.01		$a1*b2*a3*a4*b5$	5.2E-08	3.5E-09			
7				$a1*b2*a3*b4*b5$	5.2E-09	3.5E-10			
8									
9				$a1*b2*b3*a4*a5$	2.1E-07	1.4E-08			
10				$a1*b2*b3*b4*a5$	2.1E-08	1.4E-09			
11				$a1*b2*b3*a4*b5$	2.1E-08	1.4E-10			
12				$a1*b2*b3*b4*b5$	2.1E-09	1.4E-10			
13									
14				$a1*a2*b3*a4*a5$	2.1E-07	1.4E-08			
15				$a1*a2*b3*a4*b5$	2.1E-08	1.4E-09			
16									
17				$a1*a2*b3*b4*b5$	2.1E-09	1.4E-10			
18				$a1*a2*b3*b4*a5$	2.1E-08	1.4E-09			
19									
20				$a1*a2*a3*b4*a5$	5.2E-08	3.5E-09			
21									
22				$a1*a2*a3*b4*b5$	5.2E-09	3.5E-10			
23									
24				$a1*a2*a3*a4*b5$	5.2E-08	3.5E-09			
25									
26				Mean	2.3E-08	5.1E-09	1.4E-08	1.2E-08	1.1E-08
27									
28				Load hangup					
29	1.50E-04	1.00E-05		$a1*a2*a3*a4$	7.0E-07	1.9E-09	3.5E-07	1.2E-07	3.6E-08
30	0.046512	0.046512							
31	10	4		$a1*b2*a3*a4$	7.0E-07	4.7E-08			
32	0.01	0.001		$a1*b2*a3*b4$	7.0E-08	4.7E-09			
33									
34				$a1*b2*b3*a4$	2.8E-07	1.9E-08			
35				$a1*b2*b3*b4$	2.8E-08	1.9E-09			
36									
37				$a1*a2*b3*a4$	2.8E-07	1.9E-08			
38									
39				$a1*a2*b3*b4$	2.8E-08	1.9E-09			
40									
41				$a1*a2*a3*b4$	7.0E-08	4.7E-09			
42									
43				Mean	2.7E-07	1.2E-08	1.4E-07	8.3E-08	5.8E-08

B	A	B	C	D	E	F	G	H	I
44									
45				Random component					
46	1.50E-04	1.00E-05		$a1*a2*a3*a4$	8.0E-05	2.1E-07	4.0E-05	1.4E-05	4.1E-06
47	0.534884	0.534884							
48	10	4		$a1*b2*a3*a4$	8.0E-05	5.3E-06			
49	0.1	0.01		$a1*b2*a3*b4$	8.0E-06	5.3E-07			
50									
51				$a1*b2*b3*a4$	3.2E-05	2.1E-06			
52				$a1*b2*b3*b4$	3.2E-06	2.1E-07			
53									
54				$a1*a2*b3*a4$	3.2E-05	2.1E-06	1.7E-05	1.1E-05	8.3E-06
55									
56				$a1*a2*b3*b4$	3.2E-06	2.1E-07			
57									
58				$a1*a2*a3*b4$	8.0E-06	5.3E-07			
59									
60				Mean	3.1E-05	1.4E-06	1.6E-05	9.6E-06	6.6E-06
61									
62									
63				Single component					
64	1.50E-04	1.00E-05		$a1*a2*a3*a4$	3.4E-06	9.1E-08	1.7E-06	9.2E-07	5.6E-07
65	0.022727	0.022727							
66	10	4		$a1*b2*a3*a4$	3.4E-06	2.3E-07			
67	0.1	0.1		$a1*b2*a3*b4$	3.4E-06	2.3E-07			
68									
69				$a1*b2*b3*a4$	1.4E-06	9.1E-08			
70				$a1*b2*b3*b4$	1.4E-06	9.1E-08			
71									
72				$a1*a2*b3*a4$	1.4E-06	9.1E-08			
73									
74				$a1*a2*b3*b4$	1.4E-06	9.1E-08			
75									
76				$a1*a2*a3*b4$	3.4E-06	2.3E-07			
77									
78				Mean	2.4E-06	1.4E-07	1.3E-06	8.0E-07	5.8E-07
79	Crane	Failure							
80			Range	Total	8.5E-05	3.1E-07	4.3E-05	1.5E-05	5.1E-06
81			Mean	Total	3.4E-05	1.6E-06	1.8E-05	1.0E-05	7.3E-06
82									
83				Rigging					
84	1.50E-04	1.00E-05		$a1*a2*a3*a4$	2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06
85	0.069767	0.069767							
86	10	4		$a1*b2*a3*a4$	2.6E-05	1.7E-06			
87	0.25	0.05		$a1*b2*a3*b4$	5.2E-06	3.5E-07			
88									
89				$a1*b2*b3*a4$	1.0E-05	7.0E-07			
90				$a1*b2*b3*b4$	2.1E-06	1.4E-07			
91									
92				$a1*a2*b3*a4$	1.0E-05	7.0E-07			
93									
94				$a1*a2*b3*b4$	2.1E-06	1.4E-07			
95									
96				$a1*a2*a3*b4$	5.2E-06	3.5E-07			
97									
98				Mean	1.1E-05	5.3E-07	5.8E-06	3.5E-06	2.4E-06
99									
100	Rigging	Failure							
101			Range	Total	2.6E-05	1.4E-07	1.3E-05	5.0E-06	1.9E-06
102			Mean	Total	1.1E-05	5.3E-07	5.8E-06	3.5E-06	2.4E-06
103									
104	Total	Failure							
105			Range	Total	1.1E-04	4.5E-07	5.6E-05	2.0E-05	7.0E-06

B	A	B	C	D	E	F	G	H	I
106			Mean	Total	4.5E-05	2.1E-06	2.3E-05	1.4E-05	9.7E-06
107									
108									
109			Range	Loss-of-inventory					
110	1.11E-04	4.46E-07		a1*a2*a3*a4	6.9E-06	2.2E-09	3.5E-06	8.6E-07	1.2E-07
111	1	1							
112	0.25	0.05		a1*b2*a3*a4	6.9E-06	2.8E-08			
113	0.25	0.1		a1*b2*a3*b4	2.8E-06	1.1E-08			
114									
115				a1*b2*b3*a4	1.4E-06	5.6E-09			
116				a1*b2*b3*b4	5.6E-07	2.2E-09			
117									
118				a1*a2*b3*a4	1.4E-06	5.6E-09			
119									
120				a1*a2*b3*b4	5.6E-07	2.2E-09			
121									
122				a1*a2*a3*b4	2.8E-06	1.1E-08			
123									
124				Mean	2.9E-06	8.5E-09	1.5E-06	5.0E-07	1.6E-07
125									
126									
127			Mean	Loss-of-inventory					
128	4.46E-05	2.11E-06		a1*a2*a3*a4	2.8E-06	1.1E-08	1.4E-06	5.0E-07	1.7E-07
129	1	1							
130	0.25	0.05		a1*b2*a3*a4	2.8E-06	1.3E-07			
131	0.25	0.1		a1*b2*a3*b4	1.1E-06	5.3E-08			
132									
133				a1*b2*b3*a4	5.6E-07	2.6E-08			
134				a1*b2*b3*b4	2.2E-07	1.1E-08			
135									
136				a1*a2*b3*a4	5.6E-07	2.6E-08			
137									
138				a1*a2*b3*b4	2.2E-07	1.1E-08			
139									
140				a1*a2*a3*b4	1.1E-06	5.3E-08			
141									
142				Mean	1.2E-06	4.0E-08	6.0E-07	3.4E-07	2.2E-07
C	A	B	C	D	E	F	G	H	I
1	NUREG	0612	Navy	Two-blocking			Mean	LogMean	GeoMean
2	1.50E-04	1.00E-05		a1*a2*a3*a4*a5	2.0E-08	1.4E-11	1.0E-08	2.8E-09	5.3E-10
3	0.04545	0.04545							
4	3	3		a1*b2*a3*a4*a5	2.0E-08	1.4E-09			
5	0.01	0.001		a1*b2*a3*b4*a5	2.0E-09	1.4E-10			
6	0.1	0.01		a1*b2*a3*a4*b5	2.0E-09	1.4E-10			
7				a1*b2*a3*b4*b5	2.0E-10	1.4E-11			
8									
9				a1*b2*b3*a4*a5	2.0E-08	1.4E-09			
10				a1*b2*b3*b4*a5	2.0E-09	1.4E-10			
11				a1*b2*b3*a4*b5	2.0E-09	1.4E-11			
12				a1*b2*b3*b4*b5	2.0E-10	1.4E-11			
13									
14				a1*a2*b3*a4*a5	2.0E-08	1.4E-09			
15				a1*a2*b3*a4*b5	2.0E-09	1.4E-10			
16									
17				a1*a2*b3*b4*b5	2.0E-10	1.4E-11			
18				a1*a2*b3*b4*a5	2.0E-09	1.4E-10			
19									
20				a1*a2*a3*b4*a5	2.0E-09	1.4E-10			
21									
22				a1*a2*a3*b4*b5	2.0E-10	1.4E-11			
23									
24				a1*a2*a3*a4*b5	2.0E-09	1.4E-10			

C	A	B	C	D	E	F	G	H	I
25									
26				Mean	1.8E-09	3.2E-10	1.1E-09	8.6E-10	7.6E-10
27									
28				Load hangup					
29	1.50E-04	1.00E-05		a1*a2*a3*a4	6.1E-07	4.1E-09	3.1E-07	1.2E-07	5.0E-08
30	0.13636	0.13636							
31	3	3		a1*b2*a3*a4	6.1E-07	4.1E-08			
32	0.01	0.001		a1*b2*a3*b4	6.1E-08	4.1E-09			
33									
34				a1*b2*b3*a4	6.1E-07	4.1E-08			
35				a1*b2*b3*b4	6.1E-08	4.1E-09			
36									
37				a1*a2*b3*a4	6.1E-07	4.1E-08			
38									
39				a1*a2*b3*b4	6.1E-08	4.1E-09			
40									
41				a1*a2*a3*b4	6.1E-08	4.1E-09			
42									
43				Mean	3.4E-07	1.8E-08	1.8E-07	1.1E-07	7.8E-08
44									
45				Random component					
46	1.50E-04	1.00E-05		a1*a2*a3*a4	2.7E-05	1.8E-07	1.4E-05	5.4E-06	2.2E-06
47	0.60606	0.60606							
48	3	3		a1*b2*a3*a4	2.7E-05	1.8E-06			
49	0.1	0.01		a1*b2*a3*b4	2.7E-06	1.8E-07			
50									
51				a1*b2*b3*a4	2.7E-05	1.8E-06			
52				a1*b2*b3*b4	2.7E-06	1.8E-07			
53									
54				a1*a2*b3*a4	2.7E-05	1.8E-06	1.5E-05	9.4E-06	7.0E-06
55									
56				a1*a2*b3*b4	2.7E-06	1.8E-07		-	
57									
58				a1*a2*a3*b4	2.7E-06	1.8E-07			
59									
60				Mean	1.5E-05	8.0E-07	7.9E-06	4.8E-06	3.5E-06
61									
62									
63				Single component					
64	1.50E-04	1.00E-05		a1*a2*a3*a4	6.7E-07	4.5E-08	3.6E-07	2.3E-07	1.7E-07
65	0.014925	0.014925							
66	3	3		a1*b2*a3*a4	6.7E-07	4.5E-08			
67	0.1	0.1		a1*b2*a3*b4	6.7E-07	4.5E-08			
68									
69				a1*b2*b3*a4	6.7E-07	4.5E-08			
70				a1*b2*b3*b4	6.7E-07	4.5E-08			
71									
72				a1*a2*b3*a4	6.7E-07	4.5E-08			
73									
74				a1*a2*b3*b4	6.7E-07	4.5E-08			
75									
76				a1*a2*a3*b4	6.7E-07	4.5E-08			
77									
78				Mean	6.7E-07	4.5E-08	3.6E-07	2.3E-07	1.7E-07
79	Crane	Failure							
80			Range	Total	2.9E-05	2.3E-07	1.4E-05	5.9E-06	2.6E-06
81			Mean	Total	1.6E-05	8.6E-07	8.4E-06	5.2E-06	3.7E-06
82									
83				Rigging					
84	1.50E-04	1.00E-05		a1*a2*a3*a4	4.8E-05	6.4E-07	2.4E-05	1.1E-05	5.5E-06
85	0.21212	0.21212							
86	6	6		a1*b2*a3*a4	4.8E-05	3.2E-06			

C	A	B	C	D	E	F	G	H	I
87	0.25	0.05		a1*b2*a3*b4	9.5E-06	6.4E-07			
88									
89				a1*b2*b3*a4	4.8E-05	3.2E-06			
90				a1*b2*b3*b4	9.5E-06	6.4E-07			
91									
92				a1*a2*b3*a4	4.8E-05	3.2E-06			
93									
94				a1*a2*b3*b4	9.5E-06	6.4E-07			
95									
96				a1*a2*a3*b4	9.5E-06	6.4E-07			
97									
98				Mean	2.9E-05	1.6E-06	1.5E-05	9.4E-06	6.7E-06
99									
100	Rigging	Failure							
101			Range	Total	4.8E-05	6.4E-07	2.4E-05	1.1E-05	5.5E-06
102			Mean	Total	2.9E-05	1.6E-06	1.5E-05	9.4E-06	6.7E-06
103									
104	Total	Failure							
105			Range	Total	7.6E-05	8.7E-07	3.9E-05	1.7E-05	8.1E-06
106			Mean	Total	4.5E-05	2.4E-06	2.4E-05	1.5E-05	1.0E-05
107									
108									
109			Range	Loss-of-inventory					
110	7.63E-05	8.67E-07		a1*a2*a3*a4	4.8E-06	4.3E-09	2.4E-06	6.8E-07	1.4E-07
111	1	1							
112	0.25	0.05		a1*b2*a3*a4	4.8E-06	5.4E-08			
113	0.25	0.1		a1*b2*a3*b4	1.9E-06	2.2E-08			
114									
115				a1*b2*b3*a4	9.5E-07	1.1E-08			
116				a1*b2*b3*b4	3.8E-07	4.3E-09			
117									
118				a1*a2*b3*a4	9.5E-07	1.1E-08			
119									
120				a1*a2*b3*b4	3.8E-07	4.3E-09			
121									
122				a1*a2*a3*b4	1.9E-06	2.2E-08			
123									
124				Mean	2.0E-06	1.7E-08	1.0E-06	4.1E-07	1.8E-07
125									
126									
127			Mean	Loss-of-inventory					
128	4.46E-05	2.45E-06		a1*a2*a3*a4	2.8E-06	1.2E-08	1.4E-06	5.1E-07	1.8E-07
129	1	1							
130	0.25	0.05		a1*b2*a3*a4	2.8E-06	1.5E-07			
131	0.25	0.1		a1*b2*a3*b4	1.1E-06	6.1E-08			
132									
133				a1*b2*b3*a4	5.6E-07	3.1E-08			
134				a1*b2*b3*b4	2.2E-07	1.2E-08			
135									
136				a1*a2*b3*a4	5.6E-07	3.1E-08			
137									
138				a1*a2*b3*b4	2.2E-07	1.2E-08			
139									
140				a1*a2*a3*b4	1.1E-06	6.1E-08			
141									
142				Mean	1.2E-06	4.7E-08	6.1E-07	3.5E-07	2.3E-07
D	A	B	C	D	E	F	G	H	I
1	NUREG	0612	N/WIPP	Two-blocking			Mean	LogMean	GeoMean
2	1.50E-04	1.00E-05		a1*a2*a3*a4*a5	2.0E-08	1.4E-11	1.0E-08	2.8E-09	5.3E-10
3	0.04545	0.04545							
4	3	3		a1*b2*a3*a4*a5	2.0E-08	1.4E-09			
5	0.01	0.001		a1*b2*a3*b4*a5	2.0E-09	1.4E-10			

D	A	B	C	D	E	F	G	H	I
6	0.1	0.01		$a1*b2*a3*a4*b5$	2.0E-09	1.4E-10			
7				$a1*b2*a3*b4*b5$	2.0E-10	1.4E-11			
8									
9				$a1*b2*b3*a4*a5$	2.0E-08	1.4E-09			
10				$a1*b2*b3*b4*a5$	2.0E-09	1.4E-10			
11				$a1*b2*b3*a4*b5$	2.0E-09	1.4E-11			
12				$a1*b2*b3*b4*b5$	2.0E-10	1.4E-11			
13									
14				$a1*a2*b3*a4*a5$	2.0E-08	1.4E-09			
15				$a1*a2*b3*a4*b5$	2.0E-09	1.4E-10			
16									
17				$a1*a2*b3*b4*b5$	2.0E-10	1.4E-11			
18				$a1*a2*b3*b4*a5$	2.0E-09	1.4E-10			
19									
20				$a1*a2*a3*b4*a5$	2.0E-09	1.4E-10			
21									
22				$a1*a2*a3*b4*b5$	2.0E-10	1.4E-11			
23									
24				$a1*a2*a3*a4*b5$	2.0E-09	1.4E-10			
25									
26				Mean	1.8E-09	3.2E-10	1.1E-09	8.6E-10	7.6E-10
27									
28				Load hangup					
29	1.50E-04	1.00E-05		$a1*a2*a3*a4$	6.1E-07	4.1E-09	3.1E-07	1.2E-07	5.0E-08
30	0.13636	0.13636							
31	3	3		$a1*b2*a3*a4$	6.1E-07	4.1E-08			
32	0.01	0.001		$a1*b2*a3*b4$	6.1E-08	4.1E-09			
33									
34				$a1*b2*b3*a4$	6.1E-07	4.1E-08			
35				$a1*b2*b3*b4$	6.1E-08	4.1E-09			
36									
37				$a1*a2*b3*a4$	6.1E-07	4.1E-08			
38									
39				$a1*a2*b3*b4$	6.1E-08	4.1E-09			
40									
41				$a1*a2*a3*b4$	6.1E-08	4.1E-09			
42									
43				Mean	3.4E-07	1.8E-08	1.8E-07	1.1E-07	7.8E-08
44									
45				Random component					
46	1.50E-04	1.00E-05		$a1*a2*a3*a4$	2.7E-05	1.8E-07	1.4E-05	5.4E-06	2.2E-06
47	0.60606	0.60606							
48	3	3		$a1*b2*a3*a4$	2.7E-05	1.8E-06			
49	0.1	0.01		$a1*b2*a3*b4$	2.7E-06	1.8E-07			
50									
51				$a1*b2*b3*a4$	2.7E-05	1.8E-06			
52				$a1*b2*b3*b4$	2.7E-06	1.8E-07			
53									
54				$a1*a2*b3*a4$	2.7E-05	1.8E-06	1.5E-05	9.4E-06	7.0E-06
55									
56				$a1*a2*b3*b4$	2.7E-06	1.8E-07			
57									
58				$a1*a2*a3*b4$	2.7E-06	1.8E-07			
59									
60				Mean	1.5E-05	8.0E-07	7.9E-06	4.8E-06	3.5E-06
61									
62									
63				Single component					
64	1.50E-04	1.00E-05		$a1*a2*a3*a4$	6.7E-07	4.5E-08	3.6E-07	2.3E-07	1.7E-07
65	0.014925	0.014925							
66	3	3		$a1*b2*a3*a4$	6.7E-07	4.5E-08			
67	0.1	0.1		$a1*b2*a3*b4$	6.7E-07	4.5E-08			

D	A	B	C	D	E	F	G	H	I
68									
69				a1*b2*b3*a4	6.7E-07	4.5E-08			
70				a1*b2*b3*b4	6.7E-07	4.5E-08			
71									
72				a1*a2*b3*a4	6.7E-07	4.5E-08			
73									
74				a1*a2*b3*b4	6.7E-07	4.5E-08			
75									
76				a1*a2*a3*b4	6.7E-07	4.5E-08			
77									
78				Mean	6.7E-07	4.5E-08	3.6E-07	2.3E-07	1.7E-07
79	Crane	Failure							
80			Range	Total	2.9E-05	2.3E-07	1.4E-05	5.9E-06	2.6E-06
81			Mean	Total	1.6E-05	8.6E-07	8.4E-06	5.2E-06	3.7E-06
82									
83				Rigging					
84	8.70E-07	8.70E-07		a1*a2	5.2E-06	5.2E-06	5.2E-06	5.2E-06	5.2E-06
85	6	6							
86				a1*b2	5.2E-06	5.2E-06			
87									
88				Mean	5.2E-06	5.2E-06	5.2E-06	5.2E-06	5.2E-06
89									
90	Rigging	Failure							
91			Range	Total	5.2E-06	5.2E-06	5.2E-06	5.2E-06	5.2E-06
92			Mean	Total	5.2E-06	5.2E-06	5.2E-06	5.2E-06	5.2E-06
93									
94									
95									
96									
97									
98									
99									
100									
101									
102									
103									
104	Total	Failure							
105			Range	Total	3.4E-05	5.5E-06	2.0E-05	1.6E-05	1.4E-05
106			Mean	Total	2.1E-05	6.1E-06	1.4E-05	1.2E-05	1.1E-05
107									
108									
109			Range	Loss-of-inventory					
110	3.38E-05	5.45E-06		a1*a2*a3*a4	2.1E-06	2.7E-08	1.1E-06	4.8E-07	2.4E-07
111	1	1							
112	0.25	0.05		a1*b2*a3*a4	2.1E-06	3.4E-07			
113	0.25	0.1		a1*b2*a3*b4	8.4E-07	1.4E-07			
114									
115				a1*b2*b3*a4	4.2E-07	6.8E-08			
116				a1*b2*b3*b4	1.7E-07	2.7E-08			
117									
118				a1*a2*b3*a4	4.2E-07	6.8E-08			
119									
120				a1*a2*b3*b4	1.7E-07	2.7E-08			
121									
122				a1*a2*a3*b4	8.4E-07	1.4E-07			
123									
124				Mean	8.9E-07	1.0E-07	5.0E-07	3.7E-07	3.0E-07
125									
126									
127			Mean	Loss-of-inventory					
128	2.12E-05	6.08E-06		a1*a2*a3*a4	1.3E-06	3.0E-08	6.8E-07	3.4E-07	2.0E-07
129	1	1							

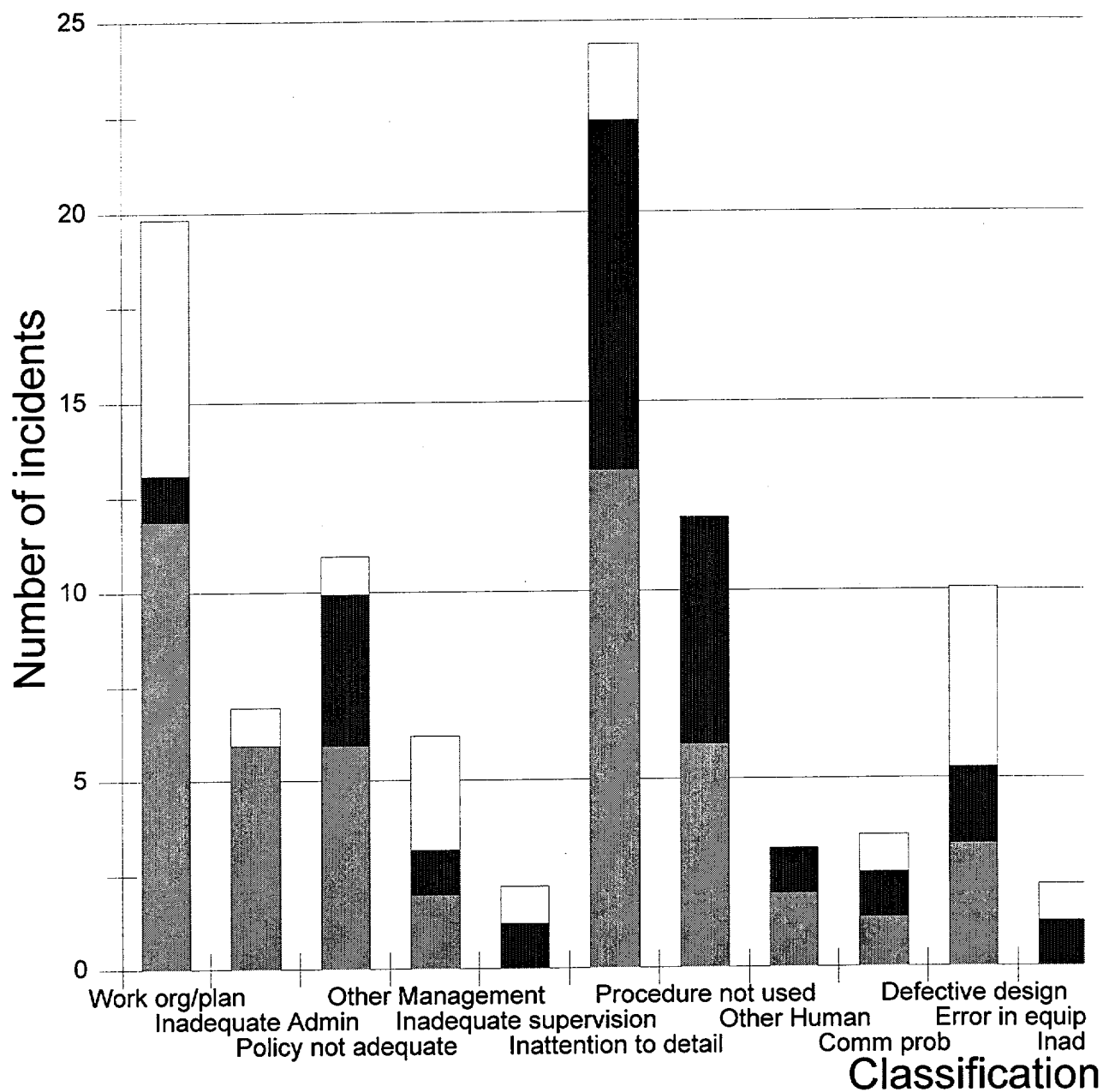
D	A	B	C	D	E	F	G	H	I
130	0.25	0.05		$a1*b2*a3*a4$	1.3E-06	3.8E-07			
131	0.25	0.1		$a1*b2*a3*b4$	5.3E-07	1.5E-07			
132									
133				$a1*b2*b3*a4$	2.7E-07	7.6E-08			
134				$a1*b2*b3*b4$	1.1E-07	3.0E-08			
135									
136				$a1*a2*b3*a4$	2.7E-07	7.6E-08			
137									
138				$a1*a2*b3*b4$	1.1E-07	3.0E-08			
139									
140				$a1*a2*a3*b4$	5.3E-07	1.5E-07			
141									
142				Mean	5.6E-07	1.2E-07	3.4E-07	2.8E-07	2.5E-07

	Percent			Number			Cause		
	Crane	Forklift	Other	Crane	Forklift	Other			
Work org/plan	0.18	0.03	0.27	12	1	7	Management	20	
Inadequate Admin	0.09	0.00	0.04	6	0	1	Management	7	
Policy not adequate	0.09	0.10	0.04	6	4	1	Management	11	
Other Management	0.03	0.03	0.12	2	1	3	Management	6	
Inadequate supervision	0.00	0.03	0.04	0	1	1	Management	2	46
Inattention to detail	0.20	0.23	0.08	13	9	2	Personnel	24	
Procedure not used	0.09	0.15	0.00	6	6	0	Personnel	12	
Other Human	0.03	0.03	0.00	2	1	0	Personnel	3	
Comm prob	0.02	0.03	0.04	1	1	1	Personnel	4	43
Defective design	0.05	0.05	0.19	3	2	5	Design	10	
Error in equip selection	0.00	0.03	0.04	0	1	1	Design	2	
Inadequate work env	0.00	0.10	0.00	0	4	0	Design	4	16
Inadequate Procedure	0.09	0.05	0.00	6	2	0	Procedure	8	
Lack of procedure	0.02	0.03	0.04	1	1	1	Procedure	4	11
Insufficient training	0.03	0.03	0.03	2	1	1	Training	4	
Insufficient hands-on	0.05	0.00	0.00	3	0	0	Training	3	
No training	0.00	0.00	0.04	0	0	1	Training	1	8
Defect fail part	0.06	0.05	0.08	4	2	2	Equipment	8	8
Weather	0.00	0.03	0.00	0	1	0	Weather	1	1
	1.03	1.00	1.05	68	40	26		134	134

Management	0.38	0.19	0.49
Personnel	0.33	0.44	0.11
Design	0.05	0.18	0.22
Procedure	0.11	0.08	0.04
Training	0.08	0.03	0.07
Equipment	0.06	0.05	0.08
Weather	0.00	0.03	0.00
Total	1.00	1.00	1.00

Cumulative			
Management	0.38	0.19	0.49
Personnel	0.71	0.63	0.60
Design	0.76	0.81	0.82
Procedure	0.86	0.89	0.86
Training	0.94	0.92	0.92
Equipment	1.00	0.97	1.00
Weather	1.00	1.00	1.00
Total			

DOE Summar

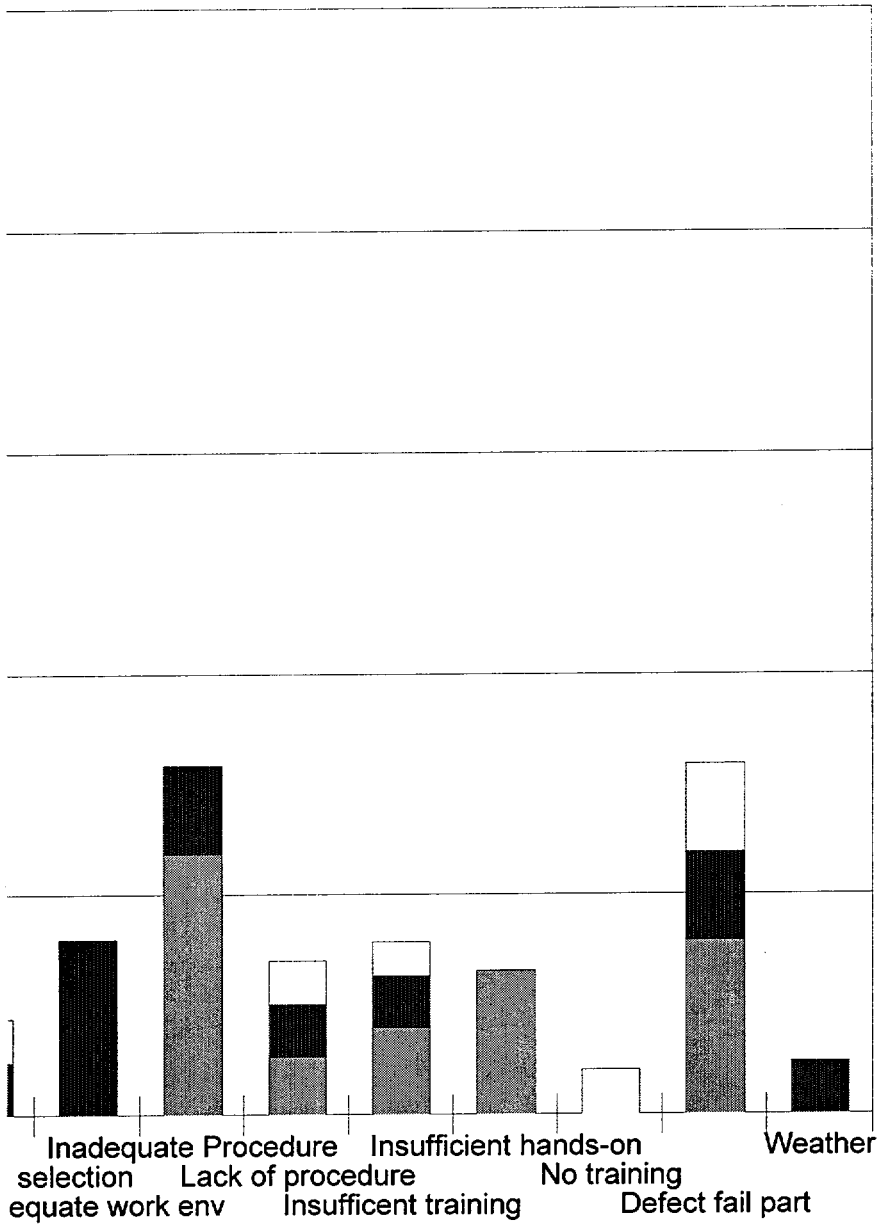


Crane

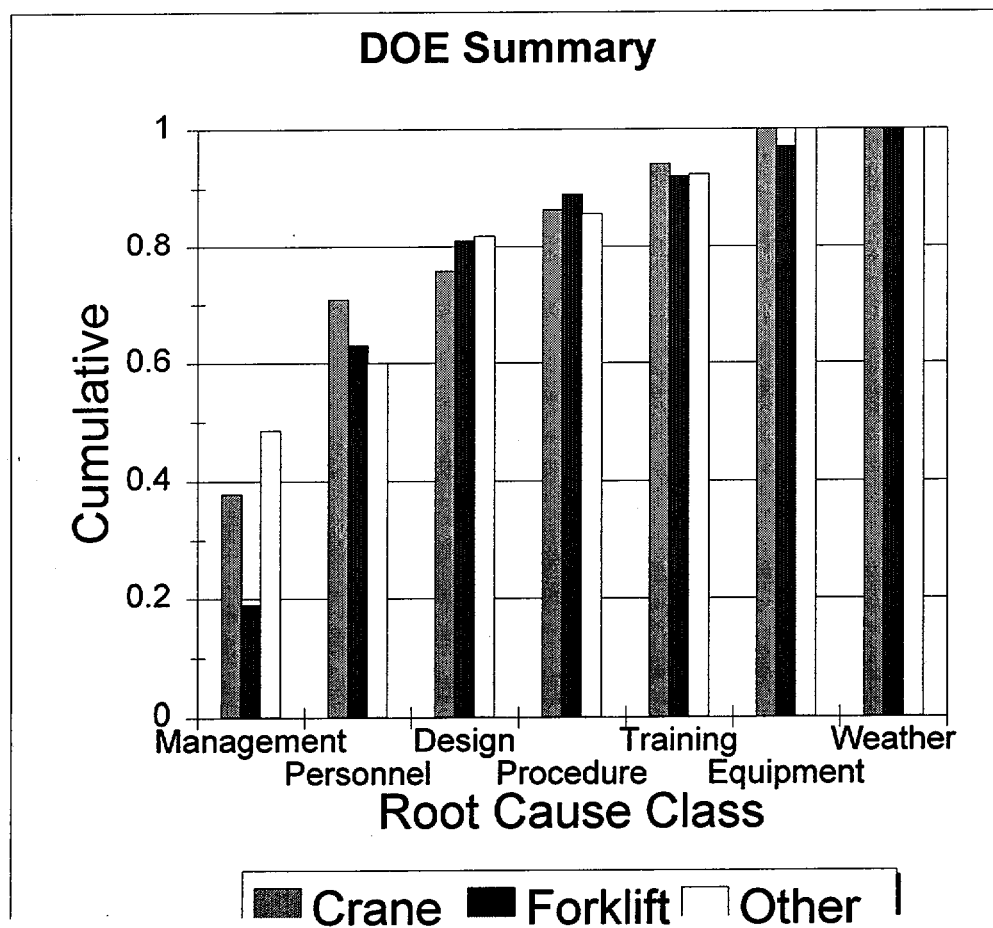
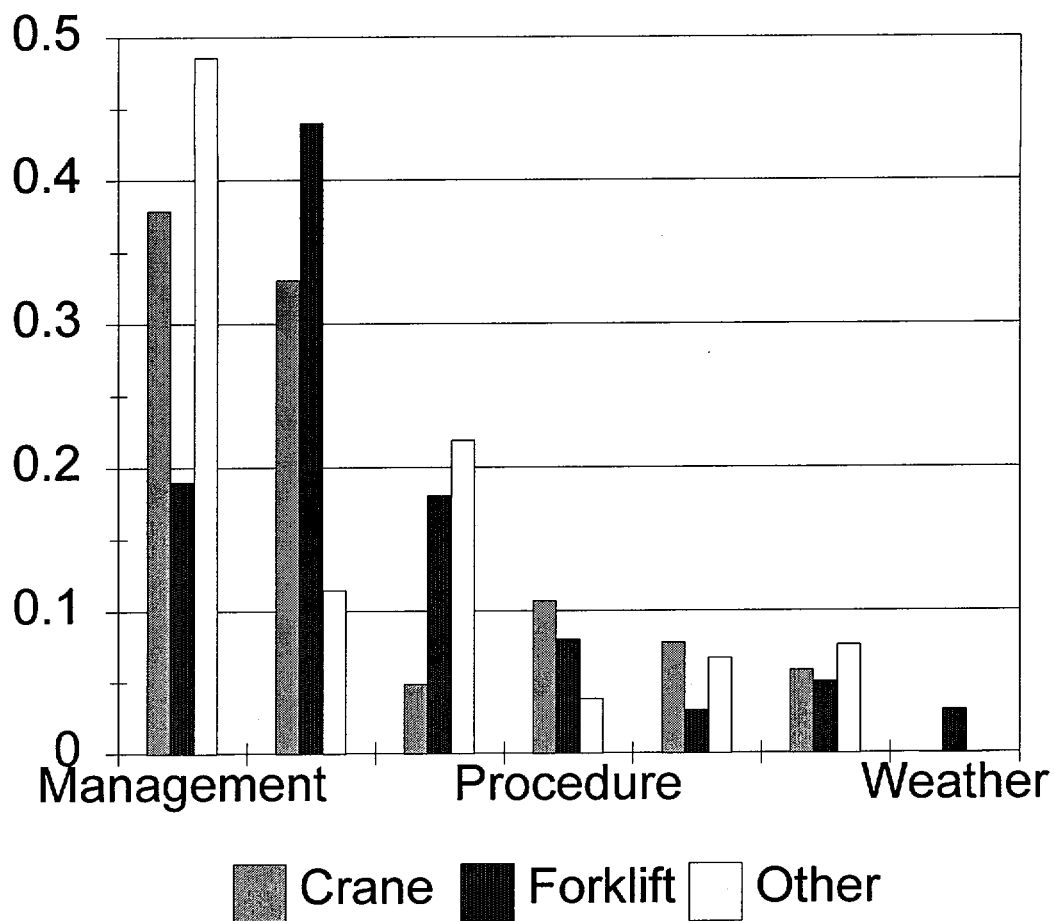


Forklift

y



Other



☒ Crane ☐ Forklift ☐ Other

	Percent			Number			Cause
	Crane	Forklift	Other	Crane	Forklift	Other	
Inattention to detail	0.20	0.23	0.08	13	9	2	Personnel
Work org/plan	0.18	0.03	0.27	12	1	7	Management
Procedure not used	0.09	0.15	0.00	6	6	0	Personnel
Policy not adequate	0.09	0.10	0.04	6	4	1	Management
Defective design	0.05	0.05	0.19	3	2	5	
Inadequate Procedure	0.09	0.05	0.00	6	2	0	
Inadequate Admin	0.09	0.00	0.04	6	0	1	Management
Defect fail part	0.06	0.05	0.08	4	2	2	
Other Mang	0.03	0.03	0.12	2	1	3	Management
Other Human	0.03	0.03	0.00	2	1	0	Personnel
Inadequate work env	0.00	0.10	0.00	0	4	0	
Lack of procedure	0.02	0.03	0.04	1	1	1	
Insufficient train refresh	0.03	0.03	0.03	2	1	1	
Insufficient hands-on	0.05	0.00	0.00	3	0	0	
Comm prob	0.02	0.03	0.04	1	1	1	Personnel
Inadequate supervision	0.00	0.03	0.04	0	1	1	Management
Error in equip selection	0.00	0.03	0.04	0	1	1	
Weather	0.00	0.03	0.00	0	1	0	
No training	0.00	0.00	0.04	0	0	1	
	1.03	1.00	1.05	68	40	26	

Personnel Root	0.33	0.44	0.11
Management Root	0.38	0.19	0.49
	0.71	0.63	0.60

	Percent			Number			Cause
	Crane	Forklift	Other	Crane	Forklift	Other	
Inattention to detail	0.20	0.23	0.08	13	9	2	Personnel
Work org/plan	0.18	0.03	0.27	12	1	7	Management
Procedure not used	0.09	0.15	0.00	6	6	0	Personnel
Policy not adequate	0.09	0.10	0.04	6	4	1	Management
Defective design	0.05	0.05	0.19	3	2	5	
Inadequate Procedure	0.09	0.05	0.00	6	2	0	
Inadequate Admin	0.09	0.00	0.04	6	0	1	Management
Defect fail part	0.06	0.05	0.08	4	2	2	
Other Mang	0.03	0.03	0.12	2	1	3	Management
Other Human	0.03	0.03	0.00	2	1	0	Personnel
Inadequate work env	0.00	0.10	0.00	0	4	0	
Lack of procedure	0.02	0.03	0.04	1	1	1	
Insufficient train refresh	0.03	0.03	0.03	2	1	1	
Insufficient hands-on	0.05	0.00	0.00	3	0	0	
Comm prob	0.02	0.03	0.04	1	1	1	Personnel
Inadequate supervision	0.00	0.03	0.04	0	1	1	Management
Error in equip selection	0.00	0.03	0.04	0	1	1	
Weather	0.00	0.03	0.00	0	1	0	
No training	0.00	0.00	0.04	0	0	1	
	1.03	1.00	1.05	68	40	26	

Personnel Root	0.33	0.44	0.11
Management Root	0.38	0.19	0.49
	0.71	0.63	0.60

Heavy Loads NUREG-0612 Evaluation
Data Sheet 2(b)

Event	Description	High	Low	Median	Units	LogMean
CF11	OpEr load hangup	1.4E-02	1.0E-03	7.5E-03	/R-yr	3.74E-03
CF12	Fail overload device	1.0E-02	1.0E-03	5.5E-03	/demand	3.16E-03
CF1	Load hangup event CF11 and CF12	1.4E-04	1.0E-06	4.1E-05	/R-yr	1.18E-05
CF21	Fail single comp	2.0E-02	1.0E-03	1.1E-02	/R-yr	4.47E-03
CF22	Fail backup if CF21	1.0E-01	1.0E-02	5.5E-02	/demand	3.16E-02
CF2	Random comp failure CF21 and CF22	2.0E-03	1.0E-05	5.8E-04	/R-yr	1.41E-04
CF31	Two-blocking	1.0E-02	7.0E-04	5.4E-03	/R-yr	2.65E-03
CF32	Fail lower limit switch	1.0E-02	1.0E-03	5.5E-03	/demand	3.16E-03
CF33	Fail upper limit switch	1.0E-01	1.0E-02	5.5E-02	/demand	3.16E-02
CF3	Two-blocking event CF31 and CF32 and CF33	1.0E-05	7.0E-09	1.6E-06	/R-yr	2.65E-07
CF4	Fail comp w/o backup	7.0E-05	5.0E-06	3.8E-05	/R-yr	1.87E-05
CF	Fail crane CF1 or CF2 or CF3 or CF4	2.2E-03	1.1E-05	1.1E-03	/R-yr	1.54E-04

Heavy Loads
Data Sheet 2(b)

NUREG-0612 Evaluation

Event	Description	High	Low	Median	Units	LogMean
CF11	OpEr load hangup	1.4E-02	1.0E-03	7.5E-03	/R-yr	3.74E-03
CF12	Fail overload device	1.0E-02	1.0E-03	5.5E-03	/demand	3.16E-03
CF1	Load hangup event CF11 and CF12	1.4E-04	1.0E-06	4.1E-05	/R-yr	1.18E-05
CF21	Fail single comp	2.0E-02	1.0E-03	1.1E-02	/R-yr	4.47E-03
CF22	Fail backup if CF21	1.0E-01	1.0E-02	5.5E-02	/demand	3.16E-02
CF2	Random comp failure CF21 and CF22	2.0E-03	1.0E-05	5.8E-04	/R-yr	1.41E-04
CF31	Two-blocking	1.0E-02	7.0E-04	5.4E-03	/R-yr	2.65E-03
CF32	Fail lower limit switch	1.0E-02	1.0E-03	5.5E-03	/demand	3.16E-03
CF33	Fail upper limit switch	1.0E-01	1.0E-02	5.5E-02	/demand	3.16E-02
CF3	Two-blocking event CF31 and CF32 and CF33	1.0E-05	7.0E-09	1.6E-06	/R-yr	2.65E-07
CF4	Fail comp w/o backup	7.0E-05	5.0E-06	3.8E-05	/R-yr	1.87E-05
CF	Fail crane CF1 or CF2 or CF3 or CF4	2.2E-03	1.1E-05	1.1E-03	/R-yr	1.54E-04

Heavy Loads TruDock Re-Evaluation
Data Sheet 2(B-1)

Event	Description	High	Low	Median	Units	LogMean		
CF11	OpEr load hangup	7.0E-06	4.7E-07	3.7E-06	/lift	1.81E-06	1.43E+05	2.13E+06
CF12	Fail overload device	1.0E-02	1.0E-03	5.5E-03	/demand	3.16E-03		
CF1	Load hangup event CF11 and CF12	7.0E-08	4.7E-10	2.1E-08	/lift	5.74E-09		
CF21	Fail single comp	8.0E-05	5.3E-06	4.3E-05	/lift	2.06E-05		
CF22	Fail backup if CF21	1.0E-01	1.0E-02	5.5E-02	/demand	3.16E-02		
CF2	Random comp failure CF21 and CF22	8.0E-06	5.3E-08	2.3E-06	/lift	6.51E-07		
CF31	Two-blocking	5.2E-05	3.5E-06	2.8E-05	/lift	1.35E-05	1.92E+04	2.86E+05
CF32	Fail lower limit switch	1.0E-02	1.0E-03	5.5E-03	/demand	3.16E-03		
CF33	Fail upper limit switch	1.0E-01	1.0E-02	5.5E-02	/demand	3.16E-02		
CF3	Two-blocking event CF31 and CF32 and CF33	5.2E-08	3.5E-11	8.4E-09	/lift	1.35E-09		
CF4	Fail comp w/o backup	3.4E-07	2.3E-08	1.8E-07	/lift	8.84E-08	2.94E+06	4.35E+07
CF	Fail crane CF1 or CF2 or CF3 or CF4	8.1E-06	5.4E-08	4.1E-06	/lift	6.59E-07		

7

A	A	B	C	D	E	F	G
1	Heavy Loads	NUREG-0612 Evaluation					
2	Data Sheet 2(B-1)	(As presented)					
3							
4	Event	Description	Units	High	Low	Mean	LogMean
5	CF11	Operator error leading to load hangup	/year	7.0E-05	2.0E-06	3.6E-05	1.2E-05
6	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
7	CF1	Load hangup event (CF11 and CF12)	/year	7.0E-07	2.0E-09	3.5E-07	3.7E-08
8							
9							
10	CF21	Failure of single component with a backup	/year	8.0E-04	2.0E-05	4.1E-04	1.3E-04
11	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
12	CF2	Failure due to random component failure (CF21 and CF22)	/year	8.0E-05	2.0E-07	4.0E-05	4.0E-06
13							
14							
15	CF31	Operator error leading to Two-blocking	/year	5.0E-04	1.0E-05	2.6E-04	7.1E-05
16	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
17	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
18	CF3	Two-blocking event (CF31 and CF32 and CF33)	/year	5.0E-07	1.0E-10	2.5E-07	7.1E-09
19							
20							
21	CF4	Failure of component that doesn't have backup	/year	3.0E-06	9.0E-08	1.5E-06	5.2E-07
22							
23							
24	CF	Failure of crane (CF1 or CF2 or CF3 or CF4)	/year	8.4E-05	2.9E-07	4.2E-05	5.0E-06
25							
26	CF1+CF3	Operator related		1.2E-06	2.1E-09	6.0E-07	4.4E-08
27	CF2+CF4	Hardware related		8.3E-05	2.9E-07	4.2E-05	4.5E-06
28							
29							

A	A	B	C	D	E	F	G
30	Heavy Loads	TruDock Re-Evaluation					
31	Data Sheet 2(B-1)	(Based on NUREG-0612 failures/errors in per lift)					
32							
33	Event	Description	Units	High	Low	Mean	LogMean
34	CF11	Operator error leading to load hangup	/lift	7.0E-06	4.7E-07	3.7E-06	1.8E-06
35	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
36	CF1	Load hangup event (CF11 and CF12)	/lift	7.0E-08	4.7E-10	3.5E-08	5.7E-09
37							
38							
39	CF21	Failure of single component with a backup	/lift	8.0E-05	5.3E-06	4.3E-05	2.1E-05
40	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
41	CF2	Failure due to random component failure (CF21 and CF22)	/lift	8.0E-06	5.3E-08	4.0E-06	6.5E-07
42							
43							
44	CF31	Operator error leading to Two-blocking	/lift	5.2E-05	3.5E-06	2.8E-05	1.3E-05
45	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
46	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
47	CF3	Two-blocking event (CF31 and CF32 and CF33)	/lift	5.2E-08	3.5E-11	2.6E-08	1.3E-09
48							
49							
50	CF4	Failure of component that doesn't have backup	/lift	3.4E-07	2.3E-08	1.8E-07	8.8E-08
51							
52							
53	CF	Failure of crane (CF1 or CF2 or CF3 or CF4)	/lift	8.5E-06	7.7E-08	4.3E-06	8.0E-07
54							
55	CF1+CF3	Operator related		1.2E-07	5.1E-10	6.1E-08	7.1E-09
56	CF2+CF4	Hardware related		8.3E-06	7.6E-08	4.2E-06	7.4E-07
57							
58							

A	A	B	C	D	E	F	G
59	Heavy Loads	TruDock Re-Evaluation					
60	Data Sheet 2(B-1)	(100 lift per year, 1/10 actual result in drop - new Navy data)					
61							
62	Event	Description	Units	High	Low	Mean	LogMean
63	CF11	Operator error leading to load hangup	/year	7.0E-05	4.7E-06	3.7E-05	1.8E-05
64	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
65	CF1	Load hangup event (CF11 and CF12)	/year	7.0E-07	4.7E-09	3.5E-07	5.7E-08
66							
67							
68	CF21	Failure of single component with a backup	/year	8.0E-04	5.3E-05	4.3E-04	2.1E-04
69	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
70	CF2	Failure due to random component failure (CF21 and CF22)	/year	8.0E-05	5.3E-07	4.0E-05	6.5E-06
71							
72							
73	CF31	Operator error leading to Two-blocking	/year	5.2E-04	3.5E-05	2.8E-04	1.3E-04
74	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
75	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
76	CF3	Two-blocking event (CF31 and CF32 and CF33)	/year	5.2E-07	3.5E-10	2.6E-07	1.3E-08
77							
78							
79	CF4	Failure of component that doesn't have backup	/year	3.4E-06	2.3E-07	1.8E-06	8.8E-07
80							
81							
82	CF	Failure of crane (CF1 or CF2 or CF3 or CF4)	/year	8.5E-05	7.7E-07	4.3E-05	8.0E-06
83							
84	CF1+CF3	Operator related		1.2E-06	5.1E-09	6.1E-07	7.1E-08
85	CF2+CF4	Hardware related		8.3E-05	7.6E-07	4.2E-05	7.4E-06
86							
87							

A	A	B	C	D	E	F	G
88	Heavy Loads	TruDock Re-Evaluation (Reduce hardware by factor of 10)					
89	Data Sheet 2(B-1)	(100 lift per year, 1/10 actual result in drop - new Navy data)					
90							
91	Event	Description	Units	High	Low	Mean	LogMean
92	CF11	Operator error leading to load hangup	/year	7.0E-05	4.7E-06	3.7E-05	1.8E-05
93	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
94	CF1	Load hangup event (CF11 and CF12)	/year	7.0E-07	4.7E-09	3.5E-07	5.7E-08
95							
96							
97	CF21	Failure of single component with a backup	/year	8.0E-05	5.3E-06	4.3E-05	2.1E-05
98	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
99	CF2	Failure due to random component failure (CF21 and CF22)	/year	8.0E-06	5.3E-08	4.0E-06	6.5E-07
100							
101							
102	CF31	Operator error leading to Two-blocking	/year	5.2E-04	3.5E-05	2.8E-04	1.3E-04
103	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
104	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
105	CF3	Two-blocking event (CF31 and CF32 and CF33)	/year	5.2E-07	3.5E-10	2.6E-07	1.3E-08
106							
107							
108	CF4	Failure of component that doesn't have backup	/year	3.4E-07	2.3E-08	1.8E-07	8.8E-08
109							
110							
111	CF	Failure of crane (CF1 or CF2 or CF3 or CF4)	/year	9.6E-06	8.1E-08	4.8E-06	8.8E-07
112							
113	CF1+CF3	Operator related		1.2E-06	5.1E-09	6.1E-07	7.1E-08
114	CF2+CF4	Hardware related		8.3E-06	7.6E-08	4.2E-06	7.4E-07
115							
116							

A	A	B	C	D	E	F	G
117	Heavy Loads	TruDock Re-Evaluation (Reduce all by factor of 10)					
118	Data Sheet 2(B-1)	(100 lift per year, 1/10 actual result in drop - new Navy data)					
119							
120	Event	Description	Units	High	Low	Mean	LogMean
121	CF11	Operator error leading to load hangup	/year	7.0E-06	4.7E-07	3.7E-06	1.8E-06
122	CF12	Failure of the overload device	/demand	1.0E-03	1.0E-04		
123	CF1	Load hangup event (CF11 and CF12)	/year	7.0E-09	4.7E-11	3.5E-09	5.7E-10
124							
125							
126	CF21	Failure of single component with a backup	/year	8.0E-05	5.3E-06	4.3E-05	2.1E-05
127	CF22	Failure of backup component given CF21	/demand	1.0E-02	1.0E-03		
128	CF2	Failure due to random component failure (CF21 and CF22)	/year	8.0E-07	5.3E-09	4.0E-07	6.5E-08
129							
130							
131	CF31	Operator error leading to Two-blocking	/year	5.2E-05	3.5E-06	2.8E-05	1.3E-05
132	CF32	Failure of lower limit switch	/demand	1.0E-03	1.0E-04		
133	CF33	Failure of upper limit switch	/demand	1.0E-02	1.0E-03		
134	CF3	Two-blocking event (CF31 and CF32 and CF33)	/year	5.2E-10	3.5E-13	2.6E-10	1.3E-11
135							
136							
137	CF4	Failure of component that doesn't have backup	/year	3.4E-07	2.3E-08	1.8E-07	8.8E-08
138							
139							
140	CF	Failure of crane (CF1 or CF2 or CF3 or CF4)	/year	1.1E-06	2.8E-08	5.9E-07	1.8E-07
141							
142	CF1+CF3	Operator related		7.5E-09	4.7E-11	3.8E-09	5.9E-10
143	CF2+CF4	Hardware related		1.1E-06	2.8E-08	5.8E-07	1.5E-07
144							
145							

A	A	B	C	D	E	F	G
146	Heavy Loads	TruDock Re-Evaluation					
147	Data Sheet 2(B-1)	(Based on NUREG-0612 method and values)					
148							
149	Event	Description	Units	High	Low	Mean	LogMean
150							
151	N	Range of incidents per lift	/lift	1.5E-04	1.0E-05	8.0E-05	3.9E-05
152							
153	F1	Range of incidents (OVER,DL,LC) (13 to 5)		0.05	0.05		
154	CF11	Operator error leading to load hangup (N * F1)	/lift	7.0E-06	4.7E-07	3.7E-06	1.8E-06
155	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
156	CF1	Load hangup event (CF11 and CF12)	/lift	7.0E-08	4.7E-10	3.5E-08	5.7E-09
157							
158	F2	Range of incidents (CC,DC,DROP) (24 to 12)		0.53	0.53		
159	CF21	Failure of single component with a backup (N * F2)	/lift	8.0E-05	5.3E-06	4.2E-05	2.1E-05
160	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
161	CF2	Failure due to random component failure (CF21 and CF22)	/lift	8.0E-06	5.3E-08	4.0E-06	6.5E-07
162							
163	F3	Range of incidents (TB)		0.34	0.35		
164	CF31	Operator error leading to Two-blocking (N * F3)	/lift	5.1E-05	3.5E-06	2.7E-05	1.3E-05
165	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
166	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
167	CF3	Two-blocking event (CF31 and CF32 and CF33)	/lift	5.1E-08	3.5E-11	2.6E-08	1.3E-09
168							
169	CF4	Failure of component that doesn't have backup	/lift	3.4E-07	2.3E-08	1.8E-07	8.8E-08
170							
171	CF	Failure of crane (CF1 or CF2 or CF3 or CF4)	/lift	8.4E-06	7.7E-08	4.2E-06	8.0E-07
172							
173	F4	Range of incidents leading to a drop (IR) (0.07)		0.20	0.01		
174	CR-NUREG	Improper rigging (NUREG method) (N * F4)		3.0E-05	1.0E-07	1.5E-05	1.7E-06
175	CR1	Mean 8.7E-7 based on WIPP study		8.7E-07	8.7E-07	8.7E-07	8.7E-07
176	CR'	Improper Rigging from WIPP report (CR1 * F4)		1.7E-07	8.7E-09	9.1E-08	3.9E-08
177							
178	CF1+CF3	Operator related		1.2E-07	5.1E-10	6.1E-08	7.1E-09
179	CF2+CF4	Hardware related		8.3E-06	7.6E-08	4.2E-06	7.4E-07
180							
181	CR	Failure of rigging (CR-NUREG)		3.0E-05	1.0E-07	1.5E-05	1.7E-06
182							
183	Total	0.1 * (CF + CR)		3.8E-06	1.8E-08	1.9E-06	2.6E-07
184							
185	Failure of SFP	100 lifts * 0.1 failures per lift		3.8E-05	1.8E-07	1.9E-05	2.6E-06
186							
187			Rigging	Equip	Other	Total	
188		Crane Collision (CC)	0	0	11	11	
189		Damage Crane (DC)	5	0	13	18	
190		Damage Load (DL)	2	1	0	3	
191		Dropped Load (DROP)	4	2	0	6	
192		Load Collision (LC)	2	0	7	9	
193		Overload (OVER)	3	0	5	8	
194		Personnel Injury (PI)	0	0	5	5	
195		Two-Blocking (TB)	0	0	3	3	
196		OTHER	0	0	1	1	
197		SHOCK	1	0	0	1	
198		UL	0	0	1	1	
199			17	3	46	66	
200							
201							

A	A	B	C	D	E	F	G
202	Heavy Loads	TruDock Re-Evaluation					
203	Data Sheet 2(B-1)	(Based on NUREG-0612 method with 1990s Navy data)					
204							
205	Event	Description	Units	High	Low	Mean	LogMean
206							
207	N	Range of incidents per lift	/lift	1.0E-04	1.0E-05	5.5E-05	3.2E-05
208							
209	F1	Range of incidents (OVER,DL,LC) (13 to 5)		0.20	0.08		
210	CF11	Operator error leading to load hangup (N * F1)	/lift	2.0E-05	7.6E-07	1.0E-05	3.9E-06
211	CF12	Failure of the overload device	/demand	1.0E-02	1.0E-03		
212	CF1	Load hangup event (CF11 and CF12)	/lift	2.0E-07	7.6E-10	9.9E-08	1.2E-08
213							
214	F2	Range of incidents (CC,DC,DROP) (24 to 12)		0.50	0.39		
215	CF21	Failure of single component with a backup (N * F2)	/lift	5.0E-05	3.9E-06	2.7E-05	1.4E-05
216	CF22	Failure of backup component given CF21	/demand	1.0E-01	1.0E-02		
217	CF2	Failure due to random component failure (CF21 and CF22)	/lift	5.0E-06	3.9E-08	2.5E-06	4.4E-07
218							
219	F3	Range of incidents (TB)		0.05	0.01		
220	CF31	Operator error leading to Two-blocking (N * F3)	/lift	5.0E-06	1.0E-07	2.6E-06	7.1E-07
221	CF32	Failure of lower limit switch	/demand	1.0E-02	1.0E-03		
222	CF33	Failure of upper limit switch	/demand	1.0E-01	1.0E-02		
223	CF3	Two-blocking event (CF31 and CF32 and CF33)	/lift	5.0E-09	1.0E-12	2.5E-09	7.1E-11
224							
225	CF4	Failure of component that doesn't have backup	/lift	3.4E-07	2.3E-08	1.8E-07	8.8E-08
226							
227	CF	Failure of crane (CF1 or CF2 or CF3 or CF4)	/lift	5.5E-06	6.3E-08	2.8E-06	5.9E-07
228							
229	F4	Range of incidents leading to a drop (IR) (0.07)		0.07	0.07		
230	CR-NUREG	Improper rigging (NUREG method) (N * F4)		7.0E-06	7.0E-07	3.9E-06	2.2E-06
231	CR1	Mean 8.7E-7 based on WIPP study		8.7E-07	8.7E-07	8.7E-07	8.7E-07
232	CR'	Improper Rigging from WIPP report (CR1 * F4)		6.1E-08	6.1E-08	6.1E-08	6.1E-08
233							
234	CF1+CF3	Operator related		2.0E-07	7.6E-10	1.0E-07	1.2E-08
235	CF2+CF4	Hardware related		5.3E-06	6.2E-08	2.7E-06	5.3E-07
236							
237	CR	Failure of rigging (CR, from WIPP)		6.1E-08	6.1E-08	6.1E-08	6.1E-08
238							
239	Total	(4/49) times CF + (2/17) times CR		4.6E-07	1.2E-08	2.4E-07	7.5E-08
240							
241	Failure of SFP	100 lifts * 0.1 failure per lift		4.6E-06	1.2E-07	2.4E-06	7.5E-07
242							
243			Rigging	Equip	Other	Total	
244		Crane Collision (CC)	0	0	11	11	
245		Damage Crane (DC)	5	0	13	18	
246		Damage Load (DL)	2	1	0	3	
247		Dropped Load (DROP)	4	2	0	6	
248		Load Collision (LC)	2	0	7	9	
249		Overload (OVER)	3	0	5	8	
250		Personnel Injury (PI)	0	0	5	5	
251		Two-Blocking (TB)	0	0	3	3	
252		OTHER	0	0	1	1	
253		SHOCK	1	0	0	1	
254		UL	0	0	1	1	
255			17	3	46	66	

	1	2	3	4	5	6	
pl	0.5	2.05	6.55	20.95	65.95	100	
pw	0.0102	0.0207	0.0656	0.2	0.65	1	
al	1.000	0.383	0.180	0.077	0.130	0.118	1
	0.000	0.617	0.279	0.245	0.131	0.125	2
	0.000	0.000	0.541	0.310	0.248	0.162	3
	0.000	0.000	0.000	0.368	0.234	0.236	4
	0.000	0.000	0.000	0.000	0.257	0.187	5
	0.000	0.000	0.000	0.000	0.000	0.172	6
sum-al	1.000	1.000	1.000	1.000	1.000	1.000	
aw	1.000	0.418	0.154	0.153	0.152	0.152	1
	0.000	0.582	0.570	0.310	0.264	0.262	2
	0.000	0.000	0.276	0.363	0.216	0.143	3
	0.000	0.000	0.000	0.174	0.246	0.168	4
	0.000	0.000	0.000	0.000	0.122	0.183	5
	0.000	0.000	0.000	0.000	0.000	0.092	6
sum-aw	1.000	1.000	1.000	1.000	1.000	1.000	

	pw=1		pw=2		pw=3	
pl=1	0.1915	0.001571	0.011799	0.018106	0.006028	0.031475
pl=2	1.26485	0.001571	0.011799	0.018106	0.039812	
	1.45635				0.045839	
					0.13448	2.933734

	Aircraft data			Facility Data			height	Diag	Af
	Wingspan	Skid distance	cot-i-ang	length	width				
General aviation	50	1440	10.2	400	200	100	447.21	605046.41	
Air carrier	98	60	8.2	400	200	100	447.21	562136.69	
Air Taxi	58	60	8.2	400	200	100	447.21	515025.86	
Lrge military	223	780	7.4	400	200	100	447.21	655740.97	
Small military	100	447	10.4	400	200	100	447.21	684879.23	
Total Eff Area									

	Sq.Mile	Crashes	PSA	Min		Crashes
	Aeff	Average				Maximum
General aviation	4.7E-02	2.0E-04	9.5E-06	1.0E-07	4.7E-09	3.0E-03
Air carrier	2.1E-02	4.0E-07	8.5E-09	7.0E-08	1.5E-09	2.0E-06
Air Taxi	2.0E-02	1.0E-06	2.0E-08	4.0E-07	7.8E-09	8.0E-06
Lrge military	4.2E-02	2.0E-07	8.5E-09	6.0E-08	2.5E-09	7.0E-07
Small military	3.3E-02	4.0E-06	1.3E-07	4.0E-08	1.3E-09	6.0E-08
Total	3.3E-02	2.1E-04	9.6E-06	6.7E-07	1.8E-08	3.0E-03
Factor (0.01)	1		9.6E-06		1.8E-08	

	Aircraft data			Facility Data			height	Diag	Af
	Wingspan	Skid distance	cot-i-ang	length	width				
General aviation	0	0	10.2	400	200	0	447.21	80000.00	
Air carrier	0	0	8.2	400	200	0	447.21	80000.00	
Air Taxi	0	0	8.2	400	200	0	447.21	80000.00	
Lrge military	0	0	7.4	400	200	0	447.21	80000.00	
Small military	0	0	10.4	400	200	0	447.21	80000.00	
Total Eff Area									

	Sq.Mile	Crashes	PSA	Min		Crashes
	Aeff	Average				Maximum
General aviation	2.9E-03	2.0E-04	5.7E-07	1.0E-07	2.9E-10	3.0E-03
Air carrier	2.9E-03	4.0E-07	1.1E-09	7.0E-08	2.0E-10	2.0E-06
Air Taxi	2.9E-03	1.0E-06	2.9E-09	4.0E-07	1.1E-09	8.0E-06
Lrge military	2.9E-03	2.0E-07	5.7E-10	6.0E-08	1.7E-10	7.0E-07
Small military	2.9E-03	4.0E-06	1.1E-08	4.0E-08	1.1E-10	6.0E-08
Total	2.9E-03	2.1E-04	5.9E-07	6.7E-07	1.9E-09	3.0E-03
Factors(.3,.5,.5)	1		5.9E-07		1.9E-09	

Build	400	200	100
	Min	Ave	Max
W/	1.8E-08	9.6E-06	1.4E-04
W/O	1.9E-09	5.9E-07	8.6E-06
	9.32	16.35	16.48

As

715987.58
32712.82
30312.82
522766.60
244604.48

PSA

1.4E-04
4.3E-08
1.6E-07
3.0E-08
2.0E-09
1.4E-04
1.4E-04

As

0.00
0.00
0.00
0.00
0.00

PSA

8.6E-06
5.7E-09
2.3E-08
2.0E-09
1.7E-10
8.6E-06
8.6E-06

Torprob2.txt

AL	46	165	364	323	129	36	14	2.9E-05	3.2E-05	1.3E-05	3.7E-06	6.9E-07	4.3E-08
AZ	44	90	57	11	2	0	0	6.7E-07	2.9E-07	3.6E-08	1.8E-09	0.0E+00	0.0E+00
AR	46	198	298	331	149	31	0	3.2E-05	3.5E-05	1.3E-05	2.4E-06	1.9E-07	0.0E+00
CA	45	142	58	21	2	0	0	5.1E-07	2.7E-07	6.0E-08	2.7E-09	0.0E+00	0.0E+00
CO	46	616	441	99	15	1	0	4.4E-06	2.0E-06	4.2E-07	3.9E-08	3.3E-11	0.0E+00
CT	46	9	29	20	5	2	0	1.1E-05	1.1E-05	3.6E-06	8.5E-07	2.2E-07	0.0E+00
DE	42	20	23	11	1	0	0	2.6E-05	1.5E-05	1.5E-06	6.4E-09	0.0E+00	0.0E+00
DC	1	1	0	0	0	0	0	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FL	46	1156	665	293	30	4	0	1.5E-05	8.6E-06	2.2E-06	2.8E-07	2.0E-08	0.0E+00
GA	46	147	537	266	65	17	0	2.9E-05	3.0E-05	1.2E-05	3.4E-06	4.3E-07	0.0E+00
ID	42	63	53	8	0	0	0	4.7E-07	1.9E-07	1.4E-08	0.0E+00	0.0E+00	0.0E+00
IN	46	246	336	263	108	77	8	3.3E-05	3.5E-05	1.5E-05	5.2E-06	1.2E-06	6.7E-08
IA	46	478	506	421	119	74	9	3.7E-05	3.7E-05	1.4E-05	3.1E-06	6.1E-07	2.5E-08
KS	46	1111	610	404	168	54	16	3.5E-05	3.0E-05	1.1E-05	3.0E-06	5.8E-07	1.1E-07
LA	46	225	620	268	123	16	2	2.4E-05	2.2E-05	6.9E-06	1.4E-06	1.2E-07	1.9E-08
ME	42	21	44	17	0	0	0	1.8E-06	1.1E-06	1.7E-07	0.0E+00	0.0E+00	0.0E+00
MD	46	49	92	26	5	0	0	1.5E-05	9.2E-06	9.4E-07	8.2E-09	0.0E+00	0.0E+00
MA	45	24	72	31	8	3	0	1.2E-05	1.1E-05	4.3E-06	1.6E-06	3.7E-07	0.0E+00
MI	45	195	308	210	57	30	7	1.4E-05	1.4E-05	5.2E-06	1.4E-06	2.8E-07	1.4E-08
MN	46	372	336	158	53	28	6	1.4E-05	1.2E-05	3.5E-06	7.2E-07	1.3E-07	6.6E-09
MS	46	226	468	369	136	59	10	4.4E-05	4.4E-05	1.7E-05	5.0E-06	1.0E-06	1.3E-08
MO	46	298	577	334	109	48	1	1.8E-05	1.6E-05	5.3E-06	1.3E-06	2.3E-07	2.6E-11
MT	44	174	42	33	4	0	0	1.0E-06	7.0E-07	2.3E-07	2.2E-08	0.0E+00	0.0E+00
NE	46	827	585	255	105	42	4	2.9E-05	2.9E-05	1.2E-05	3.5E-06	3.5E-07	1.6E-08
NV	34	41	8	0	0	0	0	2.9E-07	4.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NH	45	24	34	15	2	0	0	4.7E-06	2.4E-06	4.7E-07	1.1E-08	0.0E+00	0.0E+00
NJ	45	43	58	23	4	0	0	1.7E-05	6.6E-06	7.9E-07	7.1E-09	0.0E+00	0.0E+00
NM	46	261	104	31	4	0	0	1.5E-06	5.2E-07	8.0E-08	1.1E-09	0.0E+00	0.0E+00
NY	44	101	106	35	21	5	0	7.6E-06	6.1E-06	2.3E-06	8.8E-07	2.2E-07	0.0E+00
NC	46	153	321	143	44	26	0	1.5E-05	1.4E-05	4.9E-06	1.5E-06	2.5E-07	0.0E+00
ND	46	490	211	91	28	7	3	4.7E-06	3.2E-06	1.1E-06	3.6E-07	9.1E-08	1.1E-08
OH	46	157	321	166	53	27	9	2.1E-05	1.8E-05	5.6E-06	1.3E-06	3.0E-07	2.8E-08
OK	46	845	808	626	209	83	9	4.1E-05	3.9E-05	1.4E-05	3.6E-06	7.0E-07	5.5E-08
OR	45	31	15	3	0	0	0	2.9E-07	1.5E-07	3.1E-08	0.0E+00	0.0E+00	0.0E+00
PA	46	93	220	143	26	22	2	9.4E-06	9.0E-06	3.3E-06	9.3E-07	2.0E-07	5.4E-09
RI	23	3	4	1	0	0	0	1.9E-05	1.3E-05	1.7E-06	0.0E+00	0.0E+00	0.0E+00
SC	46	136	234	100	31	15	0	1.9E-05	1.9E-05	6.8E-06	1.8E-06	3.0E-07	0.0E+00
SD	46	651	259	197	57	7	1	9.7E-06	8.1E-06	3.0E-06	7.7E-07	1.5E-07	1.2E-08
TN	46	107	241	139	76	29	4	2.2E-05	2.2E-05	8.3E-06	2.1E-06	2.0E-07	1.7E-10
TX	46	2632	1837	1067	317	76	5	1.6E-05	1.3E-05	4.3E-06	1.1E-06	1.8E-07	3.8E-09
UT	43	53	19	6	1	0	0	5.1E-07	3.2E-07	1.0E-07	2.8E-08	0.0E+00	0.0E+00
VT	41	7	14	12	0	0	0	3.3E-06	2.0E-06	3.4E-07	0.0E+00	0.0E+00	0.0E+00
VA	45	84	132	68	28	6	0	8.5E-06	7.0E-06	2.0E-06	4.4E-07	7.1E-08	0.0E+00
WA	41	24	17	12	3	0	0	4.9E-07	9.6E-08	2.3E-08	3.6E-09	0.0E+00	0.0E+00
WV	45	27	36	16	8	0	0	2.2E-06	2.4E-06	9.7E-07	2.5E-07	0.0E+00	0.0E+00
WI	46	204	378	276	62	24	5	2.6E-05	2.4E-05	7.9E-06	1.4E-06	2.5E-07	3.3E-08
WY	46	247	145	43	8	1	0	2.5E-06	1.2E-06	3.1E-07	7.1E-08	1.9E-08	0.0E+00
KY	46	79	168	133	65	35	3	1.6E-05	1.7E-05	6.9E-06	1.8E-06	3.1E-07	1.4E-08
IL	46	431	440	316	113	39	3	3.0E-05	2.7E-05	9.8E-06	2.5E-06	3.3E-07	2.1E-08

Area.txt

Alabama	AL	01	50750.23	1672.71	52422.94
Arizona	AZ	04	113642.26	364.00	114006.26
Arkansas	AR	05	52075.29	1107.07	53182.36
California	CA	06	155973.09	7734.06	163707.15
Colorado	CO	08	103729.54	370.78	104100.32
Connecticut	CT	09	4845.39	698.26	5543.65
Delaware	DE	10	1954.62	534.76	2489.38
DC	DC	11	61.41	6.95	68.36
Florida	FL	12	53997.08	11761.00	65758.08
Georgia	GA	13	57918.73	1522.49	59441.22
Idaho	ID	16	82750.93	822.84	83573.77
Illinois	IL	17	55593.29	2324.55	57917.84
Indiana	IN	18	35870.18	549.91	36420.09
Iowa	IA	19	55874.90	400.64	56275.54
Kansas	KS	20	81823.02	458.98	82282.00
Kentucky	KY	21	39732.31	678.93	40411.24
Louisiana	LA	22	43566.03	8277.44	51843.47
Maine	ME	23	30864.55	4522.78	35387.33
Maryland	MD	24	9774.65	2632.80	12407.45
Massachusetts	MA	25	7837.98	2716.81	10554.79
Michigan	MI	26	56809.18	40001.04	96810.22
Minnesota	MN	27	79616.66	7326.05	86942.71
Mississippi	MS	28	46913.64	1519.95	48433.59
Missouri	MO	29	68898.01	810.80	69708.81
Montana	MT	30	145556.34	1489.82	147046.16
Nebraska	NE	31	76877.73	480.67	77358.40
Nevada	NV	32	109805.89	761.02	110566.91
New Hampshire	NH	33	8969.36	381.57	9350.93
New Jersey	NJ	34	7418.84	1303.11	8721.95
New Mexico	NM	35	121364.54	233.69	123598.23
New York	NY	36	47223.85	7250.71	54474.56
N Carolina	NC	37	48718.08	5103.27	53821.35
North Dakota	ND	38	68994.24	1709.59	70703.83
Ohio	OH	39	40952.59	3874.94	44827.53
Oklahoma	OK	40	68678.57	1224.33	69902.90
Oregon	OR	41	96002.58	2383.17	98385.75
Pennsylvania	PA	42	44819.61	1238.63	46058.24
Rhode Island	RI	44	1044.98	500.12	1545.10
S Carolina	SC	45	30111.12	1895.99	32007.11
South Dakota	SD	46	75897.74	1223.72	77121.46
Tennessee	TN	47	41219.52	926.49	42146.01
Texas	TX	48	261914.26	6686.70	268600.96
Utah	UT	49	82168.15	2735.97	84904.12
Vermont	VT	50	9249.33	365.67	9615.00
Virginia	VA	51	39597.79	3171.09	42768.88
Washington	WA	53	66581.95	4720.70	71302.65
West Virginia	WV	54	24086.55	144.89	24231.44
Wisconsin	WI	55	54313.71	11189.50	65503.21
Wyoming	WY	56	97104.55	713.56	97818.11
U.S. Total	US	99	3536341.73	251083.35	3787425.08
a14	a2	i3	f12.2	f11.2	f11.2

50 sets

Torarea2.txt

AL	0	165	364	323	129	36	14	68.557	73.993	30.046	8.595	1.607	0.102
AZ	0	90	57	11	2	0	0	3.360	1.442	0.180	0.009	0.000	0.000
AR	0	198	298	331	149	31	0	77.228	84.402	30.356	5.709	0.462	0.000
CA	0	142	58	21	2	0	0	3.584	1.913	0.421	0.019	0.000	0.000
CO	0	616	441	99	15	1	0	20.944	9.708	2.015	0.184	0.000	0.000
CT	0	9	29	20	5	2	0	2.518	2.462	0.808	0.189	0.049	0.000
DE	0	20	23	11	1	0	0	2.138	1.218	0.122	0.001	0.000	0.000
DC	0	1	0	0	0	0	0	0.008	0.000	0.000	0.000	0.000	0.000
FL	0	1156	665	293	30	4	0	36.168	21.380	5.452	0.698	0.050	0.000
GA	0	147	537	266	65	17	0	78.529	80.587	31.238	9.099	1.143	0.000
ID	0	63	53	8	0	0	0	1.617	0.667	0.049	0.000	0.000	0.000
IN	0	246	336	263	108	77	8	54.707	57.901	25.024	8.532	2.015	0.111
IA	0	478	506	421	119	74	9	94.698	95.467	34.778	8.027	1.575	0.064
KS	0	1111	610	404	168	54	16	131.845	111.398	41.278	11.143	2.198	0.409
LA	0	225	620	268	123	16	2	48.533	44.658	13.828	2.735	0.241	0.038
ME	0	21	44	17	0	0	0	2.292	1.383	0.215	0.000	0.000	0.000
MD	0	49	92	26	5	0	0	6.726	4.140	0.421	0.004	0.000	0.000
MA	0	24	72	31	8	3	0	4.402	3.877	1.510	0.572	0.132	0.000
MI	0	195	308	210	57	30	7	36.263	35.722	13.377	3.546	0.707	0.036
MN	0	372	336	158	53	28	6	50.812	42.833	12.790	2.647	0.461	0.024
MS	0	226	468	369	136	59	10	95.880	95.645	37.275	10.820	2.223	0.029
MO	0	298	577	334	109	48	1	56.884	51.702	16.941	4.077	0.717	0.000
MT	0	174	42	33	4	0	0	6.600	4.498	1.499	0.142	0.000	0.000
NE	0	827	585	255	105	42	4	101.906	103.088	43.378	12.267	1.240	0.057
NV	0	41	8	0	0	0	0	1.091	0.151	0.000	0.000	0.000	0.000
NH	0	24	34	15	2	0	0	1.893	0.986	0.190	0.004	0.000	0.000
NJ	0	43	58	23	4	0	0	5.535	2.200	0.262	0.002	0.000	0.000
NM	0	261	104	31	4	0	0	8.099	2.900	0.444	0.006	0.000	0.000
NY	0	101	106	35	21	5	0	15.840	12.698	4.707	1.834	0.451	0.000
NC	0	153	321	143	44	26	0	34.005	31.481	11.017	3.264	0.563	0.000
ND	0	490	211	91	28	7	3	15.072	10.245	3.571	1.141	0.290	0.036
OH	0	157	321	166	53	27	9	38.964	33.967	10.625	2.432	0.566	0.053
OK	0	845	808	626	209	83	9	130.454	123.048	44.709	11.494	2.197	0.175
OR	0	31	15	3	0	0	0	1.232	0.641	0.133	0.000	0.000	0.000
PA	0	93	220	143	26	22	2	19.367	18.474	6.720	1.912	0.422	0.011
RI	0	3	4	1	0	0	0	0.450	0.302	0.042	0.000	0.000	0.000
SC	0	136	234	100	31	15	0	26.642	25.878	9.423	2.450	0.413	0.000
SD	0	651	259	197	57	7	1	33.868	28.163	10.571	2.696	0.519	0.043
TN	0	107	241	139	76	29	4	41.914	41.180	15.784	3.959	0.380	0.000
TX	0	2632	1837	1067	317	76	5	198.122	152.627	52.269	12.795	2.187	0.046
UT	0	53	19	6	1	0	0	1.789	1.124	0.359	0.098	0.000	0.000
VT	0	7	14	12	0	0	0	1.267	0.751	0.127	0.000	0.000	0.000
VA	0	84	132	68	28	6	0	15.196	12.453	3.608	0.781	0.127	0.000
WA	0	24	17	12	3	0	0	1.340	0.262	0.062	0.010	0.000	0.000
WV	0	27	36	16	8	0	0	2.430	2.566	1.049	0.274	0.000	0.000
WI	0	204	378	276	62	24	5	64.616	60.037	19.695	3.515	0.636	0.083
WY	0	247	145	43	8	1	0	11.150	5.576	1.391	0.317	0.083	0.000
KY	0	79	168	133	65	35	3	28.992	31.452	12.522	3.293	0.572	0.026
IL	0	431	440	316	113	39	3	76.392	69.359	25.022	6.327	0.839	0.054

Torprobl.txt

KS	46	1111	610	404	168	54	16	3.5E-05	3.0E-05	1.1E-05	3.0E-06	5.8E-07	1.1E-07
OK	46	845	808	626	209	83	9	4.1E-05	3.9E-05	1.4E-05	3.6E-06	7.0E-07	5.5E-08
IA	46	478	506	421	119	74	9	3.7E-05	3.7E-05	1.4E-05	3.1E-06	6.1E-07	2.5E-08
MO	46	298	577	334	109	48	1	1.8E-05	1.6E-05	5.3E-06	1.3E-06	2.3E-07	2.6E-11
AR	46	198	298	331	149	31	0	3.2E-05	3.5E-05	1.3E-05	2.4E-06	1.9E-07	0.0E+00
IL	46	431	440	316	113	39	3	3.0E-05	2.7E-05	9.8E-06	2.5E-06	3.3E-07	2.1E-08
KY	46	79	168	133	65	35	3	1.6E-05	1.7E-05	6.9E-06	1.8E-06	3.1E-07	1.4E-08
TN	46	107	241	139	76	29	4	2.2E-05	2.2E-05	8.3E-06	2.1E-06	2.0E-07	1.7E-10
MS	46	226	468	369	136	59	10	4.4E-05	4.4E-05	1.7E-05	5.0E-06	1.0E-06	1.3E-08
IN	46	246	336	263	108	77	8	3.3E-05	3.5E-05	1.5E-05	5.2E-06	1.2E-06	6.7E-08
OH	46	157	321	166	53	27	9	2.1E-05	1.8E-05	5.6E-06	1.3E-06	3.0E-07	2.8E-08
AL	46	165	364	323	129	36	14	2.9E-05	3.2E-05	1.3E-05	3.7E-06	6.9E-07	4.3E-08
KS	33	625	411	339	129	42	8	2.6E-05	2.3E-05	8.2E-06	1.8E-06	2.2E-07	1.9E-08
OK	33	490	621	525	176	67	9	3.8E-05	3.6E-05	1.3E-05	3.0E-06	6.0E-07	7.7E-08
IA	33	205	290	298	84	42	9	2.9E-05	2.8E-05	9.7E-06	1.9E-06	3.4E-07	3.5E-08
MO	33	162	430	293	97	46	1	1.9E-05	1.8E-05	6.4E-06	1.6E-06	3.0E-07	3.6E-11
AR	33	114	238	289	135	24	0	3.4E-05	3.9E-05	1.5E-05	2.9E-06	2.3E-07	0.0E+00
IL	33	235	298	264	95	29	1	2.8E-05	2.5E-05	8.6E-06	1.9E-06	2.0E-07	2.4E-09
KY	33	10	108	95	62	34	3	1.7E-05	2.0E-05	8.4E-06	2.5E-06	4.3E-07	1.9E-08
TN	33	35	168	112	47	26	4	2.1E-05	1.9E-05	6.7E-06	1.5E-06	2.1E-07	2.4E-10
MS	33	99	245	290	105	40	10	3.0E-05	3.2E-05	1.2E-05	2.7E-06	4.5E-07	1.9E-08
IN	33	145	251	202	87	61	8	2.8E-05	3.1E-05	1.4E-05	4.9E-06	1.2E-06	9.4E-08
OH	33	87	217	122	41	22	6	1.7E-05	1.5E-05	4.6E-06	9.9E-07	2.1E-07	2.0E-08
AL	33	71	228	252	95	28	14	2.4E-05	2.5E-05	9.9E-06	2.6E-06	5.1E-07	6.1E-08

2

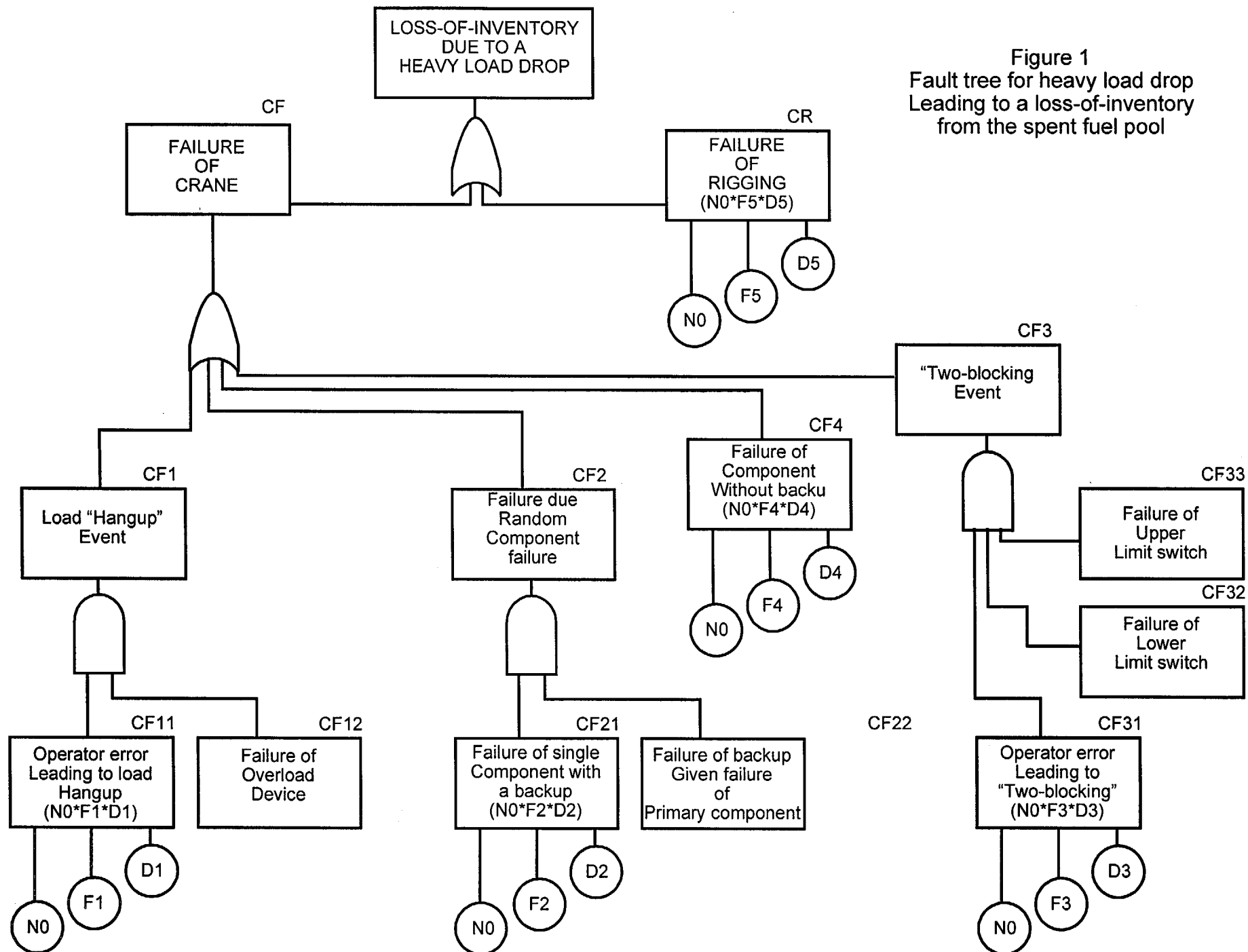
Report#,Date,Crane,Atype,ACause,Charge,Function,OpMode
navycrane.txt

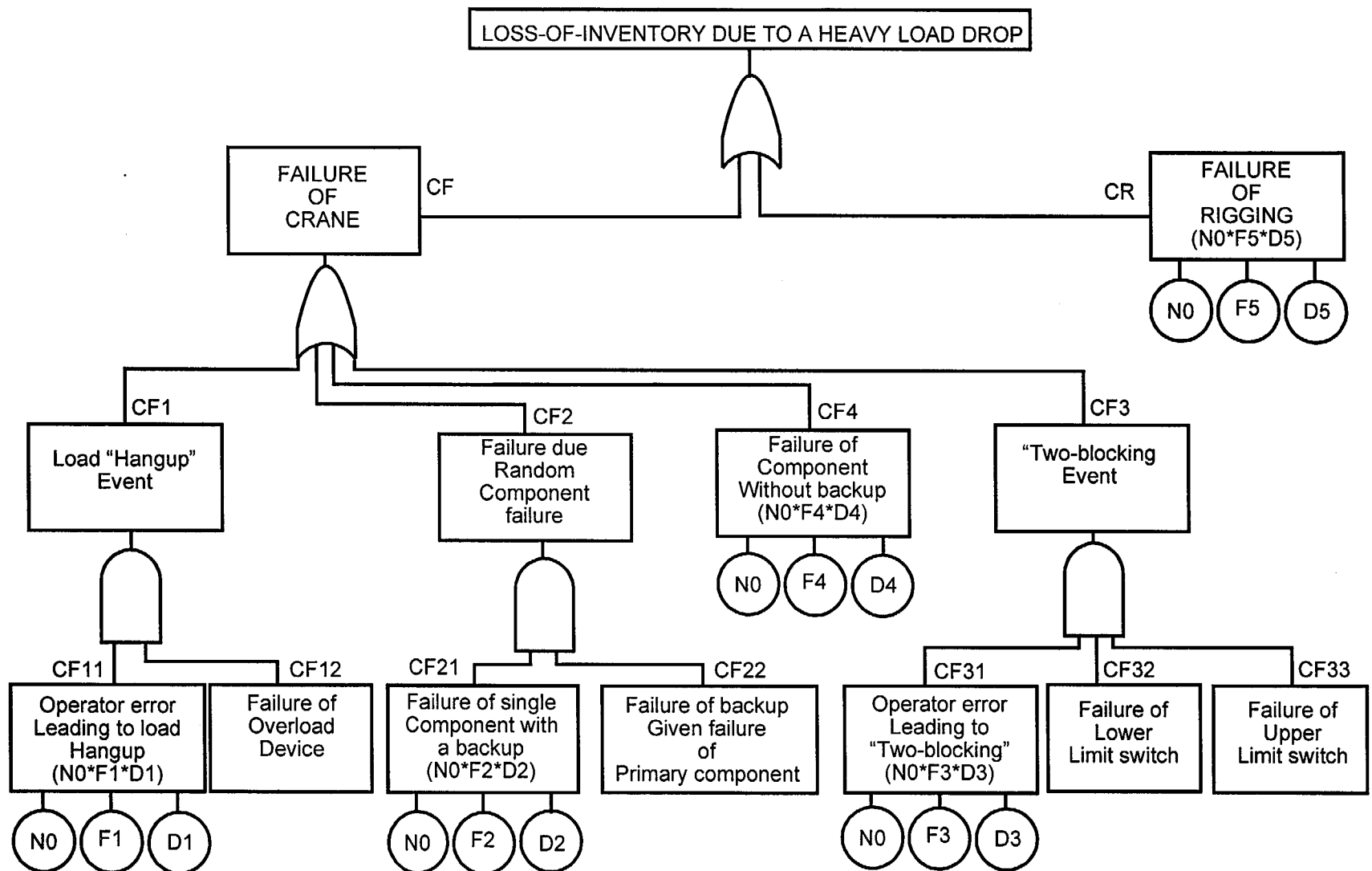
96004,04/25/96,BS,PI,IR,R,NA,OP
96013,07/09/96,BS,DC,IR,R,H,OP
96005,07/13/96,BS,DL,IR,R,H,OP
96028,08/09/96,BS,DC,IO,O,HT,OP
96017,09/06/96,BS,DL,EQ,EC,H,OP
96010,09/25/96,BS,DL,IR,R,H,OP
96041,11/08/96,BS,LC,IR,R,H,OP
96014,12/03/96,BS,UL,IO,O,L,ODCL
97001,01/08/97,BS,PI,IR,R,IDLE,OP
97008,02/26/97,BS,CC,PROC,EC,T,OP
97004,02/27/97,BS,LC,VISI,R,H,OP
97016,04/30/97,BS,DROP,EQ,R,ROT,OP
97014,06/02/97,BS,OVER,PROC,MG,H,OP
97013,12/01/97,BS,DC,IO,O,UNK,OP
98001,01/06/98,BS,DROP,IR,R,L,OP
98002,02/18/98,BS,DROP,IR,R,H,OP
98007,05/15/98,BS,LC,IO,P,B,OP
98008,06/26/98,BS,TB,PROC,M,H,MAIN
98010,07/02/98,BS,LC,IO,O,L,OP
98009,07/21/98,BS,CC,IO,O,B,OP
98013,08/28/98,BS,OVER,IR,R,H,OP
98010,12/22/98,BS,OVER,IO,R,H,OP
98017,11/06/98,BS,OTHER,PROC,P,T,OP
98018,12/11/98,BS,OVER,IR,R,H,OP
98029,12/14/98,BS,CC,PROC,O,T,OP
99005,03/03/99,BS,LC,PROC,R,HOLD,TEST
99008,03/30/99,BS,LC,IR,R,T,OP
99003,04/13/99,BS,OVER,IR,R,H,OP
99013,05/08/99,BS,CC,COMM,ISP,TROL,ISP
95001,05/09/95,BNS,DC,IR,R,H,OP
95002,08/30/95,BNS,CC,TC,M,T,MAIN
95001,12/05/95,BNS,DROP,IR,R,H,OP
96001,02/08/96,ONS,DC,IO,UNK,H,OP
96002,07/01/96,ONS,PI,IR,SHOP,H,OP
96002,09/09/96,BNS,CC,II,CONT,T,OP
97001,02/05/97,BNS,OVER,IO,O,H,OP
97001,02/10/97,BNS,PI,IO,O,H,OP
97002,04/18/97,BNS,PI,PROC,WELD,H,OP
97001,04/29/97,BNS,DROP,IR,R,H,OP
97010,10/01/97,BNS,CC,IO,UNK,B,OP
97003,10/30/97,BNS,SHOCK,IR,FWORK,H,OP
97001,11/04/97,BNS,CC,IO,O,B,OP
97009,11/19/97,BNS,OVER,PROC,MG,H,OP
98001,01/13/98,BNS,DC,IO,O,H,OP
98004,02/02/98,BNS,DC,IO,O,B,MAIN
98004,02/11/98,BNS,LC,IO,O,L,OP
98001,02/26/98,BNS,DC,PROC,MECH,L,MAIN
98002,03/13/98,BNS,DC,IO,MG,N/A,OP
98006,04/10/98,BNS,DC,IR,R,L,OP
98001,04/28/98,BNS,DC,IO,O,TROL,OP
98004,05/05/98,BNS,CC,IO,O,T,OP
98008,07/29/98,BNS,OVER,PROC,MG,H,OP
98005,01/08/98,BNS,TB,IO,CONT,H,UNK
98001,11/04/98,BNS,DROP,EQ,R,H,OP
97008,10/01/97,BNS,CC,IO,O,T,OP
99003,10/15/98,BNS,DC,IO,O,T,OP
99004,10/15/98,BNS,DC,IO,O,H,OP
99001,10/30/98,BNS,LC,IO,O,H,OP
98004,11/18/98,BNS,DC,IR,R,H,OP
98006,12/09/98,BNS,CC,VISI,R,T,OP
99007,01/29/99,BNS,DC,PROC,M,T,MAIN
99003,02/22/99,MONO,TB,IO,O,H,OP
99001,03/30/99,BNS,LC,IO,R,H,OP
99008,03/20/99,BNS,DC,PROC,MG,T,OP
99002,04/12/99,BNS,DC,IR,IR,H,OP
98004,08/04/98,BNS,DC,PROC,ISP,H,OP

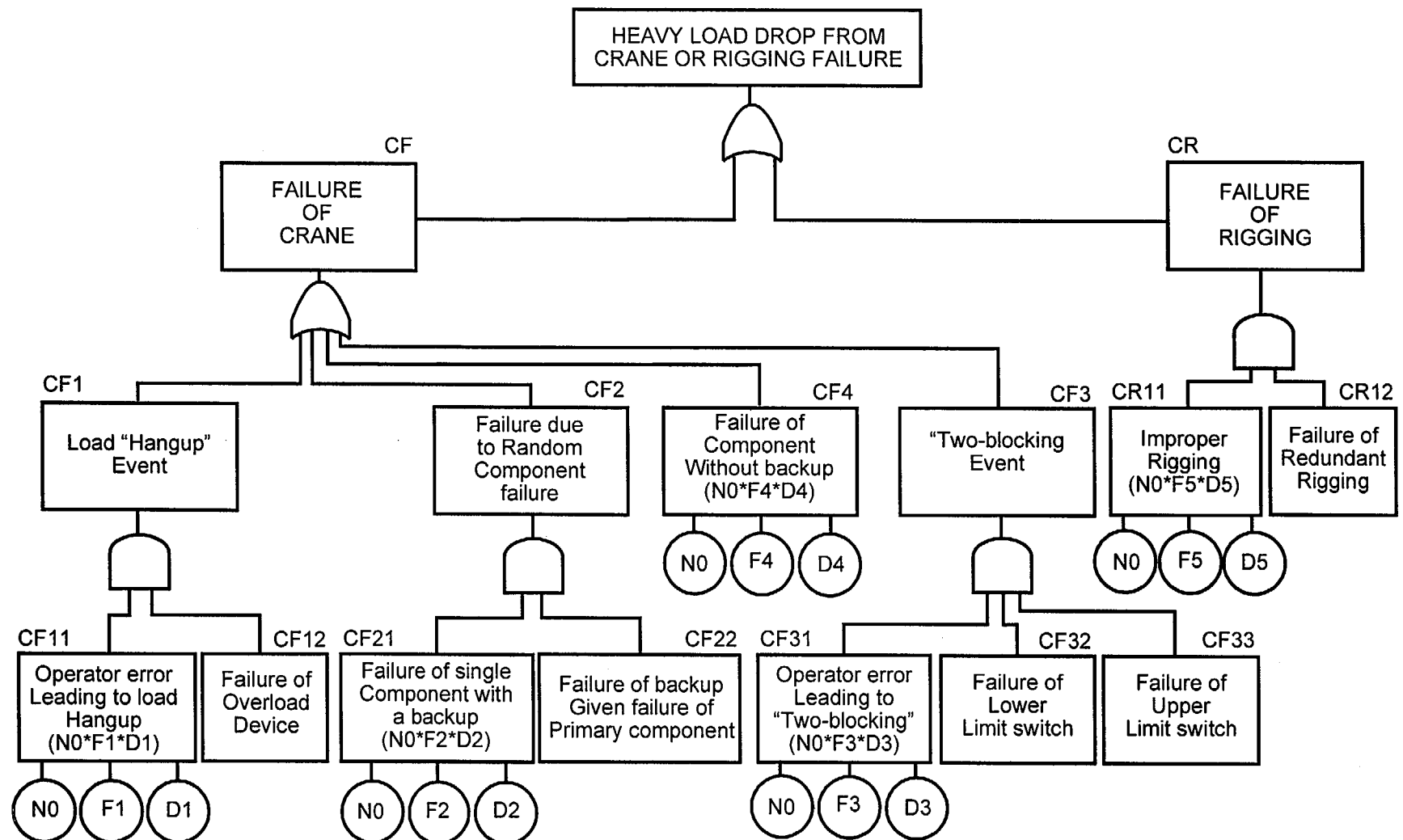
PI,5,7.58
DC,18,27.27
DL,3,4.55
LC,9,13.64
UL,1,1.52

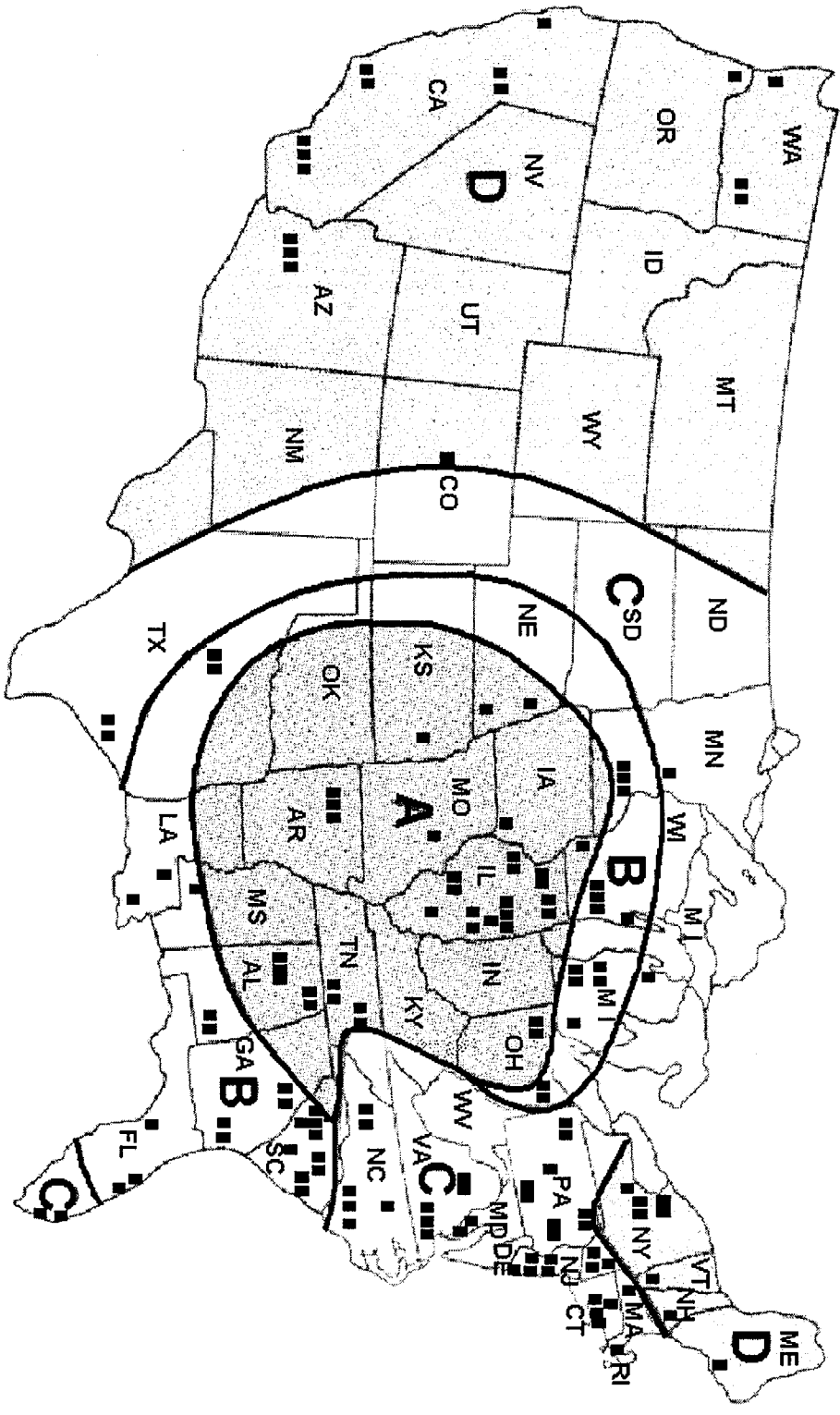
CC,11,16.67
DROP,6,9.09
OVER,8,12.12
TB,3,4.55
OTHER,1,1.52
SHOCK,1,1.52
 ,66

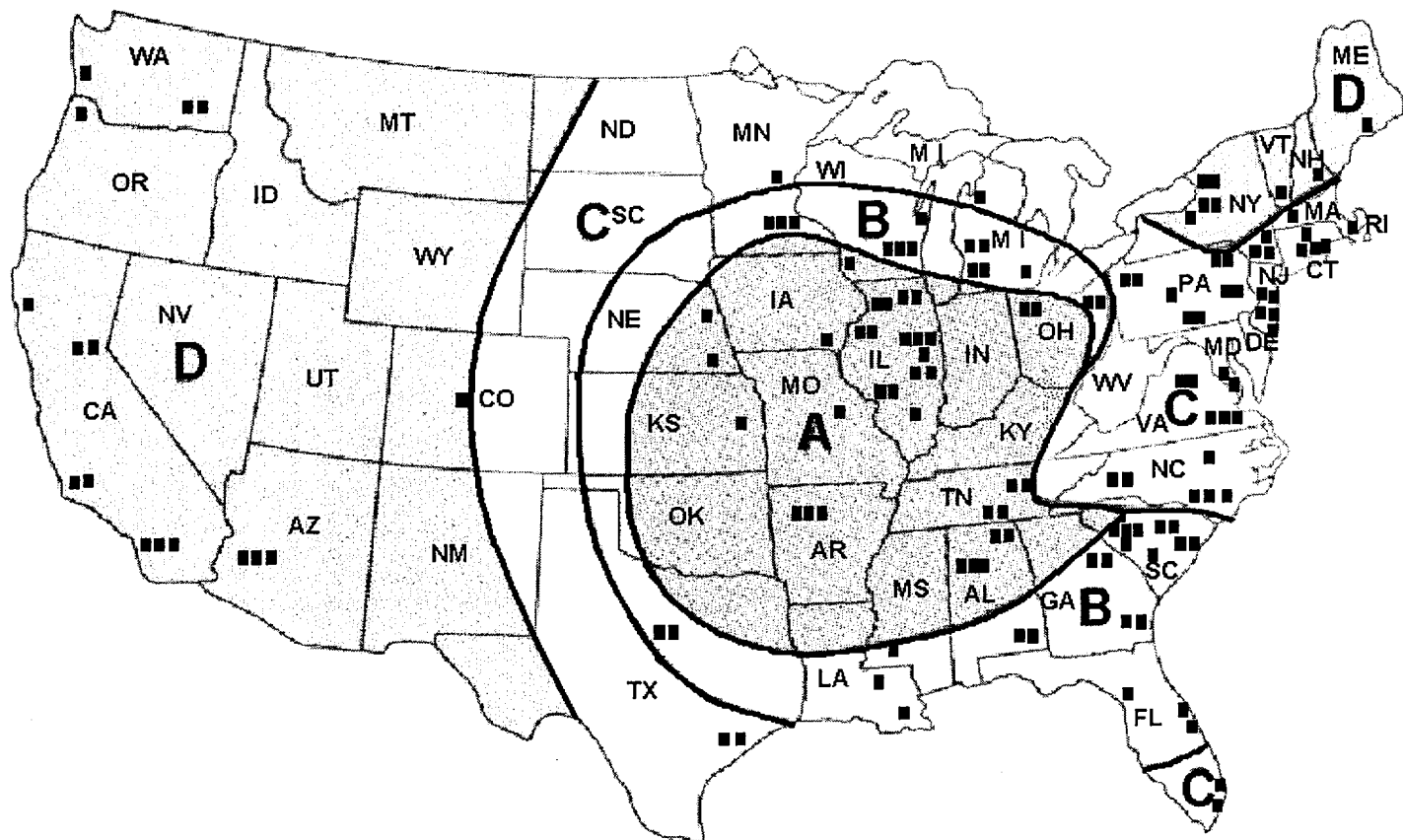
navycrane.txt



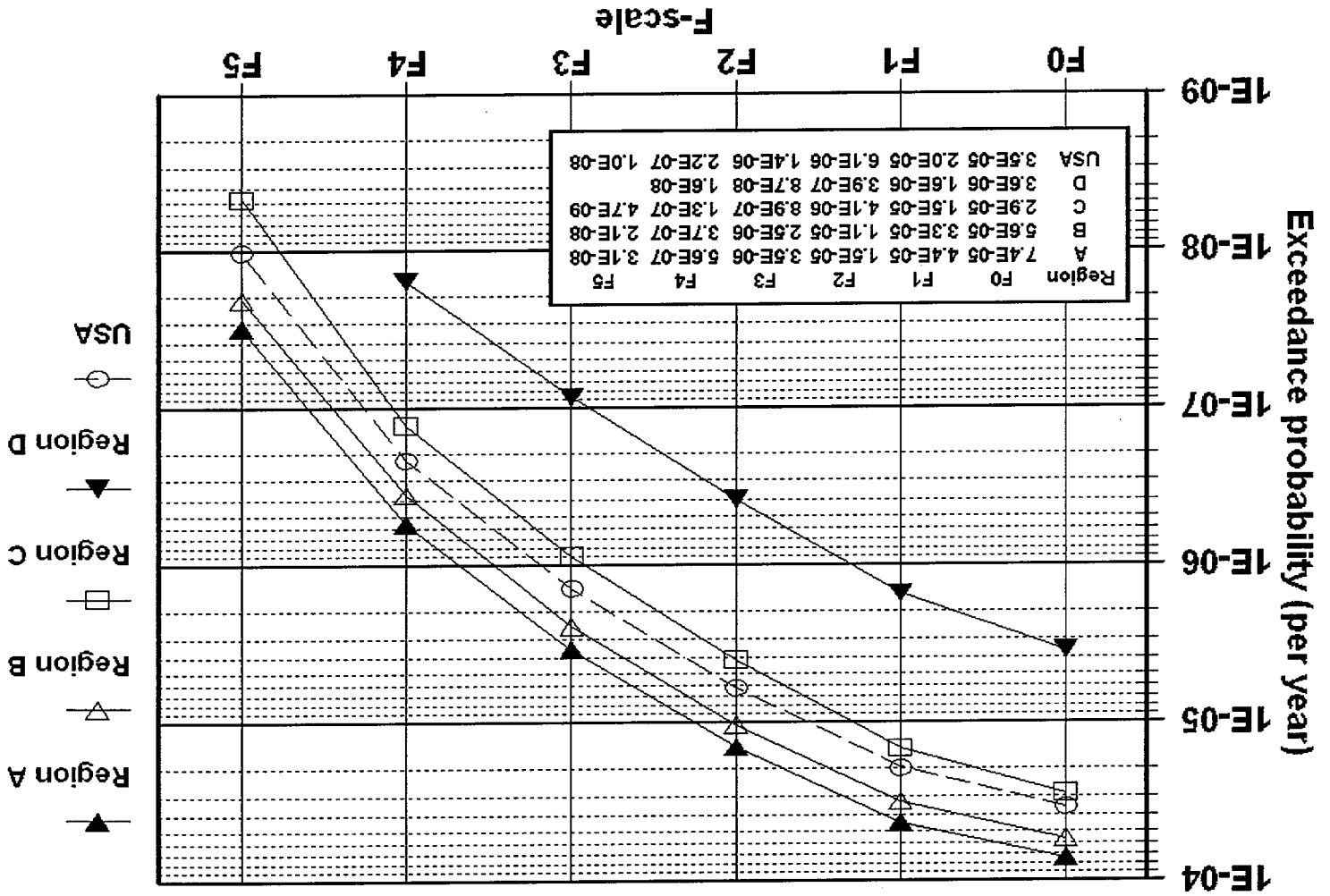




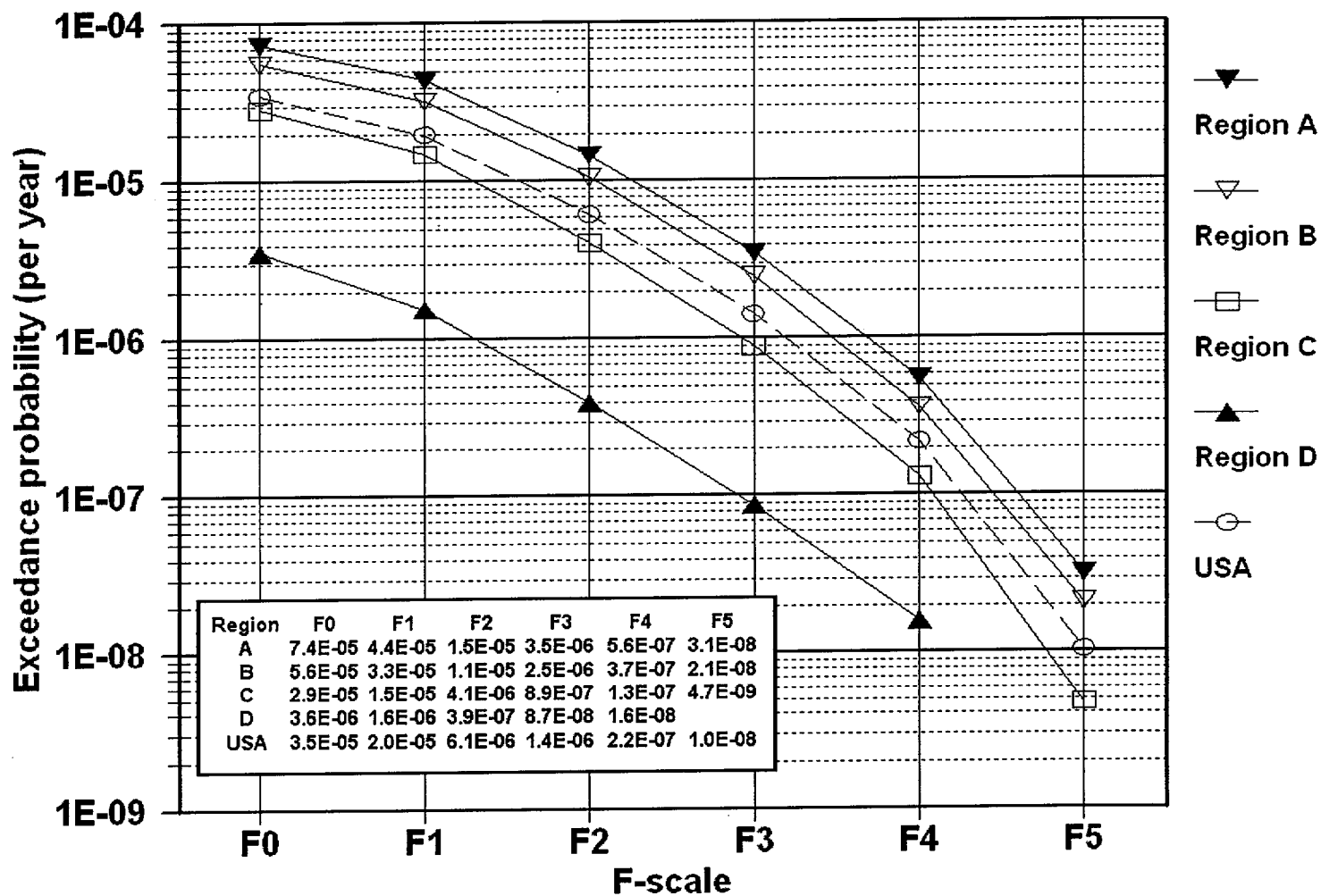




Tornado Exceedance Probability Based on NUREG/CR-2944

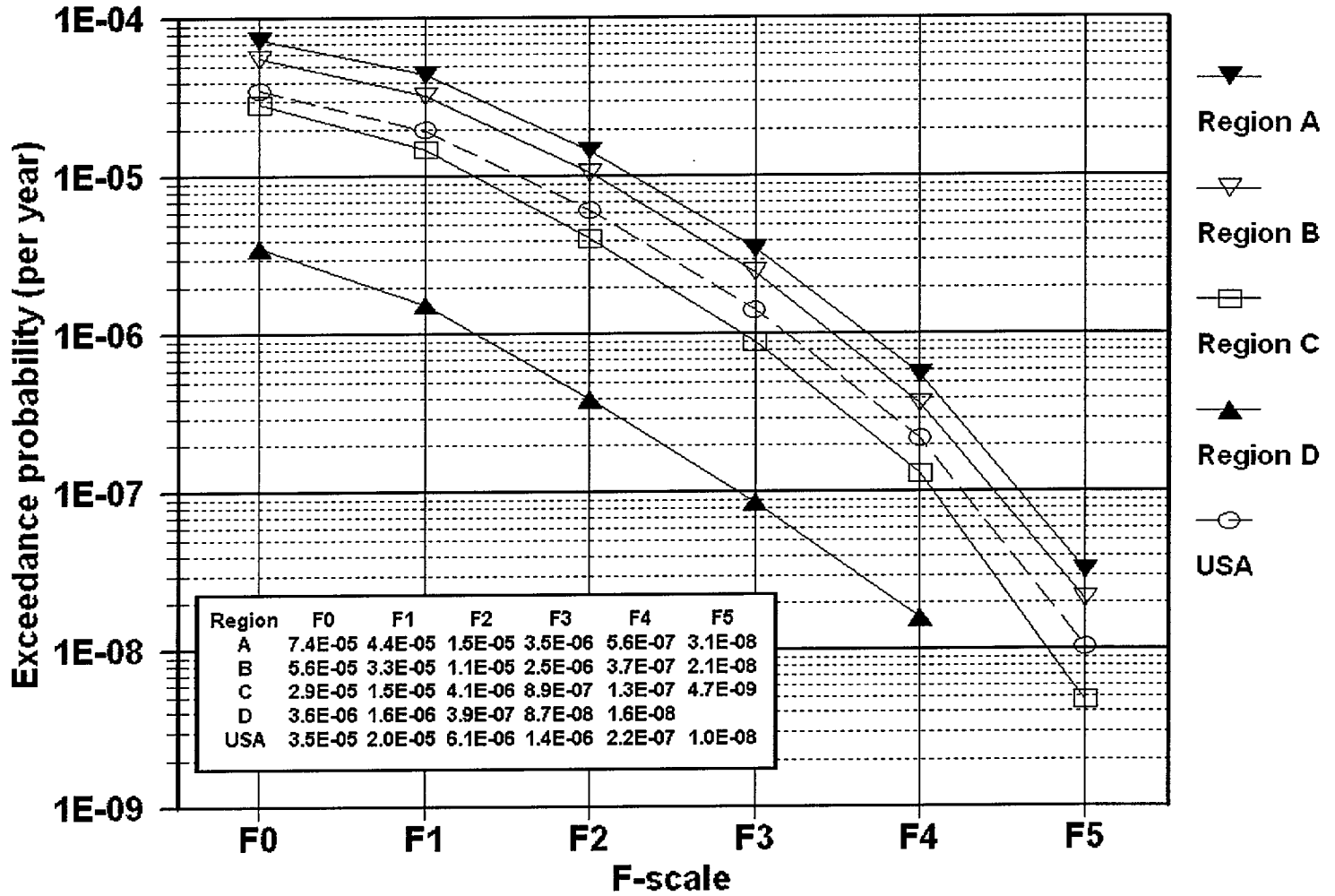


Tornado Exceedance Probability Based on NUREG/CR-2944

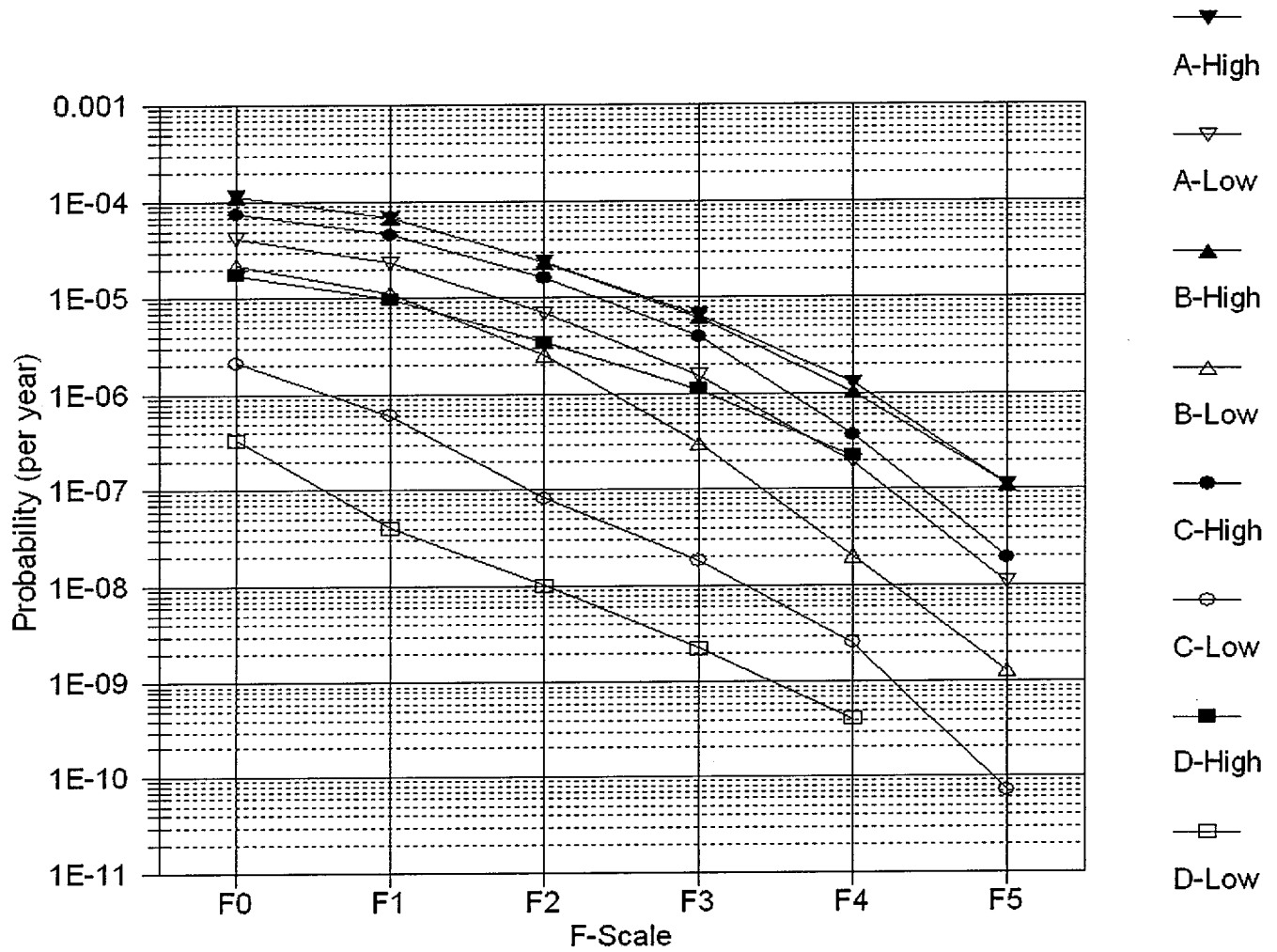


Tornado Exceedance Probability

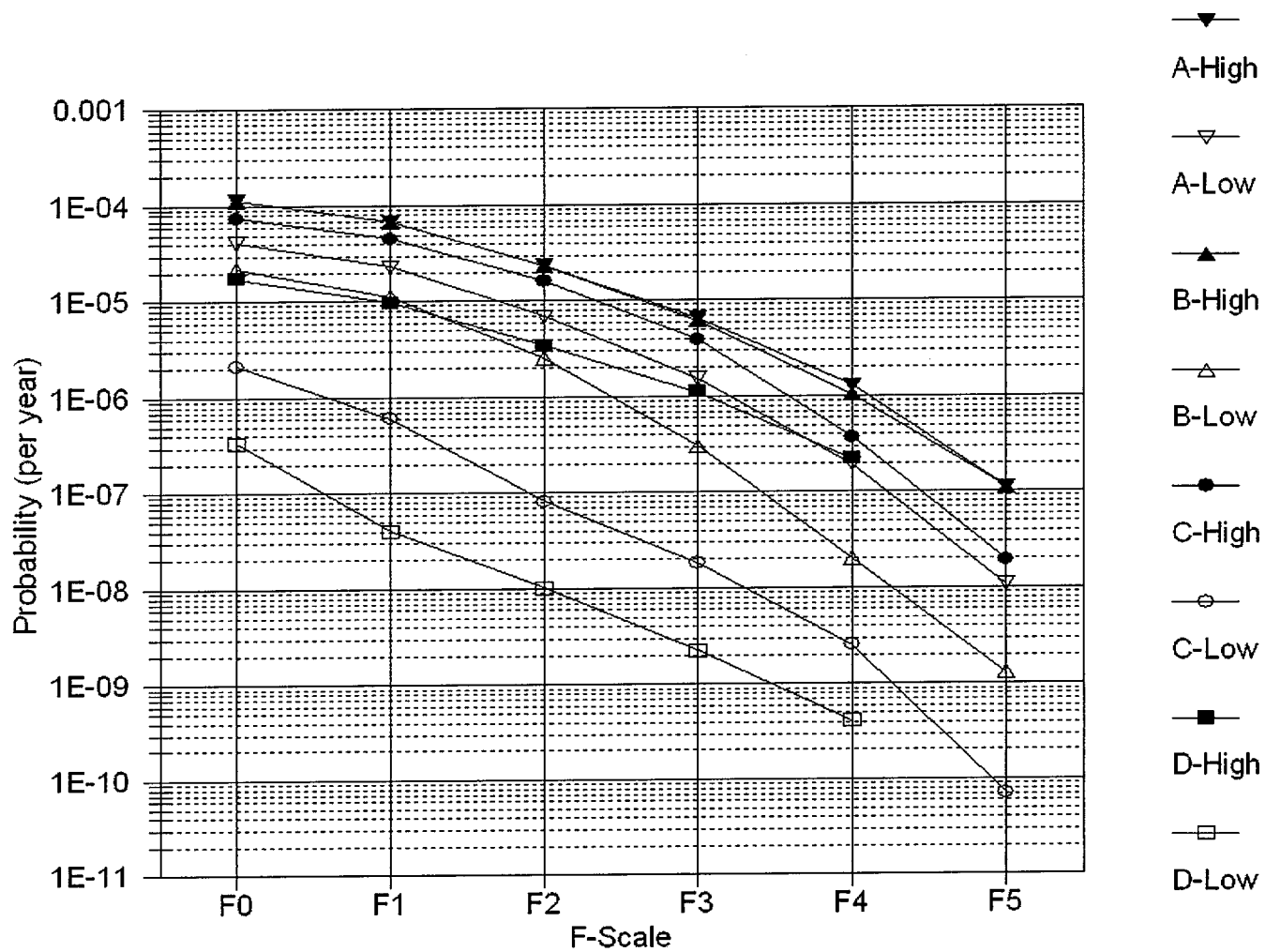
Based on NUREG/CR-2944

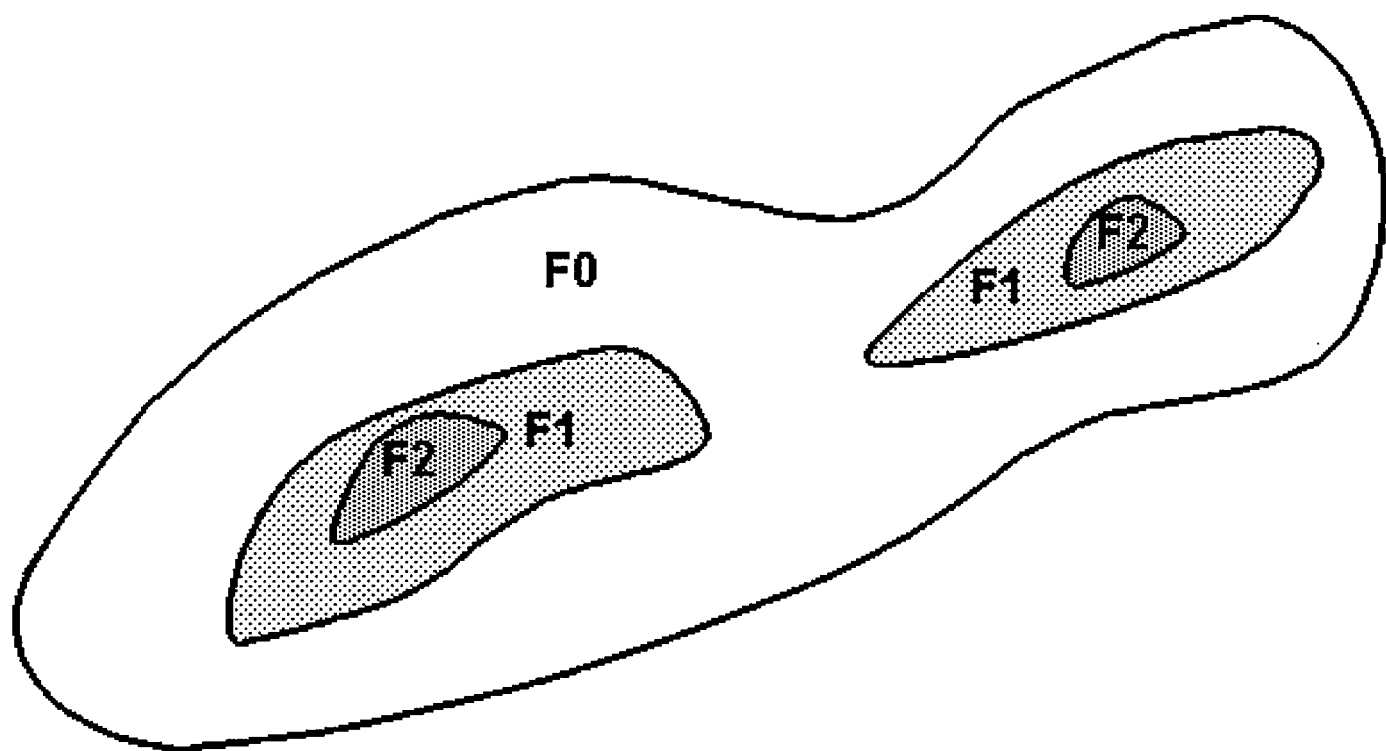


Exceedance Probability
Low estimate in NUREG/CR-2944 region

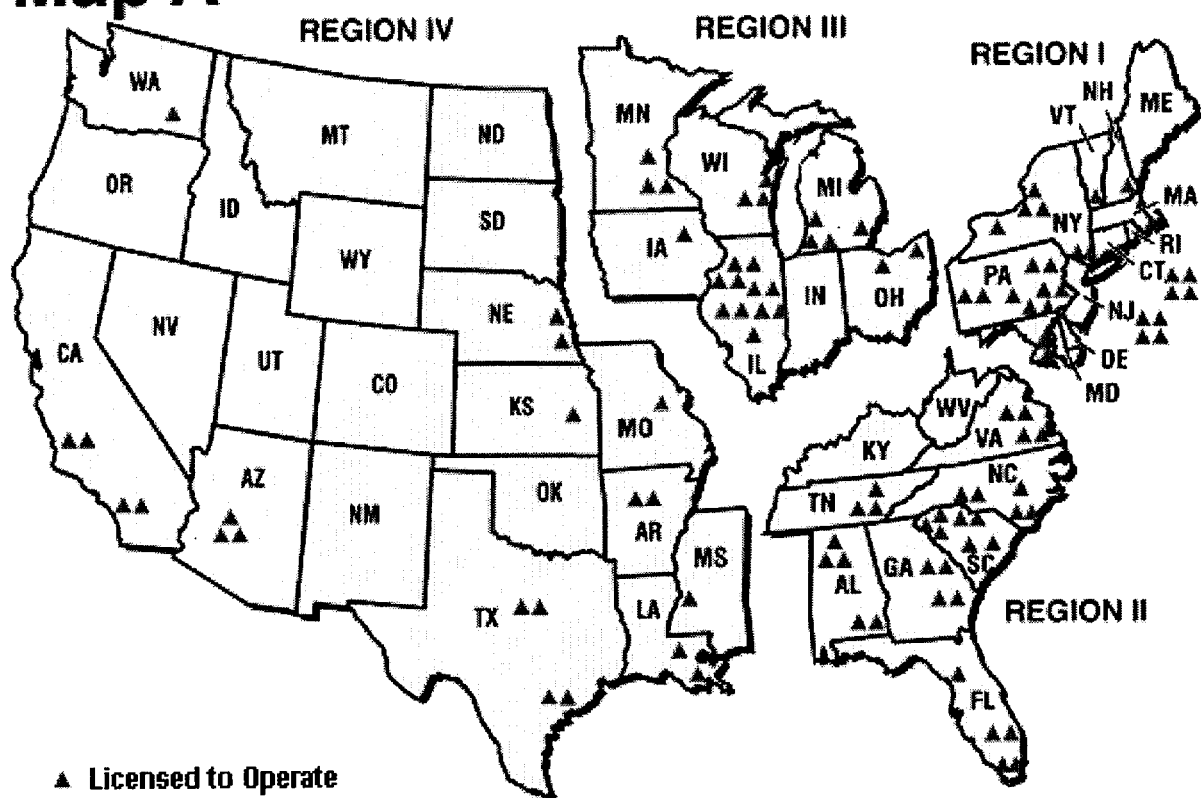


Exceedance Probability
Low estimate in NUREG/CR-2944 region

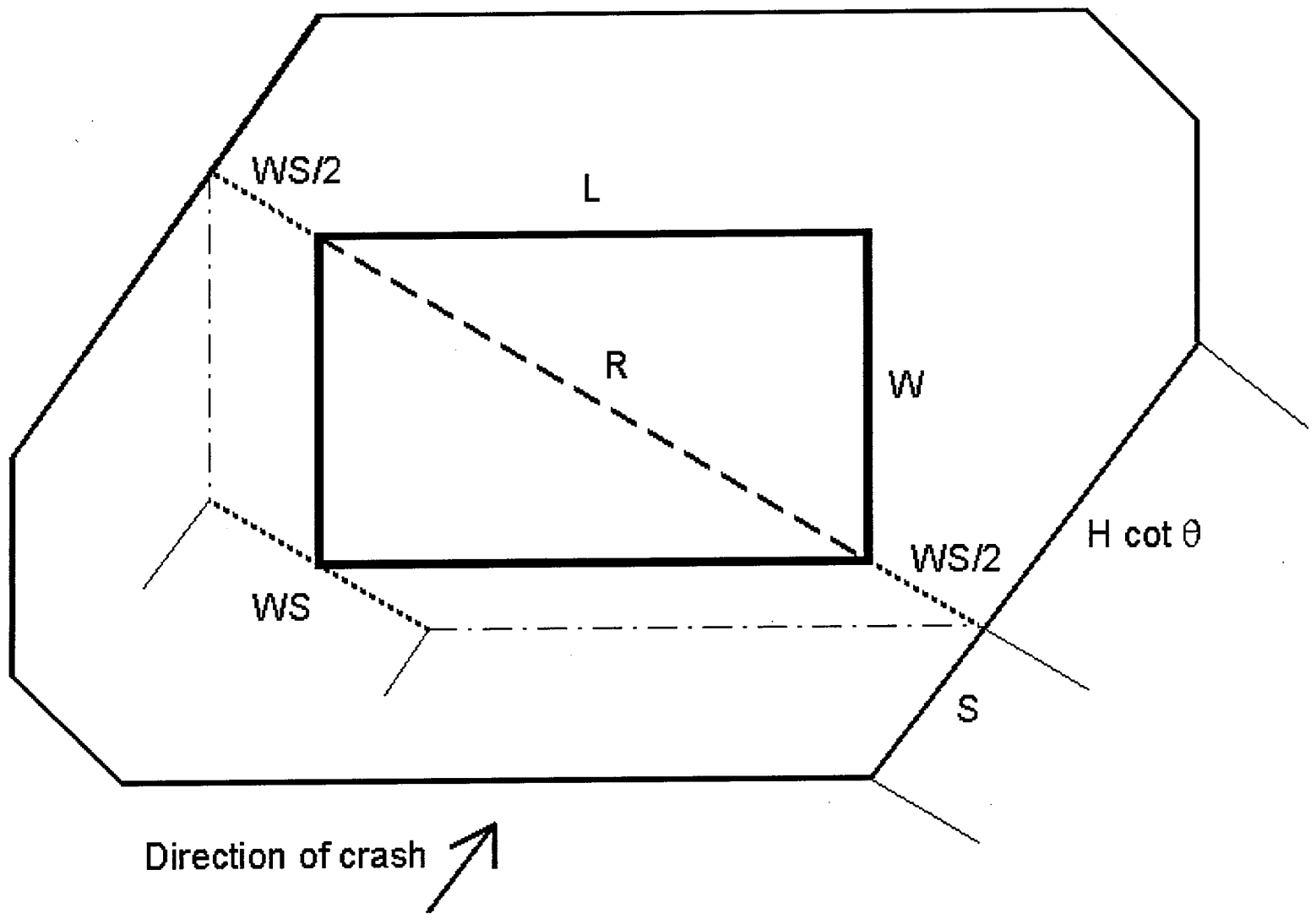




Map A



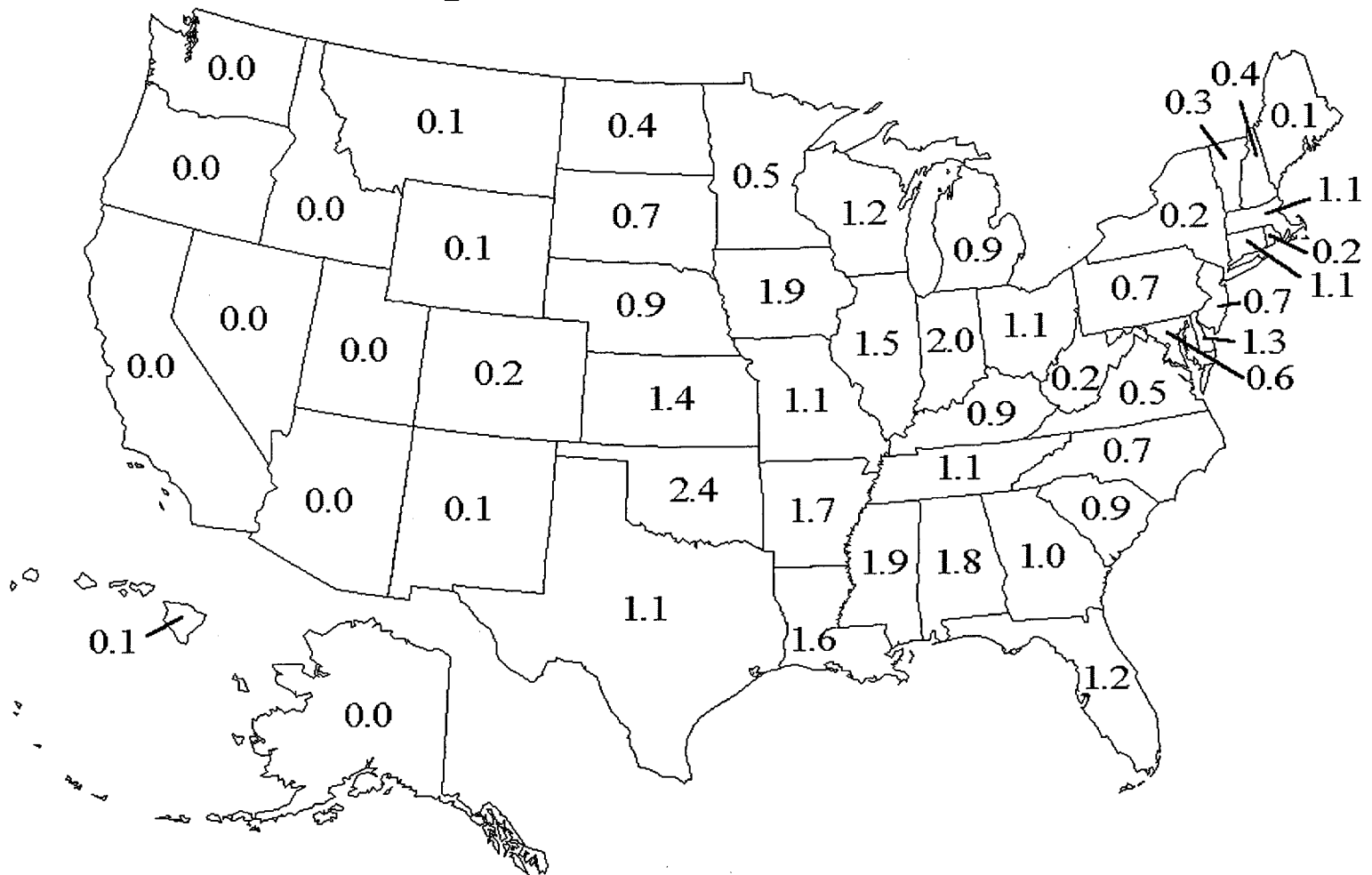
Note: There are no commercial reactors in Alaska or Hawaii.



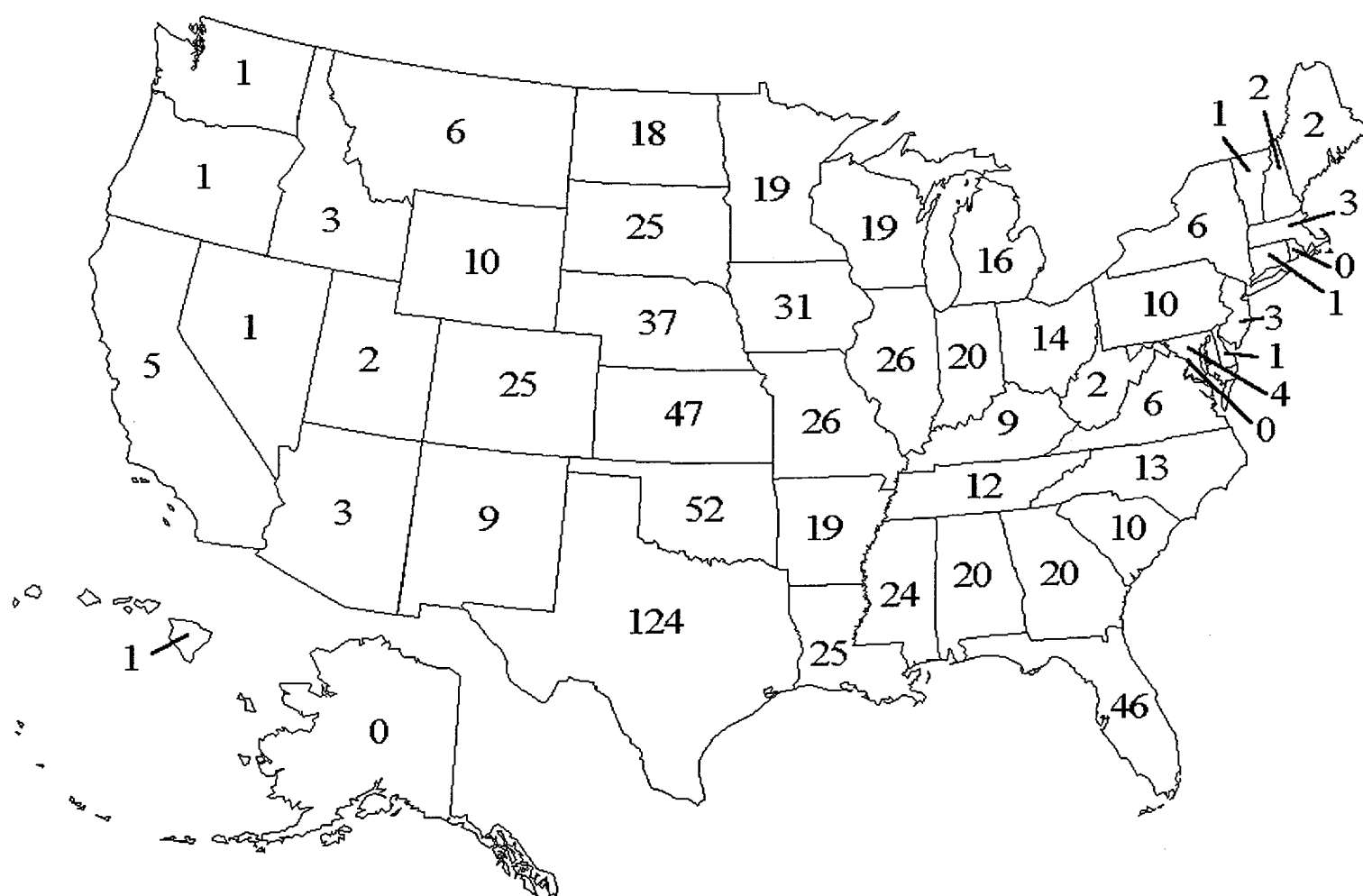
Annual Average Number of Strong-Violent (F2-F5) Tornadoes, 1950-1995



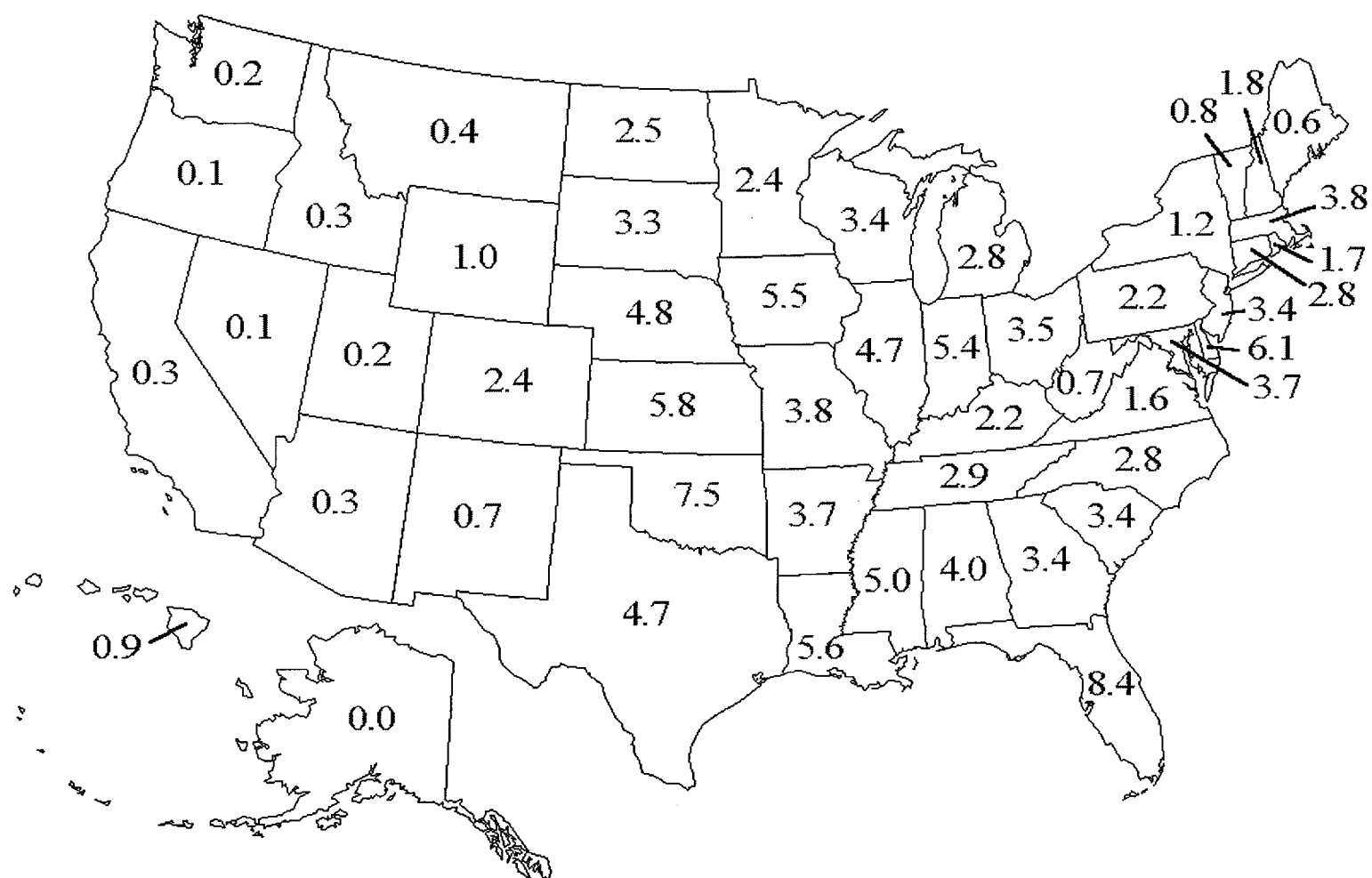
Average Annual Number of Strong-Violent (F2-F5) Tornadoes per 10,000 Square Miles by State

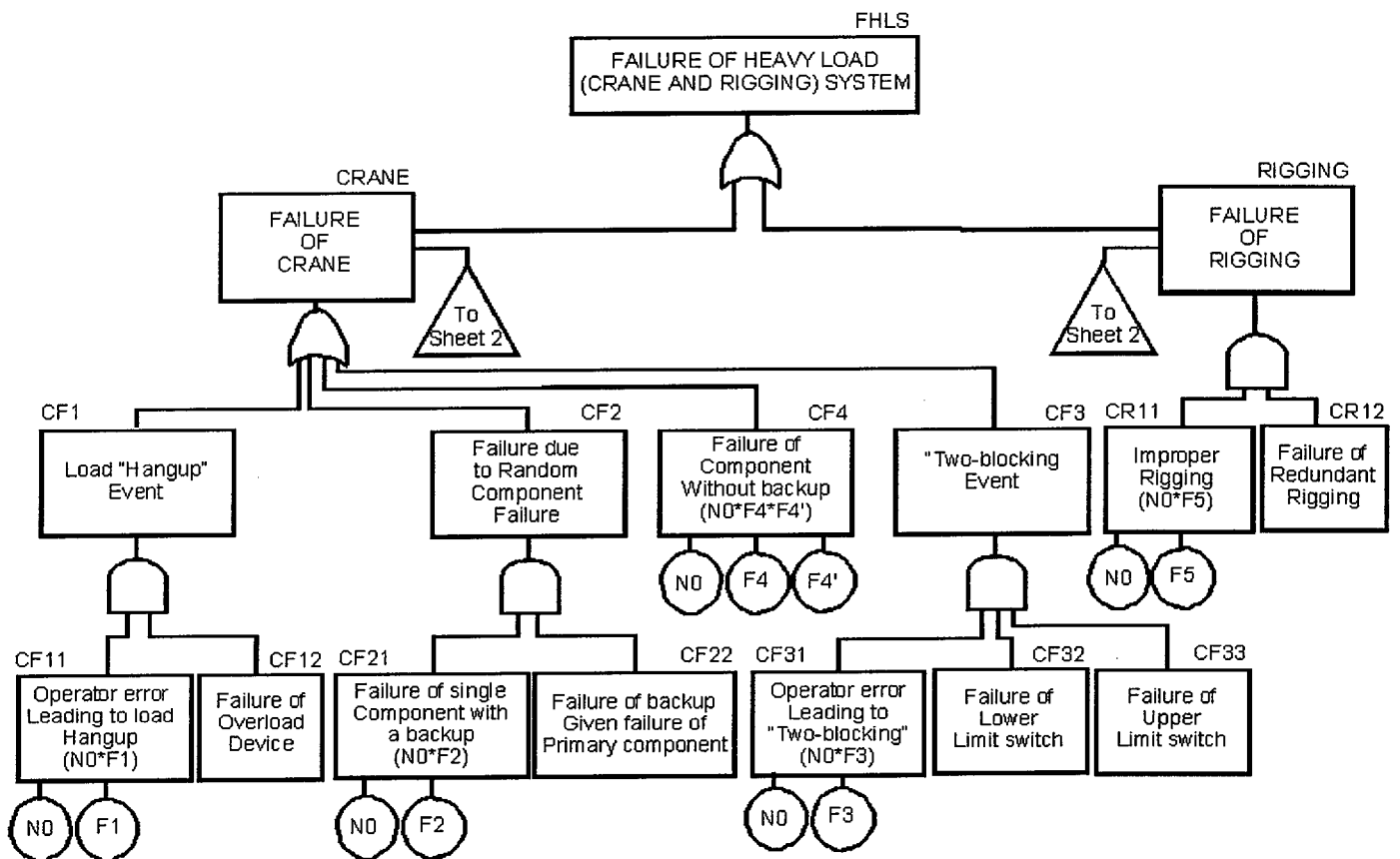


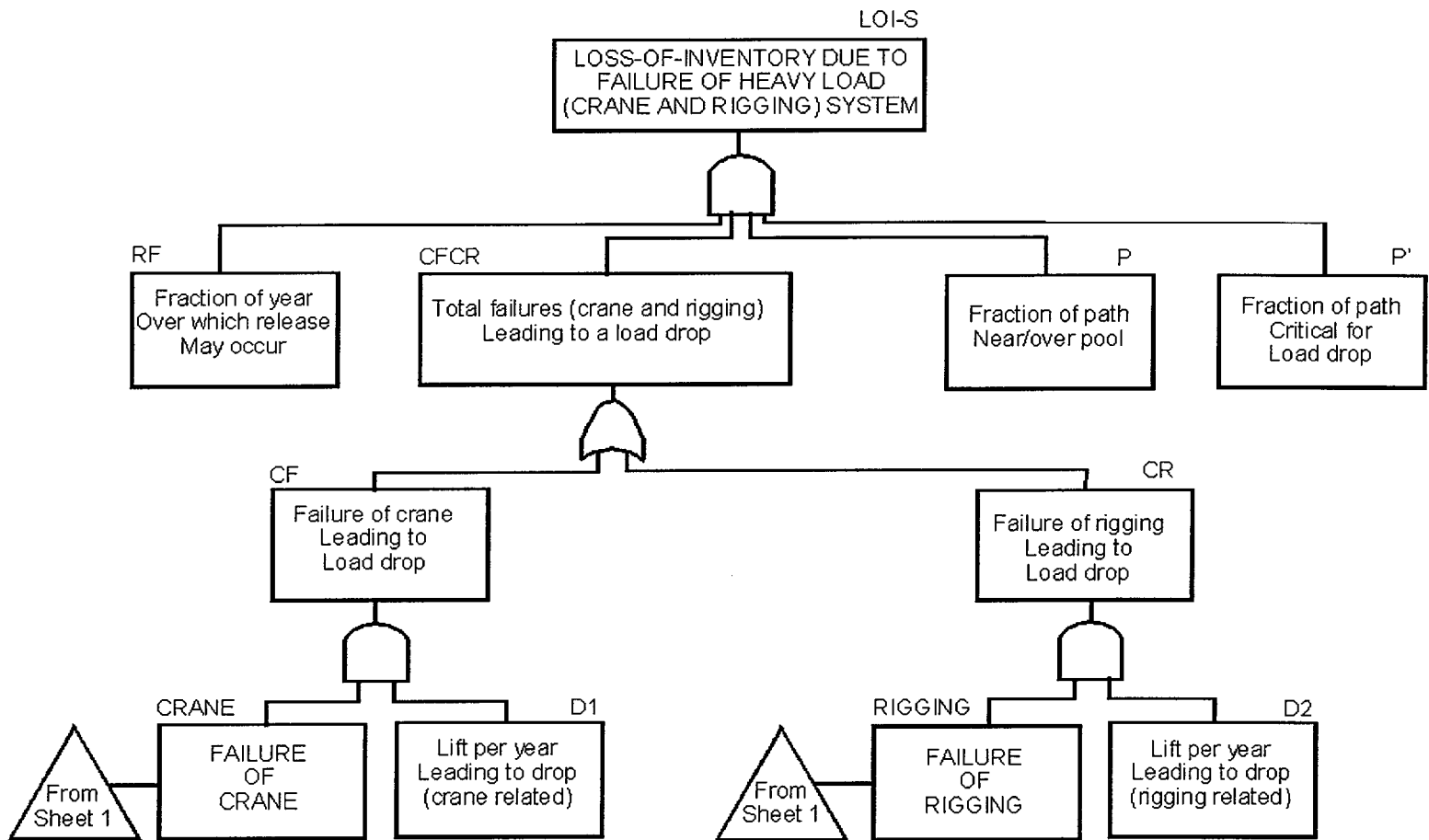
Annual Average Number of Tornadoes, 1950-1995

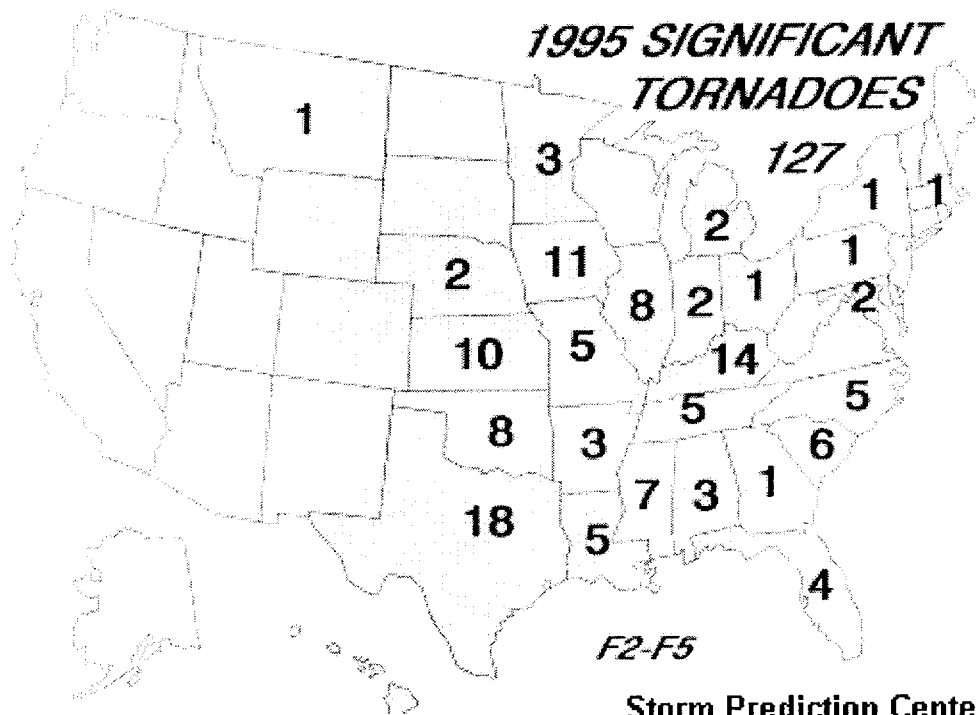


Annual Average Number of Tornadoes per 10,000 Square Miles by State, 1950-1995



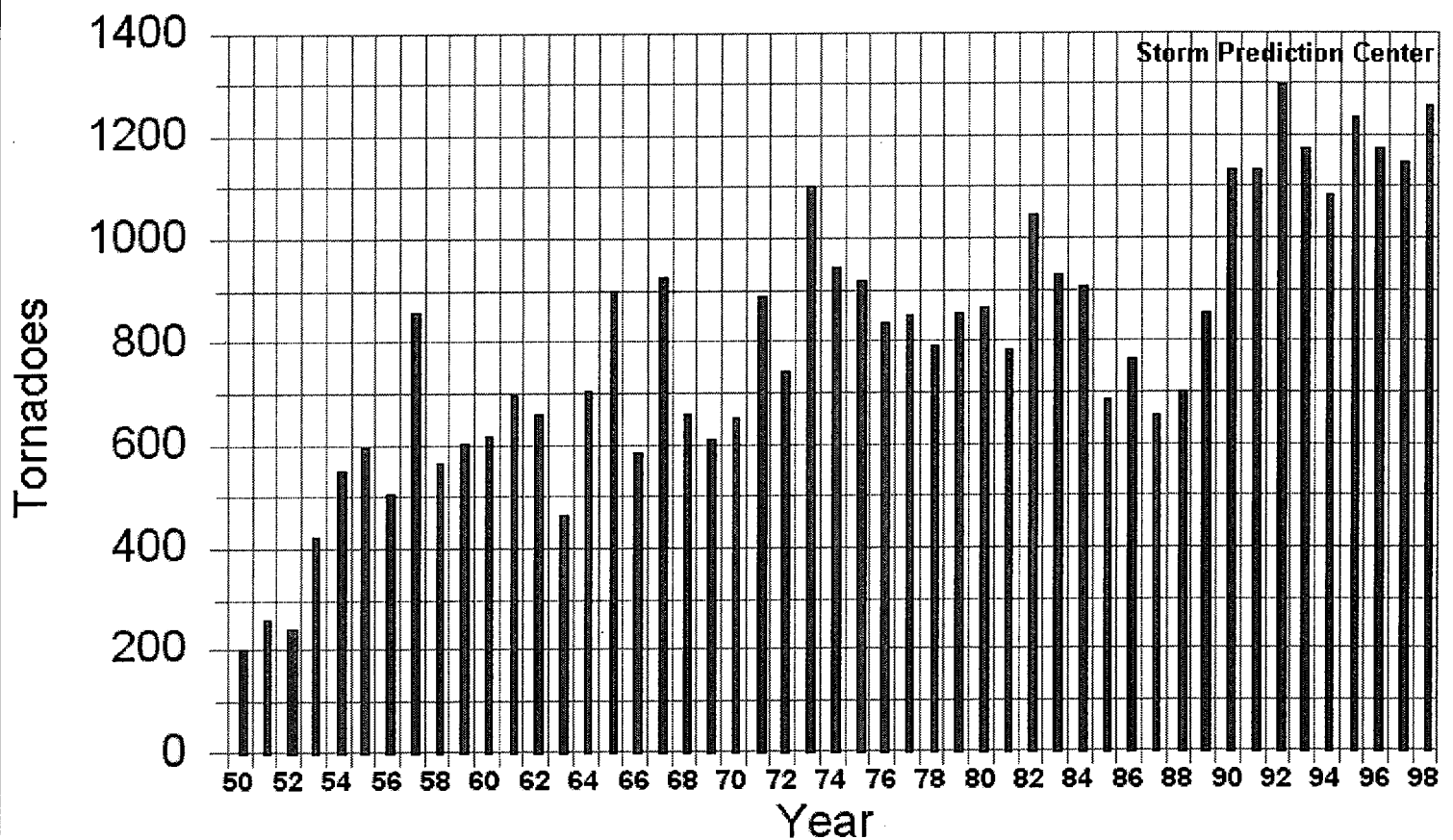


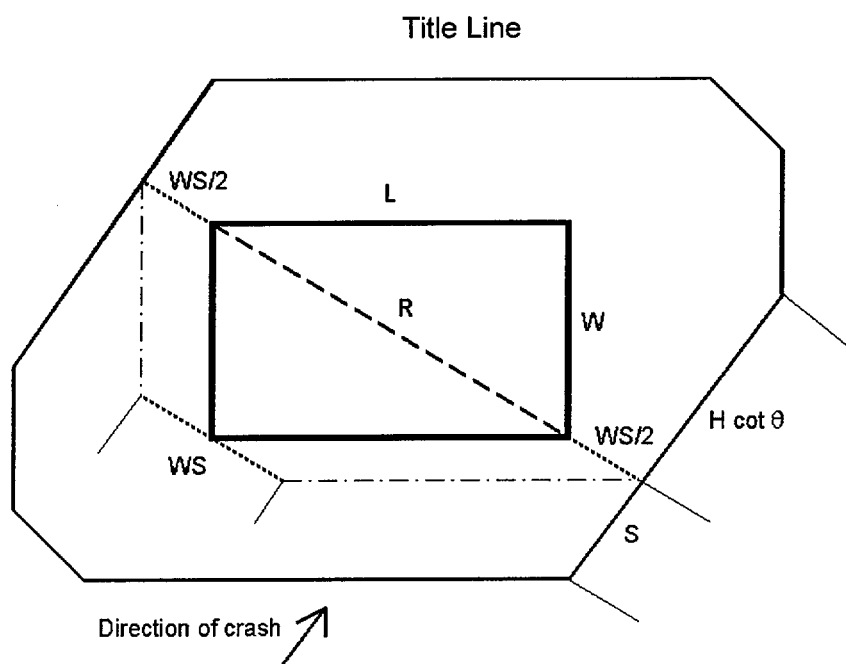




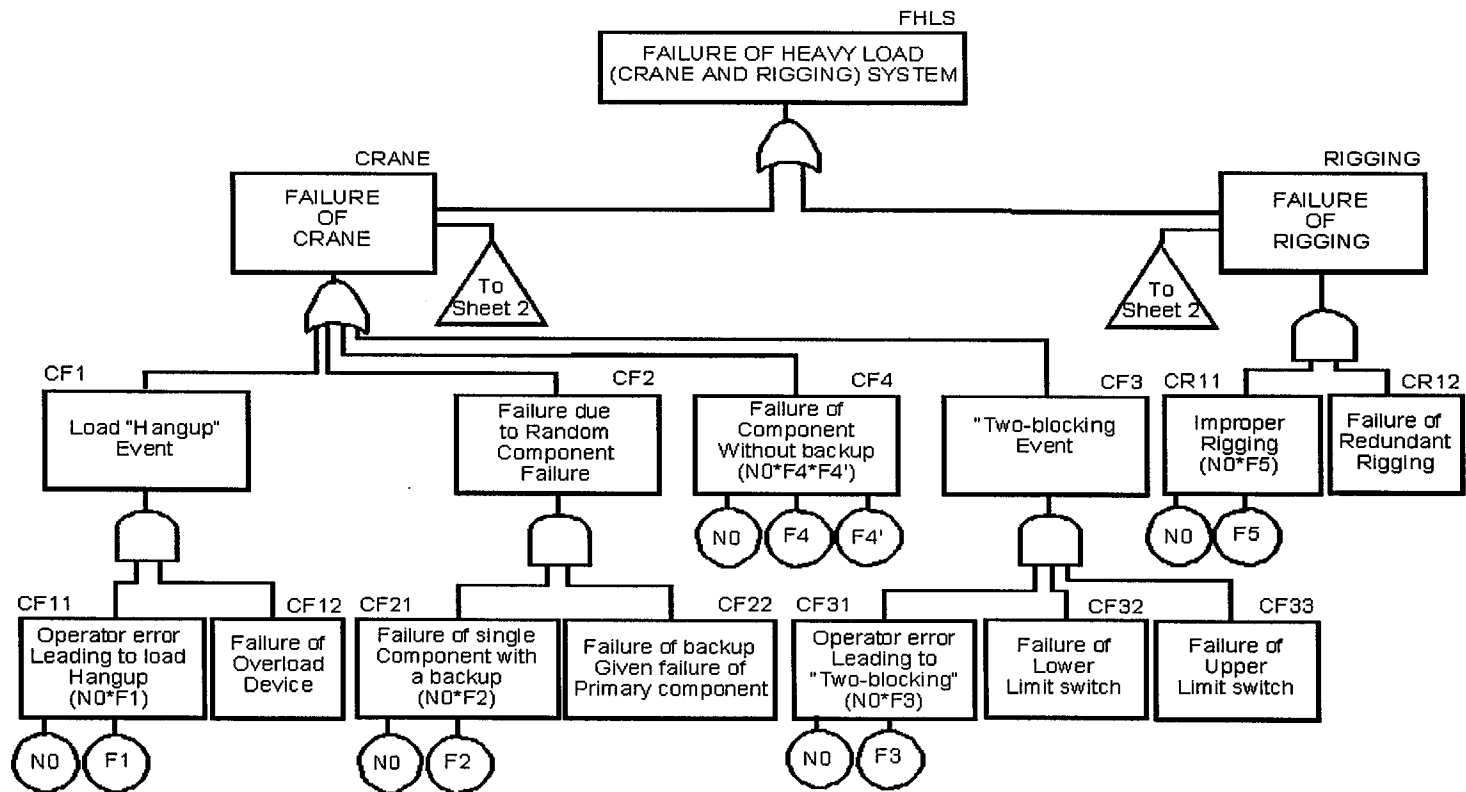
Tornadoes by Year

1950-1998

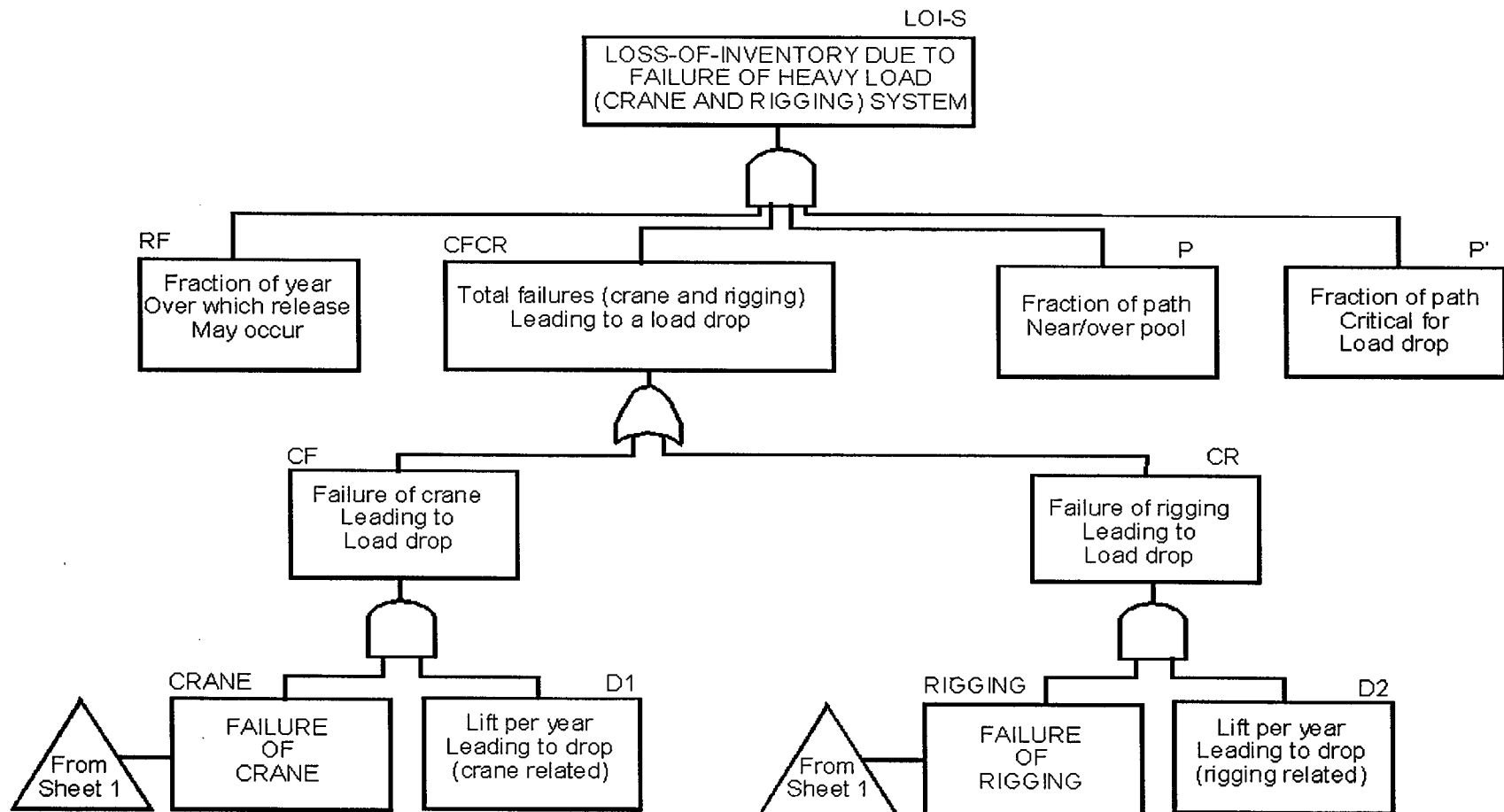




Title Line

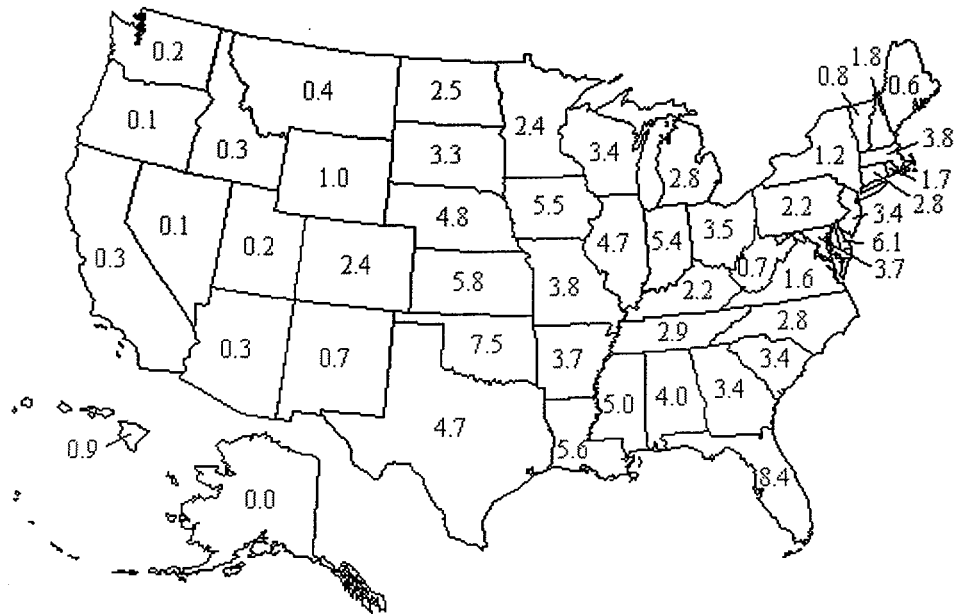


Title Line



Title Line

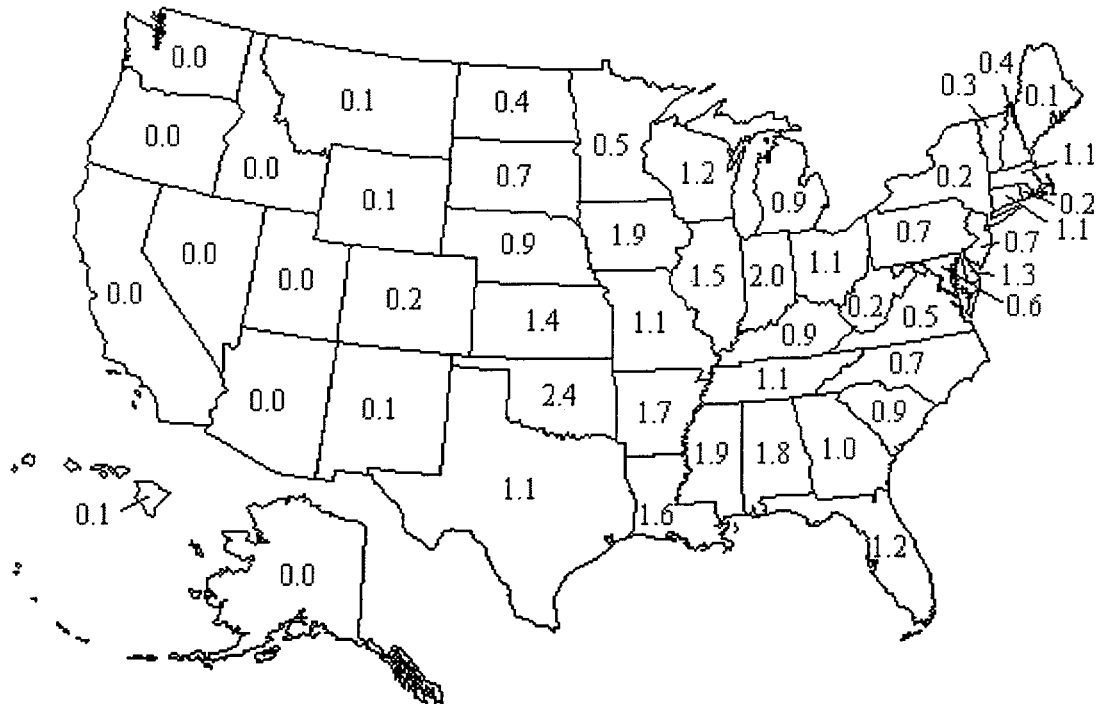
**Annual Average Number of Tornadoes per
10,000 Square Miles by State, 1950-1995**



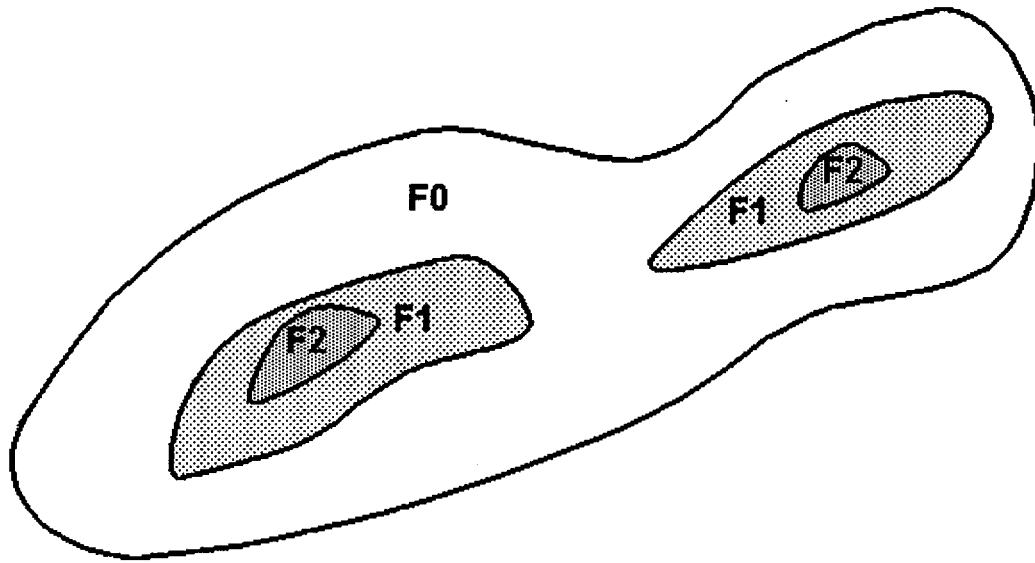
Title

**Average Annual Number of Strong-Violent (F2-F5)
Tornadoes per 10,000 Square Miles by State**

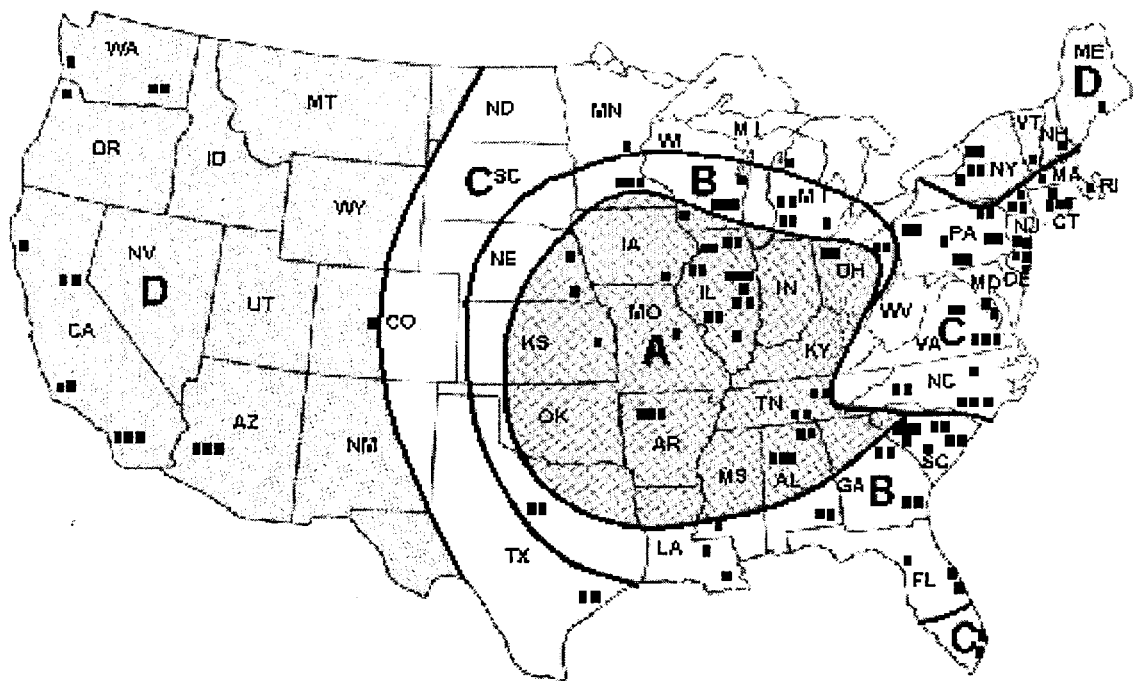
Line



Title Line



Title Line



Title Line

