

รายการอ้างอิง

ภาษาไทย

- ชัยนนท์ ศรีสุภินานนท์ การควบคุมคุณภาพ พิมพ์ครั้งที่3 กรุงเทพฯ,ภาควิชาวิศวกรรมอุตสาหกรรม วิทยาเขตธนบุรี,2527
- พิชิต สุขเจริญพงษ์ การควบคุมคุณภาพเชิงวิศวกรรม กรุงเทพฯ,สำนักพิมพ์ซีเอ็ดยูเคชั่นจำกัด, 2535
- พันธิพา สุนทวารชุน ความรู้เบื้องต้นเกี่ยวกับการวางแผนการทดลอง พิมพ์ครั้งที่ 3 กรุงเทพฯ, สำนักพิมพ์มหาวิทยาลัยรามคำแหง,2530
- สุชาติ ชื่นชวน แผนแบบทางเศรษฐศาสตร์ของแผนภูมิควบคุมค่าเฉลี่ย วิทยานิพนธ์ปริญญา มหาบัณฑิต ภาควิชาสถิติ บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย ,2533
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ภาคผนวก ก

$\mu - k\sqrt{n}/\sigma = 0.2$					
$(h\sqrt{n})/\sigma$	L_s	L_r	$(h\sqrt{n})/\sigma$	L_s	L_r
2.00	18.3335	7.5810	3.55	53.6374	14.1394
2.05	19.1295	7.7896	3.60	55.2328	14.3567
2.10	19.9455	7.9986	3.65	56.8645	14.5745
2.15	20.7815	8.2078	3.70	58.5336	14.7928
2.20	21.6376	8.4173	3.75	60.2408	15.0117
2.25	22.5136	8.6269	3.80	61.9870	15.2311
2.30	23.4100	8.8366	3.85	63.7725	15.4511
2.35	24.3268	9.0463	3.90	65.5993	15.6715
2.40	25.2641	9.2561	3.95	67.4673	15.8926
2.45	26.2224	9.4660	4.00	69.3781	16.1142
2.50	27.2019	9.6759	4.05	71.3322	16.3362
2.55	28.2032	9.8858	4.10	73.3304	16.5589
2.60	29.2263	10.0959	4.15	75.3736	16.7820
2.65	30.2721	10.3061	4.20	77.4629	17.0057
2.70	31.3408	10.5163	4.25	79.5998	17.2298
2.75	32.4330	10.7268	4.30	81.7848	17.4544
2.80	33.5495	10.9374	4.35	84.0185	17.6796
2.85	34.6905	11.1483	4.40	86.3029	17.9052
2.90	35.8566	11.3594	4.45	88.6369	18.1313
2.95	37.0492	11.5708	4.50	91.0241	18.3579
3.00	38.2679	11.7825	4.55	93.4643	18.5849
3.05	39.5142	11.9946	4.60	95.9592	18.8123
3.10	40.7881	12.2070	4.65	98.5096	19.0403
3.15	42.0911	12.4199	4.70	101.1155	19.2686
3.20	43.4234	12.6332	4.75	103.7802	19.4974
3.25	44.7859	12.8469	4.80	106.5029	19.7266
3.30	46.1791	13.0611	4.85	109.2861	19.9562
3.35	47.6043	13.2757	4.90	112.1308	20.1862
3.40	49.0619	13.4909	4.95	115.0371	20.4166
3.45	50.5531	13.7066	5.00	118.0080	20.6473
3.50	52.0779	13.9226			

$\mu - k\sqrt{n}/\sigma = 0.25$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	21.0714	6.9641	3.55	67.6809	12.6353
2.05	22.0517	7.1481	3.60	69.9109	12.8199
2.10	23.0609	7.3322	3.65	72.2014	13.0047
2.15	24.0992	7.5162	3.70	74.5536	13.1898
2.20	25.1669	7.7001	3.75	76.9693	13.3752
2.25	26.2643	7.8839	3.80	79.4503	13.5609
2.30	27.3917	8.0675	3.85	81.9995	13.7469
2.35	28.5496	8.2509	3.90	84.6159	13.9332
2.40	29.7386	8.4341	3.95	87.3040	14.1198
2.45	30.9590	8.6171	4.00	90.0653	14.3067
2.50	32.2117	8.7999	4.05	92.8999	14.4939
2.55	33.4973	8.9824	4.10	95.8122	14.6814
2.60	34.8166	9.1649	4.15	98.8017	14.8691
2.65	36.1703	9.3471	4.20	101.8725	15.0572
2.70	37.5595	9.5293	4.25	105.0261	15.4341
2.75	38.9849	9.7114	4.30	108.2638	15.4341
2.80	40.4478	9.8934	4.35	111.5877	15.6230
2.85	41.9489	10.0754	4.40	115.0012	15.8121
2.90	43.4898	10.2573	4.45	118.5070	16.0015
2.95	45.0708	10.4393	4.50	122.1048	16.1912
3.00	46.6940	10.6214	4.55	125.8000	16.3811
3.05	48.3600	10.8036	4.60	129.5931	16.5713
3.10	50.0704	10.9859	4.65	133.4856	16.7616
3.15	51.8260	11.1683	4.70	137.4855	16.9523
3.20	53.6287	11.3509	4.75	141.5878	17.1431
3.25	55.4801	11.5337	4.80	145.8013	17.3342
3.30	57.3809	11.7167	4.85	150.1251	17.5255
3.35	59.3327	11.8999	4.90	154.5648	17.7170
3.40	61.3369	12.0834	4.95	159.1210	17.9087
3.45	63.3955	12.2671	5.00	163.7986	18.1006
3.50	65.5097	12.4511			

$\mu - k\sqrt{n}/\sigma = 0.3$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	24.3810	6.4281	3.55	86.7543	11.3923
2.05	25.5977	6.5918	3.60	89.9196	11.5515
2.10	26.8561	6.7554	3.65	93.1849	11.7108
2.15	28.1565	6.9187	3.70	96.5534	11.8703
2.20	29.4998	7.0818	3.75	100.0278	12.0300
2.25	30.8868	7.2445	3.80	103.6115	12.1898
2.30	32.3180	7.4068	3.85	107.3087	12.3497
2.35	33.7944	7.5688	3.90	111.1232	12.5099
2.40	35.3172	7.7304	3.95	115.0561	12.6701
2.45	36.8872	7.8917	4.00	119.1146	12.8305
2.50	38.5060	8.0525	4.05	123.3019	12.9911
2.55	40.1741	8.2131	4.10	127.6197	13.1519
2.60	41.8935	8.3733	4.15	132.0739	13.3128
2.65	43.6656	8.5332	4.20	136.6684	13.4738
2.70	45.4916	8.6928	4.25	141.4077	13.6350
2.75	47.3735	8.8522	4.30	146.2965	13.7964
2.80	49.3130	9.0114	4.35	151.3386	13.9579
2.85	51.3116	9.1704	4.40	156.5388	14.1195
2.90	53.3717	9.3293	4.45	161.8998	14.2813
2.95	55.4953	9.4880	4.50	167.4324	14.4432
3.00	57.6840	9.6464	4.55	173.1372	14.6053
3.05	59.9402	9.8052	4.60	179.0221	14.7675
3.10	62.2663	9.96379	4.65	185.0881	14.9298
3.15	64.6646	10.1222	4.70	191.3469	15.0922
3.20	67.1376	10.2807	4.75	197.8032	15.2548
3.25	69.6879	10.4393	4.80	204.4545	15.4175
3.30	73.3169	10.5979	4.85	211.3141	15.5803
3.35	75.0289	10.7566	4.90	218.3927	15.7432
3.40	77.8256	10.9154	4.95	225.6937	15.9062
3.45	80.7105	11.0742	5.00	233.2154	16.0694
3.50	83.6857	11.2332			

$\mu - k\sqrt{n}/\sigma = 0.35$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	28.3988	5.9601	3.55	112.9315	10.3542
2.05	29.9202	6.1070	3.60	117.4875	10.4935
2.10	31.5011	6.2536	3.65	122.2088	10.6329
2.15	33.1428	6.3998	3.70	127.1011	10.7723
2.20	34.8466	6.5456	3.75	132.1698	10.9118
2.25	36.6142	6.6909	3.80	137.4215	11.0513
2.30	38.4467	6.8358	3.85	142.8659	11.1910
2.35	40.3460	6.9803	3.90	148.5082	11.3307
2.40	42.3140	7.1242	3.95	154.3520	11.4704
2.45	44.3527	7.2677	4.00	160.4100	11.6103
2.50	46.4638	7.4108	4.05	116.6876	11.7502
2.55	48.6499	7.5534	4.10	173.1906	11.8902
2.60	50.9132	7.6955	4.15	179.9335	12.0303
2.65	53.2564	7.8373	4.20	186.9173	12.1705
2.70	55.6819	7.9788	4.25	194.1567	12.3107
2.75	58.1926	8.1199	4.30	201.6606	12.4511
2.80	60.7921	8.2606	4.35	209.4306	12.5915
2.85	63.4827	8.4011	4.40	217.4838	12.7320
2.90	66.2684	8.5414	4.45	225.8306	12.8725
2.95	69.1525	8.6815	4.50	234.4811	13.0131
3.00	72.1387	8.8213	4.55	243.4382	13.1539
3.05	75.2307	8.9610	4.60	252.7274	13.2946
3.10	78.4324	9.1006	4.65	262.3442	13.4355
3.15	81.7484	9.2400	4.70	272.3152	13.5764
3.20	85.1824	9.3794	4.75	282.6426	13.7173
3.25	88.7399	9.5187	4.80	293.3430	13.8584
3.30	92.4238	9.6580	4.85	304.4272	13.9995
3.35	96.2402	9.7972	4.90	315.9128	14.1406
3.40	100.1943	9.9364	4.95	327.8230	14.2819
3.45	104.2909	10.0757	5.00	340.1472	14.4231
3.50	108.5345	10.2149			

$\mu - k\sqrt{n}/\sigma = 0.4$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	33.2966	5.5494	3.55	149.2196	9.4788
2.05	35.2116	5.6822	3.60	155.8607	9.6022
2.10	37.2119	5.8146	3.65	162.7689	9.7257
2.15	39.2993	5.9466	3.70	169.9645	9.8491
2.20	41.4767	6.0780	3.75	177.4560	9.9725
2.25	43.7465	6.2090	3.80	185.2539	10.0960
2.30	46.1115	6.3395	3.85	193.3736	10.2195
2.35	48.5747	6.4694	3.90	201.8258	10.3430
2.40	51.1396	6.5988	3.95	210.6247	10.4665
2.45	53.8087	6.7276	4.00	219.7893	10.5901
2.50	56.5868	6.8560	4.05	229.3301	10.7137
2.55	59.4769	6.9839	4.10	239.2662	10.8373
2.60	62.4836	7.1113	4.15	249.6047	10.9610
2.65	65.6102	7.2382	4.20	260.3738	11.0847
2.70	68.8631	7.3648	4.25	271.5867	11.2085
2.75	72.2460	7.4909	4.30	283.2605	11.3322
2.80	75.7638	7.6167	4.35	295.4131	11.4561
2.85	79.4229	7.7422	4.40	308.0779	11.5799
2.90	83.2279	7.8674	4.45	321.2366	11.7038
2.95	87.1861	7.9923	4.50	334.9600	11.8278
3.00	91.3039	8.1169	4.55	349.2419	11.9518
3.05	95.5862	8.2414	4.60	364.1089	12.0758
3.10	100.0410	8.3656	4.65	379.5935	12.1998
3.15	104.6764	8.4897	4.70	395.7227	12.3239
3.20	109.4989	8.6136	4.75	412.4985	12.4480
3.25	114.5176	8.7374	4.80	429.9617	12.5722
3.30	119.7390	8.8611	4.85	448.1543	12.6964
3.35	125.1731	8.9848	4.90	467.0911	12.6964
3.40	130.8290	9.1083	4.95	486.8049	12.9448
3.45	136.7165	9.2319	5.00	507.3311	13.0691
3.50	142.8433	9.3553			

$\mu - k\sqrt{n}/\sigma = 0.45$					
$(h\sqrt{n})/\sigma$	L_s	L_r	$(h\sqrt{n})/\sigma$	L_s	L_r
2.00	39.2902	5.1873	3.55	199.9999	8.7337
2.05	41.7158	5.3082	3.60	209.7767	8.8443
2.10	44.2624	5.4287	3.65	220.0069	8.9548
2.15	46.9342	5.5487	3.70	230.7094	9.0653
2.20	49.7353	5.6682	3.75	241.9006	9.1758
2.25	52.6702	5.7871	3.80	253.6071	9.2863
2.30	55.7445	5.9055	3.85	265.8535	9.3967
2.35	58.9625	6.0233	3.90	278.6633	9.5072
2.40	62.3301	6.1406	3.95	292.0720	9.6177
2.45	65.8528	6.2573	4.00	306.0952	9.7281
2.50	69.5370	6.3735	4.05	320.7720	9.8386
2.55	73.3893	6.4892	4.10	336.1150	9.9491
2.60	77.4160	6.6044	4.15	352.1782	10.0595
2.65	81.6254	6.7191	4.20	368.9707	10.1701
2.70	86.0244	6.8333	4.25	386.5588	10.2806
2.75	90.6211	6.9472	4.30	404.9373	10.3911
2.80	95.4255	7.0606	4.35	424.1643	10.5017
2.85	100.4454	7.1737	4.40	444.3113	10.6123
2.90	105.6918	7.2865	4.45	465.3625	10.7228
2.95	111.1752	7.3990	4.50	487.3901	10.8335
3.00	116.9049	7.5111	4.55	510.4539	10.9441
3.05	122.8956	7.6231	4.60	534.5596	11.0547
3.10	129.1560	7.7348	4.65	559.8154	11.1654
3.15	135.6999	7.8463	4.70	586.1765	11.2761
3.20	142.5389	7.9577	4.75	613.7852	11.3868
3.25	149.6903	8.0689	4.80	642.6877	11.4975
3.30	157.1681	8.1799	4.85	672.9316	11.6082
3.35	164.9853	8.2908	4.90	704.5923	11.7190
3.40	173.1603	8.4017	4.95	737.6504	11.8297
3.45	181.7104	8.5124	5.00	772.2432	11.9405
3.50	190.6488	8.6231			

$\mu - k\sqrt{n}/\sigma = 0.5$					
$(h\sqrt{n})/\sigma$	L_s	L_r	$(h\sqrt{n})/\sigma$	L_s	L_r
2.00	46.6505	4.8666	3.55	271.6868	8.0941
2.05	49.7396	4.9774	3.60	286.2280	8.1941
2.10	53.0007	5.0878	3.65	301.5210	8.2940
2.15	56.4404	5.1976	3.70	317.5886	8.3939
2.20	60.0659	5.3070	3.75	334.4736	8.4938
2.25	63.8858	5.4158	3.80	352.2278	8.5936
2.30	67.9074	5.5240	3.85	370.8882	8.6934
2.35	72.1397	5.6317	3.90	390.4902	8.7932
2.40	76.5914	5.7388	3.95	411.1152	8.8929
2.45	81.2726	5.8453	4.00	432.8157	8.9927
2.50	86.1935	5.9513	4.05	455.5920	9.0924
2.55	91.3653	6.0568	4.10	479.5535	9.1922
2.60	96.7995	6.1618	4.15	504.7473	9.2919
2.65	102.5067	6.2663	4.20	531.2139	9.3917
2.70	108.5030	6.3703	4.25	559.0664	9.4914
2.75	114.8001	6.4739	4.30	588.3320	9.5912
2.80	121.4135	6.5771	4.35	619.1309	9.6909
2.85	128.3567	6.6799	4.40	651.4209	9.7907
2.90	135.6515	6.7824	4.45	685.4839	9.8904
2.95	143.3100	6.8846	4.50	721.2646	9.9902
3.00	151.3558	6.9864	4.55	758.8406	10.0900
3.05	159.8010	7.0880	4.60	798.4124	10.1897
3.10	168.6753	7.1894	4.65	839.9629	10.2895
3.15	177.9960	7.2905	4.70	883.6677	10.3893
3.20	187.7862	7.3914	4.75	929.5417	10.4891
3.25	198.0667	7.4922	4.80	977.9146	10.5889
3.30	208.8707	7.5928	4.85	1028.7180	10.6888
3.35	220.2210	7.6933	4.90	1082.0870	10.7888
3.40	232.1478	7.7936	4.95	1138.1800	10.8884
3.45	244.6806	7.8938	5.00	1197.1850	10.9883
3.50	257.8496	7.9940			

$\mu - k\sqrt{n}/\sigma = 0.55$					
$(h\sqrt{n})/\sigma$	L_1	L_r	$(h\sqrt{n})/\sigma$	L_2	L_r
2.00	55.7187	4.5812	3.55	373.7202	7.5406
2.05	59.6726	4.6834	3.60	395.5449	7.6318
2.10	63.8691	4.7851	3.65	418.5701	7.7229
2.15	68.3208	4.8864	3.70	442.9001	7.8140
2.20	73.0396	4.9872	3.75	468.6101	7.9050
2.25	78.0380	5.0873	3.80	495.7637	7.9960
2.30	83.3290	5.1870	3.85	524.4260	8.0869
2.35	88.9272	5.2860	3.90	554.7383	8.1779
2.40	94.8482	5.3845	3.95	586.7344	8.2688
2.45	101.1080	5.4825	4.00	620.5691	8.3596
2.50	107.7230	5.5799	4.05	656.2874	8.4505
2.55	114.7113	5.6768	4.10	694.0100	8.5413
2.60	122.0930	5.7731	4.15	733.8301	8.6322
2.65	129.8862	5.8690	4.20	776.0020	8.7230
2.70	138.1154	5.9645	4.25	820.4707	8.8138
2.75	146.8015	6.0595	4.30	867.5405	8.9046
2.80	155.9712	6.1540	4.35	917.1343	8.9954
2.85	165.6467	6.2482	4.40	969.6252	9.0862
2.90	175.8582	6.3421	4.45	1025.1520	9.1770
2.95	186.6390	6.4356	4.50	1083.6320	9.2679
3.00	198.0180	6.5288	4.55	1145.7200	9.3587
3.05	210.0268	6.6217	4.60	1211.0607	9.4495
3.10	222.6983	6.7144	4.65	1280.2260	9.5403
3.15	236.0782	6.8069	4.70	1353.1980	9.6311
3.20	250.1986	6.8991	4.75	1430.3650	9.7219
3.25	265.1025	6.9912	4.80	1511.7850	9.8128
3.30	280.8406	7.0831	4.85	1598.1050	9.9036
3.35	297.4546	7.1748	4.90	1689.1110	9.9944
3.40	314.9883	7.2664	4.95	1784.9830	10.0853
3.45	333.5159	7.3579	5.00	1886.8220	10.1761
3.50	353.0791	7.4493			

$\mu - k\sqrt{n}/\sigma = 0.6$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	66.9237	4.3261	3.55	520.1023	7.0580
2.05	72.0060	4.4209	3.60	553.0339	7.1418
2.10	77.4315	4.5153	3.65	588.0427	7.2255
2.15	83.2194	4.6092	3.70	625.1516	7.3092
2.20	89.3887	4.7026	3.75	664.5874	7.3928
2.25	95.9617	4.7954	3.80	706.4299	7.4763
2.30	102.9583	4.8877	3.85	750.8030	7.5598
2.35	110.4028	4.9794	3.90	797.9509	7.6433
2.40	118.3198	5.0706	3.95	848.0439	7.7268
2.45	126.7356	5.1612	4.00	901.1626	7.8102
2.50	135.6801	5.2513	4.05	957.5474	7.8936
2.55	145.1775	5.3409	4.10	1017.4290	7.9769
2.60	155.2616	5.4299	4.15	1081.0040	8.0603
2.65	165.9688	5.5185	4.20	1148.5810	8.1436
2.70	177.3326	5.6066	4.25	1220.1330	8.2269
2.75	189.3890	5.6943	4.30	1296.3280	8.3103
2.80	202.1823	5.7816	4.35	1377.1300	8.3936
2.85	215.7525	5.8685	4.40	1463.0200	8.4769
2.90	230.1462	5.9551	4.45	1554.2150	8.5602
2.95	245.4181	6.0413	4.50	1650.7360	8.6435
3.00	261.6201	6.1272	4.55	1753.4350	8.7268
3.05	278.8010	6.2128	4.60	1862.6750	8.8101
3.10	297.0330	6.2982	4.65	1978.5850	8.8934
3.15	316.3618	6.3833	4.70	2101.9420	8.9767
3.20	336.8801	6.4582	4.75	2232.5940	9.0600
3.25	358.6313	6.5529	4.80	2371.2630	9.1433
3.30	381.7131	6.6374	4.85	2518.2550	9.2266
3.35	406.2156	6.7218	4.90	2674.5790	9.3099
3.40	432.1895	6.8060	4.95	2840.2270	9.3932
3.45	459.7837	6.8901	5.00	3017.1050	9.4765
3.50	489.0396	6.9741			

$\mu - k\sqrt{n}/\sigma = 0.65$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	80.8059	4.0971	3.55	731.5132	6.6344
2.05	87.3635	4.1856	3.60	781.6521	6.7119
2.10	94.4039	4.2736	3.65	835.1270	6.7893
2.15	101.9594	4.3611	3.70	892.1750	6.8667
2.20	110.0589	4.4481	3.75	952.9294	7.3928
2.25	118.7379	4.5346	3.80	1017.8600	7.0212
2.30	128.0300	4.6206	3.85	1087.1130	7.0984
2.35	137.9758	4.7060	3.90	1160.9180	7.1755
2.40	148.6122	4.7909	3.95	1239.8720	7.2526
2.45	159.9801	4.8753	4.00	1323.7220	7.3297
2.50	172.1306	4.9591	4.05	1413.5720	7.4067
2.55	185.1026	5.0424	4.10	1509.2470	7.4837
2.60	198.9562	5.1252	4.15	1611.4910	7.5607
2.65	213.7369	5.2076	4.20	1720.1610	7.6377
2.70	229.5154	5.2895	4.25	1836.6560	7.7147
2.75	246.3478	5.3709	4.30	1960.9550	7.7916
2.80	264.2908	5.4520	4.35	2093.2390	7.8685
2.85	283.4373	5.5326	4.40	2234.4760	7.9455
2.90	303.8530	5.6129	4.45	2384.9750	8.0224
2.95	325.6143	5.6929	4.50	2545.8940	8.0993
3.00	348.8220	5.7726	4.55	2718.0190	8.1763
3.05	373.5544	5.8520	4.60	2900.4460	8.2532
3.10	399.9421	5.9310	4.65	3096.2500	8.3301
3.15	428.0566	6.0099	4.70	3304.9540	8.4070
3.20	458.0217	6.0886	4.75	3527.5930	8.4839
3.25	490.0032	6.1670	4.80	3765.4450	8.5608
3.30	524.0681	6.2453	4.85	4018.9820	8.6378
3.35	560.3953	6.3234	4.90	4289.8160	8.7147
3.40	599.1255	6.4013	4.95	4579.3120	8.7916
3.45	640.4832	6.4791	5.00	4887.3980	8.8685
3.50	684.5408	6.5568			

$\mu - k\sqrt{n}/\sigma = 0.7$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	98.0455	3.8908	3.55	1038.9890	6.2602
2.05	106.5314	3.9737	3.60	1115.6650	6.3323
2.10	115.6985	4.0562	3.65	1197.9630	6.4043
2.15	125.5932	4.1382	3.70	1285.9730	6.4762
2.20	136.2654	4.2197	3.75	1380.4510	6.5481
2.25	147.7667	4.3007	3.80	1481.8010	6.6199
2.30	160.1580	4.3812	3.85	1590.3680	6.6916
2.35	173.4920	4.4612	3.90	1706.5990	6.7635
2.40	187.8370	4.5406	3.95	1831.5110	6.8349
2.45	203.2612	4.6196	4.00	1965.0580	6.9065
2.50	219.8303	4.6980	4.05	2108.7170	6.9781
2.55	237.6329	4.7759	4.10	2262.7020	7.0497
2.60	256.7415	4.8533	4.15	2427.0670	7.1927
2.65	277.2505	4.9303	4.20	2604.0607	7.1927
2.70	299.2593	5.0068	4.25	2794.4090	7.2642
2.75	322.8623	5.0829	4.30	2997.6400	7.3357
2.80	348.1787	5.1586	4.35	3216.1950	7.4072
2.85	375.3235	5.2339	4.40	3449.6400	7.4786
2.90	404.4143	5.3088	4.45	3700.8570	7.5501
2.95	435.5789	5.3834	4.50	3970.5460	7.6216
3.00	469.0002	5.4577	4.55	4257.8120	7.6930
3.05	504.7871	5.5317	4.60	4568.4760	7.7644
3.10	543.1860	5.6055	4.65	4900.6670	7.8359
3.15	584.2781	5.6789	4.70	5257.6670	7.9073
3.20	628.3562	5.7522	4.75	5639.3780	7.9788
3.25	675.6011	5.8253	4.80	6047.5500	8.0502
3.30	726.1772	5.8981	4.85	6487.4920	8.1216
3.35	780.3989	5.9708	4.90	6959.7340	8.1947
3.40	838.4434	6.0434	4.95	7479.3120	8.2645
3.45	900.7974	6.1158	5.00	8005.4880	8.3359
3.50	967.5068	6.1881			

$\mu - k\sqrt{n}/\sigma = 0.75$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	119.4951	3.7042	3.55	1488.9840	5.9278
2.05	130.5064	3.7822	3.60	1606.8600	5.9952
2.10	142.4715	3.8598	3.65	1733.9120	6.0624
2.15	155.4667	3.9370	3.70	1870.4500	6.1296
2.20	169.5686	4.0137	3.75	2118.1040	6.1968
2.25	184.8584	4.0900	3.80	2177.0410	6.2638
2.30	201.4261	4.1657	3.85	2348.8250	6.3308
2.35	219.7868	4.3157	3.90	2532.1250	6.3978
2.40	238.7868	4.3157	3.95	2730.9810	6.4647
2.45	259.7803	4.3899	4.00	2945.0630	6.5316
2.50	282.4766	4.4636	4.05	3176.6650	6.5985
2.55	306.9878	4.5368	4.10	3424.4540	6.6653
2.60	333.4573	4.6096	4.15	3693.0020	6.7321
2.65	362.0344	4.6819	4.20	3980.7790	6.7988
2.70	392.8479	4.7537	4.25	4292.2920	6.8656
2.75	426.0991	4.8252	4.30	4627.7690	6.9323
2.80	461.9336	4.8962	4.35	4991.4330	6.9991
2.85	500.5676	4.9668	4.40	5376.9250	7.0658
2.90	542.2075	5.0371	4.45	5800.2500	7.1325
2.95	587.0835	5.1071	4.50	6247.8710	7.1992
3.00	635.4414	5.1767	4.55	6743.3160	7.2659
3.05	687.5146	5.2461	4.60	7267.5070	7.3326
3.10	743.6289	5.3151	4.65	7831.4330	7.3993
3.15	804.0339	5.3839	4.70	8442.2380	7.4660
3.20	869.1067	5.4525	4.75	9097.3430	7.5326
3.25	939.2024	5.5209	4.80	9813.1170	7.6660
3.30	1014.6380	5.5891	4.85	10575.7900	7.6660
3.35	1096.0170	5.6571	4.90	11405.2300	7.7326
3.40	1183.5080	5.7250	4.95	12286.1300	7.7993
3.45	1277.9510	5.7927	5.00	13252.0100	7.8660
3.50	1379.3610	5.8603			

$\mu - k\sqrt{n}/\sigma = 0.8$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	146.2326	3.5347	3.55	2151.0830	5.6308
2.05	160.5466	3.6084	3.60	2332.4120	5.6941
2.10	176.1983	3.6818	3.65	2530.3640	5.7572
2.15	193.3015	3.7547	3.70	2743.7690	5.8203
2.20	211.9749	3.8272	3.75	2975.5450	5.8833
2.25	232.3545	3.8993	3.80	3225.4940	5.9462
2.30	254.5727	3.9709	3.85	3495.9580	6.0091
2.35	278.7705	4.0419	3.90	3788.5790	6.0719
2.40	305.1118	4.1125	3.95	4108.1090	6.1347
2.45	333.7759	4.1826	4.00	4452.0460	6.1975
2.50	364.9490	4.2523	4.05	4824.1710	6.2602
2.55	398.8127	4.3214	4.10	5225.7810	6.3228
2.60	435.6101	4.3901	4.15	5667.1600	6.3855
2.65	475.5374	4.4583	4.20	6137.0110	6.4481
2.70	518.8784	4.5261	4.25	6655.2500	6.5107
2.75	565.8723	4.5934	4.30	7206.8240	6.5733
2.80	616.8228	4.6604	4.35	7805.2770	6.6359
2.85	672.0349	4.7270	4.40	8461.9100	6.6984
2.90	731.9412	4.7932	4.45	9166.3240	6.7610
2.95	796.7219	4.8591	4.50	9929.5310	6.8235
3.00	866.9375	4.9247	4.55	10769.2300	6.8861
3.05	943.0374	4.9899	4.60	11657.4200	6.9486
3.10	1025.4610	5.0549	4.65	12639.5100	7.0111
3.15	1114.5900	5.1197	4.70	13686.3300	7.0736
3.20	1211.1460	5.1842	4.75	14831.6200	7.1362
3.25	1315.4350	5.2485	4.80	16058.4600	7.1987
3.30	1428.7810	5.3126	4.85	17394.4400	7.2612
3.35	1551.3330	5.3766	4.90	18812.2800	7.3237
3.40	1683.9750	5.4403	4.95	20416.2800	7.3862
3.45	1827.4940	5.5039	5.00	22130.4100	7.4487
3.50	1982.5250	5.5674			

$\mu - k\sqrt{n}/\sigma = 0.85$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	179.6006	3.3802	3.55	3130.8090	5.3642
2.05	198.2356	3.4502	3.60	3412.8020	5.4238
2.10	218.7468	3.5198	3.65	3720.2860	5.4833
2.15	241.3037	3.5890	3.70	4055.4600	5.5428
2.20	266.0752	3.6578	3.75	4420.9210	5.6022
2.25	293.2810	3.7261	3.80	4815.9510	5.6615
2.30	323.1208	3.7940	3.85	5246.0230	5.7207
2.35	355.8379	3.8614	3.90	5716.9920	5.7799
2.40	391.6716	3.9284	3.95	6224.3670	5.8390
2.45	430.9001	3.9949	4.00	6779.3710	5.8981
2.50	473.8145	4.0609	4.05	7382.3390	5.9571
2.55	520.7151	4.1264	4.10	8042.1210	6.0162
2.60	571.9355	4.1915	4.15	8762.3710	6.0751
2.65	627.9551	4.2562	4.20	9542.4410	6.1341
2.70	689.0496	4.3204	4.25	10396.3500	6.1930
2.75	755.6597	4.3842	4.30	11308.5300	6.2520
2.80	828.3142	4.4476	4.35	12337.7000	6.3109
2.85	907.5935	4.5106	4.40	13410.8100	6.3698
2.90	993.9067	4.5732	4.45	14597.3900	6.4287
2.95	1087.7880	4.6356	4.50	15895.5300	6.4875
3.00	1190.2780	4.6976	4.55	17331.6200	6.5464
3.05	1310.8630	4.7593	4.60	18824.8900	6.6052
3.10	1423.0870	4.8207	4.65	20510.0900	6.6641
3.15	1555.2620	4.8819	4.70	22355.8300	6.7229
3.20	1699.1310	4.9428	4.75	24313.4400	6.7818
3.25	1855.5040	5.0035	4.80	26526.8600	6.8406
3.30	2025.4980	5.0640	4.85	28827.1300	6.8995
3.35	2211.0050	5.1244	4.90	31312.8400	6.9583
3.40	2412.8270	5.1845	4.95	34217.8700	7.0171
3.45	2631.9100	5.2445	5.00	37240.9000	7.0760
3.50	2870.6220	5.3044			

$\mu - k\sqrt{n}/\sigma = 0.9$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	221.2874	3.2389	3.55	4585.5350	5.1237
2.05	245.5828	3.3055	3.60	5027.3350	5.1801
2.10	272.4922	3.3717	3.65	5505.4920	5.2364
2.15	302.2632	3.4376	3.70	6034.1600	5.2927
2.20	335.1738	3.5031	3.75	6607.3750	5.3488
2.25	371.5288	3.5682	3.80	7242.8630	5.4049
2.30	411.6970	3.6329	3.85	7924.4570	5.4609
2.35	455.9836	3.6971	3.90	8681.0000	5.5168
2.40	504.7861	3.7608	3.95	9505.2100	5.5727
2.45	558.5688	3.8241	4.00	10406.4700	5.6286
2.50	617.7725	3.8869	4.05	11387.5000	5.6844
2.55	682.8806	3.9493	4.10	12469.6200	5.7401
2.60	754.4614	4.0112	4.15	13655.2700	5.7959
2.65	833.1177	4.0727	4.20	14932.1200	5.8516
2.70	919.4189	4.1338	4.25	16354.3000	5.9073
2.75	1014.1100	4.1944	4.30	17891.6900	5.9629
2.80	1118.0450	4.2547	4.35	19578.7100	6.0186
2.85	1231.9310	4.3145	4.40	21414.2300	6.0742
2.90	1356.6900	4.3741	4.45	23435.4500	6.1298
2.95	1493.4620	4.4332	4.50	25645.4400	6.1855
3.00	1643.2470	4.4921	4.55	28071.9700	6.2967
3.05	1807.0010	4.5506	4.60	30672.5300	6.2967
3.10	1986.8950	4.6089	4.65	33654.5700	6.3522
3.15	2183.1620	4.6696	4.70	36739.2800	6.4078
3.20	2397.5840	4.7247	4.75	40091.5600	6.4634
3.25	2632.7700	4.7822	4.80	44031.8100	6.5190
3.30	2890.1040	4.8396	4.85	48416.9800	6.5746
3.35	3171.4180	4.8967	4.90	52778.4900	6.6301
3.40	3477.8960	4.9537	4.95	57565.0900	6.6857
3.45	3815.6640	5.0105	5.00	63131.4400	6.7412
3.50	4184.0970	5.0672			

$\mu - k\sqrt{n}/\sigma = 0.95$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	273.4224	3.1092	3.55	6759.5350	4.9059
2.05	305.1023	3.1728	3.60	7445.5420	4.9595
2.10	340.4063	3.2361	3.65	8206.6050	5.0129
2.15	379.7271	3.2990	3.70	9040.1790	5.0663
2.20	423.5076	3.3616	3.75	9944.7300	5.1195
2.25	472.1521	3.4237	3.80	10946.6100	5.1727
2.30	526.2073	3.4855	3.85	12053.7100	5.2258
2.35	586.2395	3.5468	3.90	13265.4000	5.2789
2.40	652.8025	3.6077	3.95	14592.4900	5.3319
2.45	726.6438	3.6682	4.00	16061.8000	5.3848
2.50	808.3569	3.7282	4.05	17660.8700	5.4377
2.55	898.9424	3.7877	4.10	19441.4500	5.4906
2.60	999.0601	3.8469	4.15	21412.4400	5.5434
2.65	1109.7440	3.9055	4.20	23524.7500	5.5962
2.70	1231.8930	3.9638	4.25	25916.2700	5.6490
2.75	1366.9570	4.0217	4.30	28478.5300	5.7018
2.80	1515.7390	4.0791	4.35	31246.7500	5.7545
2.85	1679.8890	4.1362	4.40	34396.2500	5.8072
2.90	1861.0710	4.1929	4.45	37924.6700	5.8599
2.95	2060.2470	4.2493	4.50	41703.4800	5.9126
3.00	2280.3690	4.3054	4.55	45745.4400	5.9653
3.05	2521.5730	4.3611	4.60	50424.5700	6.0180
3.10	2787.0150	4.4166	4.65	55191.7100	6.0707
3.15	3080.0910	4.4718	4.70	60954.1000	6.1233
3.20	3401.7010	4.5267	4.75	66829.8100	6.1760
3.25	3756.9070	4.5815	4.80	73226.6800	6.2286
3.30	4146.1050	4.6360	4.85	80977.6200	6.2813
3.35	4575.1050	4.6903	4.90	89108.5000	6.3339
3.40	5046.8240	4.7444	4.95	98177.7500	6.3866
3.45	5559.9920	4.7984	5.00	107710.1000	6.4392
3.50	6129.2600	4.8522			

$\mu - k\sqrt{n}/\sigma = 1.00$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	338.6375	2.9898	3.55	10014.2300	4.7079
2.05	379.9670	3.0507	3.60	11089.7300	4.7589
2.10	426.3247	3.1113	3.65	12282.5100	4.8097
2.15	478.2876	3.1716	3.70	13606.5000	4.8605
2.20	536.4600	3.2315	3.75	15048.2900	4.9112
2.25	601.5664	3.2911	3.80	16637.1300	4.9618
2.30	674.4307	3.3503	3.85	18442.0600	5.0123
2.35	755.7520	3.4090	3.90	20345.6000	5.0628
2.40	846.7068	3.4674	3.95	22520.1000	5.1132
2.45	948.0828	3.5253	4.00	25025.7900	5.1635
2.50	1061.1550	3.5828	4.05	27583.2800	5.2138
2.55	1187.0970	3.6398	4.10	30505.8000	5.2641
2.60	1327.1570	3.6965	4.15	33747.6200	5.3143
2.65	1483.2350	3.7527	4.20	37239.3300	5.3645
2.70	1656.6660	3.8084	4.25	41141.1700	5.4147
2.75	1849.0930	3.8638	4.30	45761.4500	5.4648
2.80	2062.8600	3.9188	4.35	50231.7300	5.5149
2.85	2299.7100	3.9734	4.40	55669.8100	5.5650
2.90	2562.9090	4.0276	4.45	61538.7700	5.6151
2.95	2854.1000	4.0815	4.50	68139.7500	5.6652
3.00	3177.0560	4.1351	4.55	75262.9300	5.7152
3.05	3534.0990	4.1884	4.60	82445.1800	5.7653
3.10	3930.5780	4.2413	4.65	91918.1800	5.8153
3.15	4365.2570	4.2940	4.70	101891.0000	5.8654
3.20	4850.4720	4.3465	4.75	111922.4000	5.9154
3.25	5386.0270	4.3987	4.80	124144.5000	5.9654
3.30	5975.5460	4.4507	4.85	138469.5000	6.0154
3.35	6633.4880	4.5024	4.90	151058.3000	6.0655
3.40	7352.4880	4.5540	4.95	168761.1000	6.1155
3.45	8146.5230	4.6055	5.00	181525.1000	6.1655
3.50	9037.0660	4.6576			

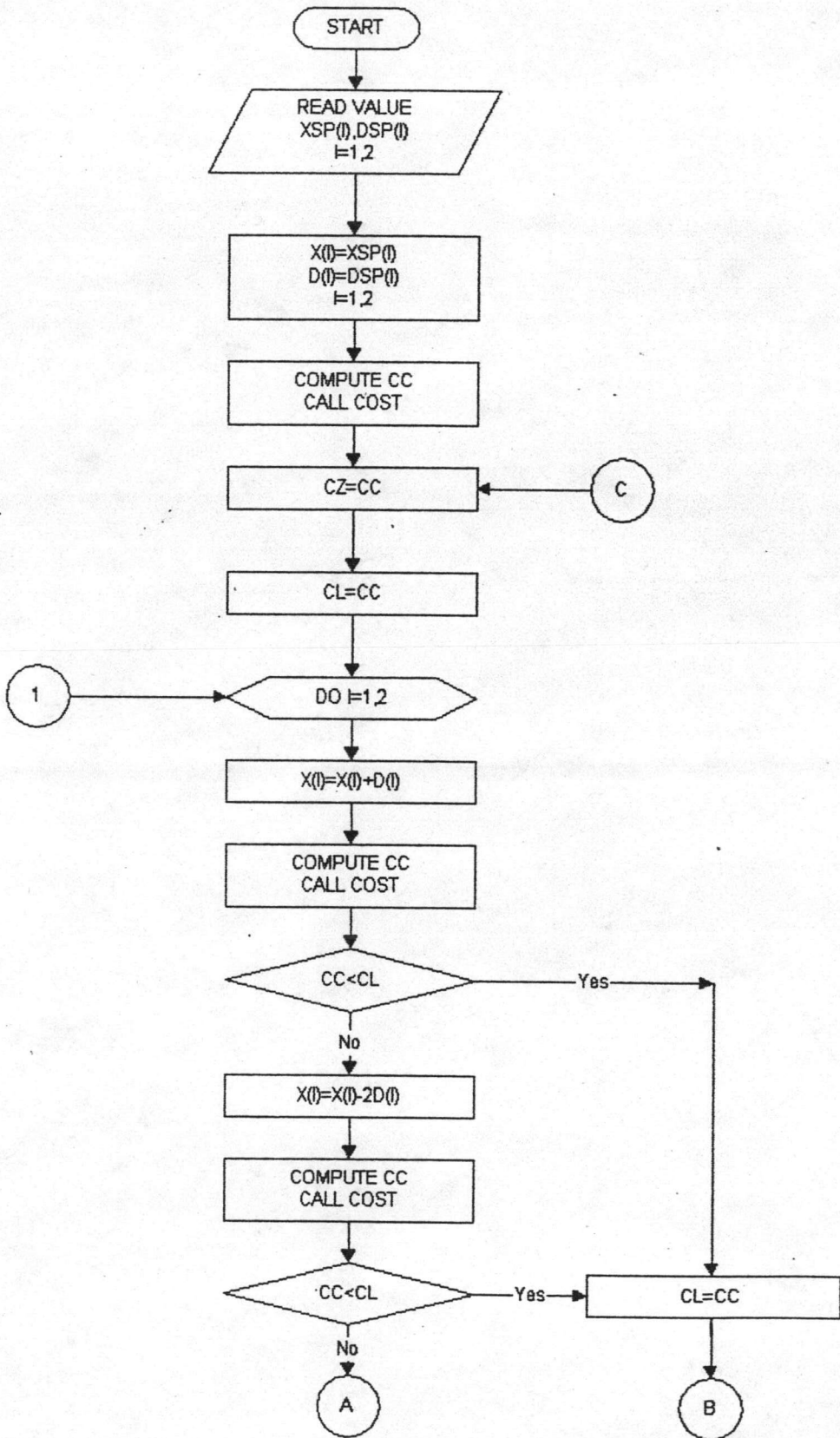
$\mu - k\sqrt{n}/\sigma = 1.05$					
$(h\sqrt{n})/\sigma$	L_a	L_r	$(h\sqrt{n})/\sigma$	L_a	L_r
2.00	420.2607	2.8796	3.55	14915.2800	4.5271
2.05	474.1438	2.9380	3.60	16608.3300	4.5758
2.10	534.9885	2.9961	3.65	18488.2500	4.6244
2.15	603.6433	3.0540	3.70	20563.0800	4.6728
2.20	680.9973	3.1116	3.75	22885.6400	4.7212
2.25	768.1365	3.1688	3.80	25518.3100	4.7695
2.30	866.2241	3.2257	3.85	28293.3400	4.8177
2.35	976.6333	3.2822	3.90	31555.2800	4.8658
2.40	1100.5950	3.3383	3.95	35073.6400	4.9138
2.45	1239.9880	3.3939	4.00	39036.2300	4.9618
2.50	1396.3740	3.4492	4.05	43463.6100	5.0098
2.55	1571.5130	3.5040	4.10	48238.2400	5.0577
2.60	1767.9570	3.5584	4.15	53367.9300	5.1055
2.65	1988.0280	3.6123	4.20	59381.8100	5.1534
2.70	2233.8040	3.6659	4.25	66711.1800	5.2012
2.75	2508.8880	3.7191	4.30	72944.3100	5.2490
2.80	2816.2220	3.7718	4.35	81394.0000	5.2967
2.85	3159.0510	3.8242	4.40	90477.2500	5.3444
2.90	3541.0390	3.8762	4.45	99911.5000	5.3921
2.95	3967.1790	3.9279	4.50	111542.0000	5.4398
3.00	4442.1520	3.9793	4.55	123283.8000	5.4875
3.05	4972.2530	4.0303	4.60	137788.5000	5.5352
3.10	5560.8390	4.0810	4.65	152766.1000	5.5829
3.15	6214.2260	4.1315	4.70	170014.5000	5.6305
3.20	6946.2030	4.1817	4.75	188231.1000	5.6782
3.25	7748.8980	4.2316	4.80	208732.1000	5.7258
3.30	8656.7530	4.2813	4.85	231670.5000	5.7735
3.35	9657.0620	4.3308	4.90	263525.7000	5.8211
3.40	10767.8800	4.3802	4.95	281094.8000	5.8688
3.45	12007.8000	4.4293	5.00	319426.6000	5.9164
3.50	13380.6500	4.4783			

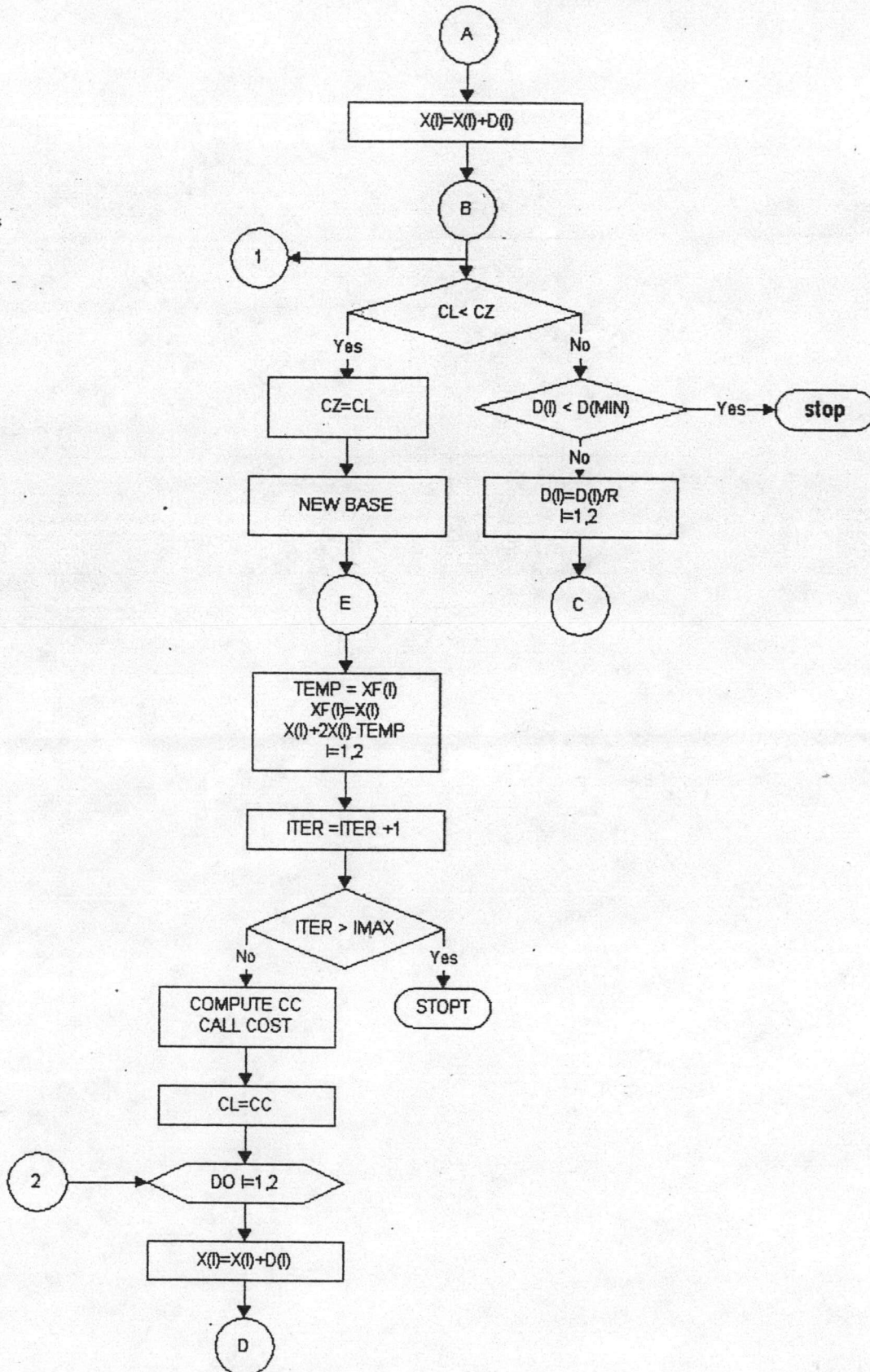
$\mu - k\sqrt{n}/\sigma = 1.10$					
$(h\sqrt{n})/\sigma$	L_2	L_r	$(h\sqrt{n})/\sigma$	L_2	L_r
2.00	522.3784	2.7774	3.55	22288.4200	4.3616
2.05	592.6243	2.8336	3.60	24960.3600	4.4082
2.10	672.4524	2.8895	3.65	28013.1200	4.4547
2.15	763.0818	2.9453	3.70	31286.8400	4.5011
2.20	865.8586	3.0007	3.75	34887.2500	4.5473
2.25	982.4373	3.0558	3.80	39050.4800	4.5935
2.30	1114.4780	3.1108	3.85	43684.1600	4.6396
2.35	1264.0750	3.1650	3.90	48860.5800	4.6856
2.40	1433.3500	3.2191	3.95	54693.3400	4.7315
2.45	1624.9070	3.2727	4.00	61367.8000	4.7774
2.50	1840.7440	3.3259	4.05	68052.0000	4.8232
2.55	2085.0300	3.3787	4.10	76088.2500	4.8689
2.60	2360.5390	3.4311	4.15	85560.3700	4.9147
2.65	2670.3020	3.4831	4.20	95463.8100	4.9604
2.70	3018.8650	3.5347	4.25	105745.1000	5.0060
2.75	3412.5780	3.5859	4.30	118508.1000	5.0516
2.80	3853.6530	3.6366	4.35	132182.7000	5.0973
2.85	4350.6440	3.6870	4.40	149424.5000	5.1428
2.90	4906.5420	3.7371	4.45	163656.1000	5.1884
2.95	5531.4330	3.7868	4.50	182484.3000	5.2339
3.00	6233.0190	3.8361	4.55	206208.0000	5.2795
3.05	7014.2730	3.8852	4.60	229120.6000	5.3250
3.10	7896.2960	3.9339	4.65	261024.1000	5.3705
3.15	8876.2300	3.9823	4.70	290436.0000	5.4160
3.20	9971.7960	4.0305	4.75	317246.0000	5.4515
3.25	11202.5500	4.0784	4.80	355535.1000	5.5070
3.30	12584.6100	4.1261	4.85	404334.6000	5.5525
3.35	14119.4300	4.1736	4.90	448284.8000	5.5979
3.40	15845.5700	4.2208	4.95	490979.0000	5.6434
3.45	17772.1700	4.2679	5.00	542661.8000	5.6889
3.50	19899.9000	4.3148			

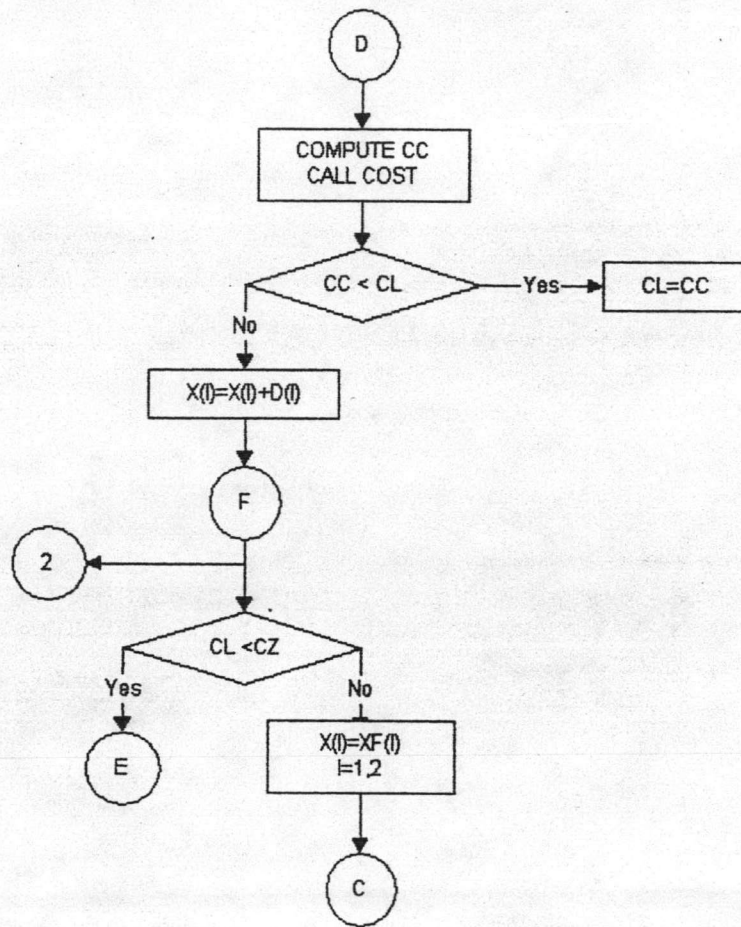
$\mu - k\sqrt{n}/\sigma = 1.15$					
$(h\sqrt{n})/\sigma$	L_s	L_r	$(h\sqrt{n})/\sigma$	L_s	L_r
2.00	650.2046	2.6824	3.55	33401.9100	4.2095
2.05	741.6802	2.7366	3.60	37632.1400	4.2543
2.10	846.3374	2.7906	3.65	42366.2800	4.2989
2.15	965.8855	2.8443	3.70	47662.6700	4.3433
2.20	1102.2770	2.8978	3.75	53463.4400	4.3877
2.25	1258.0910	2.9511	3.80	60326.4900	4.4319
2.30	1435.7140	3.0040	3.85	68045.6200	4.4761
2.35	1638.5870	3.0565	3.90	75976.2500	4.5202
2.40	1869.0490	3.1087	3.95	85634.8700	4.5642
2.45	2131.9160	3.1605	4.00	95329.9300	4.6081
2.50	2430.3480	3.2119	4.05	108075.1000	4.6520
2.55	2770.1780	3.2629	4.10	121748.0000	4.6958
2.60	3154.7800	3.3135	4.15	137484.6000	4.7396
2.65	3592.0620	3.3637	4.20	150823.3000	4.7833
2.70	4087.8970	3.4135	4.25	171274.5000	4.8270
2.75	4648.3750	3.4629	4.30	192480.7000	4.8707
2.80	5282.4100	3.5119	4.35	217317.5000	4.9143
2.85	6001.9370	3.5605	4.40	243500.8000	4.9580
2.90	6809.9020	3.6088	4.45	273116.5000	5.0016
2.95	7727.4720	3.6567	4.50	306222.2000	5.0451
3.00	8763.9450	3.7043	4.55	342554.2000	5.0887
3.05	9927.2850	3.7515	4.60	381334.6000	5.1323
3.10	11242.6300	3.7984	4.65	421057.6000	5.1758
3.15	12714.8500	3.8450	4.70	481209.5000	5.2193
3.20	14380.5500	3.8914	4.75	546238.2000	5.2629
3.25	16229.2100	3.9375	4.80	612449.9000	5.3064
3.30	18352.3900	3.9833	4.85	696926.3000	5.3499
3.35	20724.6400	4.0290	4.90	748551.0000	5.3934
3.40	23387.7300	4.0744	4.95	878734.5000	5.4369
3.45	26346.0700	4.1196	5.00	962424.3000	5.4804
3.50	29717.3800	4.1647			

$\mu - k\sqrt{n}/\sigma = 1.20$					
$(h\sqrt{n})/\sigma$	L_s	L_r	$(h\sqrt{n})/\sigma$	L_s	L_r
2.00	810.0996	2.5939	3.55	50109.3700	4.0694
2.05	929.0852	2.6462	3.60	57021.5600	4.1124
2.10	1066.1070	2.6984	3.65	64637.3900	4.1553
2.15	1223.4980	2.7504	3.70	73224.5000	4.1980
2.20	1404.2680	2.8021	3.75	82340.1200	4.2407
2.25	1612.0060	2.8536	3.80	93604.2500	4.2832
2.30	1851.0890	2.9048	3.85	106118.8000	4.3256
2.35	2124.8810	2.9557	3.90	118120.9000	4.3679
2.40	2439.0860	3.0062	3.95	134995.8000	4.4101
2.45	2799.7580	3.0563	4.00	155035.0000	4.4525
2.50	3211.8280	3.1061	4.05	169611.4000	4.4944
2.55	3683.2520	3.1555	4.10	196481.2000	4.5365
2.60	4220.9800	3.2045	4.15	215702.7000	4.5785
2.65	4839.7070	3.2531	4.20	244996.3000	4.6204
2.70	5540.7500	3.3012	4.25	275621.5000	4.6625
2.75	6344.2530	3.3490	4.30	310075.0000	4.7042
2.80	7254.4640	3.3964	4.35	360815.1000	4.7461
2.85	8292.2570	3.4435	4.40	404997.1000	4.7879
2.90	9477.4410	3.4901	4.45	451020.3000	4.8297
2.95	10822.3300	3.5364	4.50	508843.8000	4.8715
3.00	12337.2200	3.5824	4.55	566998.3000	4.9133
3.05	14080.2400	3.6280	4.60	640160.0000	4.9550
3.10	16025.6600	3.6733	4.65	734999.0000	4.9967
3.15	18252.4300	3.7183	4.70	793799.6000	5.0385
3.20	20754.1200	3.7630	4.75	902045.8000	5.0802
3.25	23620.7400	3.8074	4.80	992250.3000	5.1219
3.30	26813.2900	3.8516	4.85	1167354.0000	5.1636
3.35	30386.2200	3.8956	4.90	1240315.0000	5.2053
3.40	34689.7600	3.9393	4.95	1526541.0000	5.2470
3.45	39215.0800	3.9829	5.00	1653754.0000	5.2887
3.50	44491.2200	4.0262			

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/ FILE 6 N(A) NEW (REPL) LRECL (132)

/ LOAD WATFIV

/OPT LIST

C*****

C PROGRAM TO FILE THE OPTIMUM VALUES OF THE DECISION INTERVAL
C AND SAMPLING INTERVAL USING HOOK-JEEVES DIRECT SEARCH
C TECHNIQUE

C*****

INTEGER DL,FD,W,T,V0,S,D1
DIMENSION XSP(2),DSP(2),X(2),XX(2),XF(2),Y(2), D(2),
DOUBLE PRECISION FN,CDFN
COMMON DL,RM,SA,FD,M,SB,C,W,T,V0,S,S1,D1,X,VSS,TH
ITMAX=50
R=5.0
STDEV=1
ROT=6.2831852
SQPI=1.0/SQRT(ROT)

C*****

C	VARIABLE	NAME	DESCRIPTIVE
C	CC		CURRENT COMPUTE COST
C	CL		TEMPORARY MINIMUM COST
C	CZ		COST TO PREVIOUSLY ESTABLISHED BASE POINT
C	D(I)		CURRENT STEP SIZE ,I=1,2
C	D MIN		MINIMUM STEP SIZE
C	ITER		NUMBER OF INTERATION
C	R		FRACTION OF STEP SIZE
C	COST		A SUBROUTINE FOR COMPUTING LOSS-COST
C	X(1)		DECISION INTERVAL ,H
C	X(2)		SAMPLING INTERVAL,F.S
C	X(I)		LOCATION OF CURRENT BASE POINT ,I=1,2

C 7 XF(2) LOCATION OF PREVIOUS BASE POINT ,I=1,2

C*****

```

      READ (5,10) XSP(1)
10   FORMAT(F4.2)
      READ(5,11) XSP(2)
11   FORMAT(F4.2)
      READ(5,12) DSP(1)
12   FORMAT(F3.2)
      READ(5,13) DSP(2)
13   FORMAT(F3.2)
      READ(5,30) DL
30   FORMAT(I1)
      READ(5,31)RM
31   FORMAT(F3.2)
      READ(5,32) SA
32   FORMAR(F3.2)
      READ(5,33) FD
33   FORMAT(I2)
      READ(5,34) M
34   FORMAT(I3)
      READ(5,35) SB
35   FORMAT(F3.2)
      READ (5,36) C
36   FORMAT(F3.2)
      READ (5,37) W
37   FORMAT(I3)
      READ(5,38) T
38   FORMAT(I3)
      READ (5,39) V0
39   FORMAT(I3)

```

```

      READ(5,40) S
40  FORMAT(I3)
      READ(5,41) S1
41  FORMAT(F3.2)
      READ(5,42) D1
42  FORMAT(I2)
      THETA=(DL*STDEV)/2
      WRITE(6,*) '          ***** DATA*****'
      WRITE(6,*) ' DL RM SA FD M SB C W T V0 S S1 D1'
      WRITE(6,39) DL, RM, SA,FD,M,SB,C,W,T,VO,S,S1,D1
39  FORMAT(4X,I1,2X,F4.2,2X,F4.2,2X,I2,2X,I3,2X,F4.2,2X,F4.2,2X,I2,
*      2X,I3,2X,I4,2X,I4,2X,F6.2,2X,I4)
      WRITE(6,*) '      CL      H      S      VSS      ITER'
      DO 3000 N=1,20
      ITER =0
      VSS=N
      SQSS=SQRT(VSS)
      TH=THETA*(SQSS/STDEV)
      DO 60 I=1,2
      X(I)=XSP(I)
      D(I)=DSP(I)
      XF(I)=X(I)
      XX(I)=X(I)
      Y(I)=X(I)
60  CONTINUE
      CALL(CC)
      CZ=CC
      CL=CC
65  CL=CZ
      DO 200 I=1,2

```

```

X(I)=X(I)+D(I)
CALL(CC)
IF (CC-CL)70,80,80
70 CL=CC
GO TO 180
80 X(I)=X(I)-(2.0*D(I))
CALL(CC)
IF (CC-CL) 130,140,140
130 CL=CC
GO TO 180
140 X(I)=X(I)+D(I)
180 Y(I)=X(I)
200 CONTINUE
IF (CL-CZ) 210,420,420
C*****
C NEW BASE
C*****
210 CZ=CL
DO 212 INP=1,2
X(INP)=Y(INP)
XX(INP)=XF(INP)
XF(INP)=X(INP)
X(INP)=2.0*X(INP)-XX(INP)
212 CONTINUE
ITER=ITER+1
IF (ITER-ITMAX)214,214,2000
214 CALL(CC)
DO 600 I=1,2
X(I)=X(I)+D(I)
CALL(CC)

```



```

        IF (CC-CL)510,520,520
510   CL=CC
        GO TO 580
520   X(I)=X(I)-2.0*D(I)
        CALL(CC)
        IF(CC-CL) 530,540,540
530   CL=CC
        GO TO 580
540   X(I)=X(I)+D(I)
580   Y(I)=X(I)
600   CONTINUE
        IF (CL-CZ) 210,412,412
412   DO 312 I=1,2
312   X(I)=XF(I)
        GO TO 65
420   IF(D(1)-0.001) 2000,900,900
900   DO 902 I=1,2
        SUM=D(I)/R
        D(I)=SUM
902   CONTINUE
        GO TO 65
2000 CONTINUE
        STOP
        END

```

SUBROUTINE COST(CC)

C*****

C SUBROUTINE COST TO COMPUTE THE COST OF CUSUM SCHEME

C*****

DIMENSION THE(2),PHI(6) ,ARL(2),CP0(2),CN0(2)

```

COMMON DL,FM,SA,FD,M,SB,C,W,T,V0,S,S1,D1,X(2),VSS,TH
INTEGER DL,FD,W,T,V0,S,D1
ROT=6.2831825
SQRP=SQRT(ROT)
VZ=0
STDEV=1
VH=X(1)
VS=X(2)
THE(1)=-TH
THE(2)=TH
DO 100 I=1,2
  A1=-THE(I)
  A2=-VH-THE(I)
  A3=VH-THE(I)
  A4=VH+THE(I)
  A5=THE(I)
  A6=VH
  PHI(1)=CDFN(1)
  PHI(2)=CDFN(2)
  PHI(3)=CDFN(3)
  PHI(4)=CDFN(4)
  PHI(5)=CDFN(5)
  PHI(6)=CDFN(6)
  IF(TH)35,50,35
35  EPS=EXP(-2.0*VH*THE(I))
    VK2=(1.0+PHI(4)-PHI(3)-2 *PHI(5))/(1.0-EPS)
    VK1=1.0-PHI(3)+PHI(1) / VK2
    CP1=VK1*PHI(1)
    CP2=VK2*PHI(2)
    PT=(VK1**2)-((VK**2)*EPS)

```

```

CP0(I)=(CP1-CP2)/PT
EP1=EXP(-0.5*(THE(I)**2))
EP2=EXP(-0.5*((VH+THE(I))**2))
EP3=EXP(-0.5*((VH-THE(I))**2))
PCN1=(VK1*VH)/THE(I)
PCN2=(VK2*VH)/THE(I)
PCN3=VH/THE(I)
CN1=VK1*(1-PHI(3)+PHI(1)-PCN2)
CN2=(VK1*(EP3-EP1))/(THE(I)*SQR)
CN3=VK2*(1+PCN3-(PHI(4)-PHI(5))*(1+PCN3)-PCN1)
CN4=(VK2*(EP1-EP2))/(THE(I)*SQR)
CN0=(CN1+CN2-CN3-CN4)/PT
GO TO 80

50  EVHA=1.0-EXP(-0.5*(VH**2))
    AA=0.5*VH*SQR*EVHA
    AB=VH*SQR*(1.5-PHI(6))+2.0*EVHA
    CP0(I)=AA/AB
    CN0(I)=1.0+VH/(SQR*(1.5-PHI(6)))

80  ARL(I)=CN0(I)/(1.0-CP0(I))

100 CONTINUE

    TA=1.0/RM
    TE=(VS/(1.0-EXP(-1.0*RM*VS)))+((ARL(2)-1)*VS)+(SA*VSS)
    TR=TE-1.0/RM
    TS=(D1/(ARL(1)*RM*VS))+FD+S1
    TC=TA+TR+TS
    B=TA+TR
    COST1=M*(TR/TC)
    COST2=V0*(TS/TC)
    COST3=((SB+(C*VSS))*B)/(TC*VS)
    COST4=T/(ARL(1)*RM*VS*TC)

```

```

COST5=W/TC
COST6=S/TC
SUCOST=COST1+COST2+COST3+COST4+COST5+COST6
CC=SUCOST
RETURE
END

```

```

C*****

```

```

C

```

```

C          FUNCTION NORMAL DISTRIBUTION

```

```

C*****

```

```

          FUNCTION FN(ZZ)
          FN=(1.0/2.5066282746)*DEXP(DBLE(-1.0*(ZZ**2)/2.0)
          RETURN
          END

```

```

C*****

```

```

C

```

```

C          CUMULATIVE NORMAL DISTRIBUTION FUNCTION

```

```

C*****

```

```

          FUNCTION CDFN(Z0)
          TLZ0=FN(Z0)
          TLWW=1.0/(1.0+0.33267*ABS(Z0))
          TPL=1.0-TLZ0*(0.4361836*TLWW-0.120167*(TLWW**2)+0.937298*(TLWW**3)
          IF(Z0.GE.0) THEN
              CDFN=TLP
          ELSE
              CDFN=1.0-TLP
          ENIF
          RETURE
          EN

```

```

*****
C                               PROGRAM A.R.L
C                               COMPUE TO A.R.L FOR CUSUM CHART
C*****

      DIMENSION THE(2),PHI(6) ,ARL(2)
      DOUBLE PRECISION CN0(2),CP0(2)
      ROT=6.2831825
      SQRP=SQRT(ROT)

C*****
C      TH=((K-MUT)SQRT(N))/STDVE
C      VH=(H*SQRT(N))/STDVE
      WRITE(6,*) '          TH=0.2'
      WRITE(6,*) ' H      LA      LR'
      DO 200 N= 40,100
      TH=0.2
      VH=N/20.0
      DO 100 I=1,2
      A1=-THE(I)
      A2=-VH-THE(I)
      A3=VH-THE(I)
      A4=VH+THE(I)
      A5=THE(I)
      A6=VH
      PHI(1)=CDFN(1)
      PHI(2)=CDFN(2)
      PHI(3)=CDFN(3)
      PHI(4)=CDFN(4)
      PHI(5)=CDFN(5)
      PHI(6)=CDFN(6)
      IF(TH)35,50,35

```

```

35  EPS=EXP(-2.0*VH*THE(I))
    VK2=(1.0+PHI(4)-PHI(3)-2.0*PHI(5))/(1.0-EPS)
    VK1=1.0-PHI(3)+PHI(1)-VK2
    CP1=VK1*PHI(1)
    CP2=VK2*PHI(2)
    PT=(VK1**2)-((VK**2)*EPS)
    CP0(I)=(CP1-CP2)/PT
    EP1=EXP(-0.5*(THE(I)**2))
    EP2=EXP(-0.5*((VH+THE(I))**2))
    EP3=EXP(-0.5*((VH-THE(I))**2))
    PCN1=(VK1*VH)/THE(I)
    PCN2=(VK2*VH)/THE(I)
    PCN3=VH/THE(I)
    CN1=VK1*(1-PHI(3)+PHI(1)-PCN2)
    CN2=(VK1*(EP3-EP1))/(THE(I)*SQRP)
    CN3=VK2*(1+PCN3-(PHI(4)-PHI(5))*(1+PCN3)-PCN1)
    CN4=(VK2*(EP1-EP2))/(THE(I)*SQRP)
    CN0=(CN1+CN2-CN3-CN4)/PT
    GO TO 80
50  EVHA=1.0-EXP(-0.5*(VH**2))
    AA=0.5*VH*SQRP*EVHA
    AB=VH*SQRP*(1.5-PHI(6))+2.0*EVHA
    CP0(I)=AA/AB
    CN0(I)=1.0+VH/(SQRP*(1.5-PHI(6)))
80  ARL(I)=CN0(I)/(1.0-CP0(I))
100 CONTINUE
    WRITE(6,150)VH,ARL(1),ARL(2)
150 FORMAT(4X,F5.3,4X,F13.4,4X,F13.4)
200 CONTINUE
    STOP

```

END

C*****

C

C FUNCTION NORMAL DISTRIBUTION

C*****

FUNCTION FN(ZZ)

FN=(1.0/2.5066282746)*DEXP(DBLE(-1.0*(ZZ**2)/2.0)

RETURN

END

C*****

C

C CUMULATIVE NORMAL DISTRIBUTION FUNCTION

C*****

FUNCTION CDFN(Z0)

TLZ0=FN(Z0)

TLWW=1.0/(1.0+0.33267*ABS(Z0))

TPL=1.0-TLZ0*(0.4361836*TLWW-0.120167*(TLWW**2)+0.937298*(TLWW**3)

IF(Z0.GE.0) THEN .

 CDFN=TLP

ELSE

 CDFN=1.0-TLP

ENIF

RETURE

END

ประวัติผู้เขียน

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วิทยาศาสตรบัณฑิต สาขาสถิติ จากมหาวิทยาลัยขอนแก่น ปีการศึกษา 2534 ได้เข้าศึกษาในภาค
วิชาสถิติ คณะพาณิชยศาสตร์และการบัญชี จุฬาลงกรณ์มหาวิทยาลัย เมื่อปีการศึกษา 2536

