


```

LL      AAAAAA  MM      MM  RRRRRRRR  MM      MM  CCCCCCCC  000000  DDDDDDDD  EEEEEEEEEE
LL      AAAAAA  MM      MM  RRRRRRRR  MM      MM  CCCCCCCC  000000  DDDDDDDD  EEEEEEEEEE
LL      AA      AA  MMMM  MMMM  RR      RR  MMMM  MMMM  CC      00      00  DD      DD  EE
LL      AA      AA  MMMM  MMMM  RR      RR  MMMM  MMMM  CC      00      00  DD      DD  EE
LL      AA      AA  MM  MM  MM  RR      RR  MM  MM  MM  CC      00      00  DD      DD  EE
LL      AA      AA  MM  MM  RR      RR  MM  MM  MM  CC      00      00  DD      DD  EE
LL      AA      AA  MM      MM  RRRRRRRR  MM      MM  CC      00      00  DD      DD  EEEEEEEE
LL      AA      AA  MM      MM  RRRRRRRR  MM      MM  CC      00      00  DD      DD  EEEEEEEE
LL      AAAAAAAAAA  MM      MM  RR  RR  MM      MM  CC      00      00  DD      DD  EE
LL      AAAAAAAAAA  MM      MM  RR  RR  MM      MM  CC      00      00  DD      DD  EE
LL      AA      AA  MM      MM  RR      RR  MM      MM  CC      00      00  DD      DD  EE
LL      AA      AA  MM      MM  RR      RR  MM      MM  CC      00      00  DD      DD  EE
LL      AA      AA  MM      MM  RR      RR  MM      MM  CC      00      00  DD      DD  EE
LLLLLLLLLLLL  AA      AA  MM      MM  RR      RR  MM      MM  CCCCCCCC  000000  DDDDDDDD  EEEEEEEEEE
LLLLLLLLLLLL  AA      AA  MM      MM  RR      RR  MM      MM  CCCCCCCC  000000  DDDDDDDD  EEEEEEEEEE

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LL      IIIIII  SSSSSSSS
LL      IIIIII  SSSSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SSSSSS
LL      II      SSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LLLLLLLLLLLL  IIIIII  SSSSSSSS
LLLLLLLLLLLL  IIIIII  SSSSSSSS

```

```

0000 1 .TITLE LAMRMCOF - LPA-11 MULTIREQUEST MODE MICROCODE
0000 2 .IDENT 'V04-000'
0000 3
0000 4 *****
0000 5
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0000 23
0000 24
0000 25 *****
0000 26
0000 27
0000 28 ++
0000 29 : FACILITY: LPA-11 UTILITY ROUTINES
0000 30
0000 31 : ABSTRACT:
0000 32 : THIS MODULE CONTAINS THE LPA-11 MULTIREQUEST MODE MICROCODE
0000 33
0000 34 : ENVIRONMENT: USER MODE (LINKED WITH LPA-11 LOADER PROCESS)
0000 35
0000 36 : AUTHOR: CHUCK SAMUELSON. CREATION DATE: NOVEMBER, 1977
0000 37 : MODIFIED BY:
0000 38
0000 39 : AARON BOXER, JULY - OCTOBER, 1978
0000 40 : STEVE BECKHARDT, OCTOBER, 1978
0000 41 : ADDED MODULE PREFACE AND MICROCODE TYPE TO LAST WORD
0000 42 : OF MICROCODE
0000 43
0000 44 : V02-002 AARON BOXER AND DOUG BELLI MAY 1979 - JAN 1980
0000 45 : FIXED VARIOUS MICROCODE BUGS
0000 46 :--

```

						00000000	48	.PSECT	_LPASCODE,NOWRT,WORD	
						0000	49			
						0000	50			
						0000	51	LPASSMRRMCODE::		
6693	01FF	6696	6694	6A92	7290	0100	0000	52	.WORD	256, 29328, 27282, 26260, 26262, 511, 26259, 26264
						6698	000E			
0180	820B	6670	1DFF	6690	0107	6699	0010	53	.WORD	26265, 263, 26256, 7679, 26224,-32245, 384, 26258
						6692	001E			
6679	8210	6678	8119	8614	6390	21A0	0020	54	.WORD	8608, 25488,-31212,-32487, 26232,-32240, 26233,-32240
						8210	002E			
98B0	60F0	26A0	012A	8987	99CF	8986	0030	55	.WORD	-30330,-26161,-30329, 298, 9888, 24816,-25680,-30328
						8988	003E			
479F	6881	8329	5691	28F0	6694	7185	0040	56	.WORD	29061, 26260, 10480, 22161,-31959, 26753, 18335,-29696
						8C00	004E			
6758	26A8	6695	0107	8AFB	6675	973A	0050	57	.WORD	-26822, 26229,-29957, 263, 26261, 9896, 26456,-28790
						8F8A	005E			
8975	8337	6183	8E89	6158	898B	8632	0060	58	.WORD	-31182,-30325, 24920,-29047, 24963,-31945,-30347,-24320
						A100	006E			
8768	6152	8FFB	A190	8FFB	A729	8473	0070	59	.WORD	-31629,-22743,-28677,-24176,-28677, 24914,-30872,-23029
						A60B	007E			
0136	89FB	875B	618B	8463	8746	6182	0080	60	.WORD	24962,-30906,-31645, 24971,-30885,-30213, 310, 25748
						6494	008E			
A60C	844C	A180	6298	010F	6495	01F1	0090	61	.WORD	497, 25749, 271, 25240,-24192,-31668,-23028, 384
						0180	009E			
6288	6298	010F	6690	010C	6290	61CC	00A0	62	.WORD	25036, 25232, 268, 26256, 271, 25240, 25224, 383
						017F	00AE			
01C0	8165	875E	615B	8C82	A190	66B2	00B0	63	.WORD	26290,-24176,-29566, 24923,-30882,-32411, 448, 25241
						6299	00BE			
66B2	017E	8760	615B	89FB	66C2	0101	00C0	64	.WORD	257, 26306,-30213, 24923,-30880, 382, 26290,-30213
						99FB	00CE			
0180	813F	876E	6159	8170	876B	6189	00D0	65	.WORD	24969,-30869,-32400, 24921,-30866,-32449, 384, 25241
						6299	00DE			
A600	010C	A455	A444	8139	66B2	01BF	00E0	66	.WORD	447, 26290,-32455,-23484,-23467, 268,-23040, 26288
						66B0	00EE			
A609	017E	847B	A180	6298	61C0	0103	00F0	67	.WORD	259, 25024, 25240,-24192,-31621, 382,-23031, 25017
						61B9	00FE			
8788	6189	6288	6298	61C0	0103	6290	0100	68	.WORD	25232, 259, 25024, 25240, 25224, 24969,-30840,-30363
						8965	010E			
0107	2600	2EF4	8C67	A190	8C6B	2140	0110	69	.WORD	8512,-29589,-24176,-29593, 12020, 9728, 263, 26288
						66B0	011E			
8968	99A3	81D2	81C8	89DD	E100	0192	0120	70	.WORD	402, -7936,-30243,-32312,-32302,-26205,-30360,-30360
						8968	012E			
4698	4494	7001	012B	669F	8968	8968	0130	71	.WORD	-30360,-30360, 26271, 299, 28673, 17556, 18072, 26168
						6638	013E			
A180	8F3E	21A0	4298	5C95	82BC	7D38	0140	72	.WORD	32056,-32068, 23701, 17048, 8608,-28866,-24192,-31578
						84A6	014E			
84AD	21A0	6498	61C4	0120	84C6	A190	0150	73	.WORD	-24176,-31546, 288, 25028, 25752, 8608,-31571, 9224
						2408	015E			
5E99	5E98	7001	0128	F18F	87B3	2110	0160	74	.WORD	8464,-30797, -3697, 296, 28673, 24216, 24217, 24218
						5E9A	016E			
7D38	4698	4495	F18F	653A	7D89	7D88	0170	75	.WORD	32136, 32137, 25914, -3697, 17557, 18072, 32056,-32063
						82C1	017E			
24B8	81A4	6508	0104	4698	4298	81A3	0180	76	.WORD	-32349, 17048, 18072, 260, 25864,-32348, 9400,-30397
						8943	018E			
1008	86CF	2100	100A	896E	86CB	6182	0190	77	.WORD	24962,-31029,-30354, 4106, 8448,-31025, 4104, 16784
						4190	019E			
6758	2608	896E	86D5	6182	81E3	8C69	01A0	78	.WORD	-29591,-32285, 24962,-31019,-30354, 9736, 26456,-31015

85F7	6390	2110	8F68	6158	8F68	86D9	01AE	79	.WORD	-30353,-28824, 24920,-28824, 8464. 25488,-31241, 8464
6691	01C3	6694	1107	8D68	81E3	896F	01B0	80	.WORD	-31518,-32285,-29336, 4359, 26260, 451, 26257,-32278
01C0	8B72	7674	83F4	4190	6691	2110	01BE	81	.WORD	450, 26257, 16784,-31756, 30324,-29838, 448, 26113
89E8	6881	7581	81EA	83E8	60F4	84E2	01C0	82	.WORD	259, 24820,-31768,-32278, 30081, 26753,-30232, 8448
0000	0000	8968	84E2	2110	8v68	81EA	01CE	83	.WORD	-30982,-30360, 8464,-31518,-30360, 0, 0, 0
6176	8F1A	4796	8729	B990	8729	01C2	01D0	84	.WORD	-24288,-30935,-1E032,-30935, 18326,-28902, 24950,-29917
657C	469C	7001	012E	8B12	60F6	6601	01DE	85	.WORD	257, 24822,-29934, 302, 28673, 18076, 25980,-30190
25F0	7DBC	017E	469C	7081	8945	0103	01E0	86	.WORD	9974,-30395, 28801, 18076, 382, 32188, 9712, 281
675F	6881	05FF	0800	7084	89FA	2100	01EE	87	.WORD	-30298,-30214, 28804, 2048, 1535, 26753, 26463,-28893
8EF6	615F	66C2	0180	8917	8F28	86FA	01FO	88	.WORD	24927,-28888,-30441, 384, 26306, 24927,-28938,-30446
8917	8B2F	60F6	01AC	8B2F	60F6	0000	01FE	89	.WORD	427, 24822,-29905, 428, 24822,-29905,-30441, 424
6606	01D4	6636	6636	6636	8917	A120	0200	90	.WORD	26262,-30441, 26166, 26166, 26166, 468, 26118, 28801
6636	6636	6636	89F6	6586	1D41	8B23	020E	91	.WORD	26753, 7489, 25990,-30218, 26166, 26166, 26166, 26166
66C6	01A0	6636	6636	6636	6636	0101	0210	92	.WORD	26166, 26166, 26166, 26166, 26166, 416, 26310, 28801
6586	8FF6	4190	894E	8C4C	8EF6	8A12	021E	93	.WORD	22928,-28938,-29620,-30386, 16784,-28682, 25990, 8608
0110	4698	7081	6499	61C4	0110	26F6	0220	94	.WORD	-29105, 272, 25028, 25753, 28801, 18072, 272, 26056
8EFA	8C63	4799	7081	6636	6636	0119	022E	95	.WORD	-30218, 26166, 26166, 28801, 18329,-29597,-28934, 257
8972	6636	8944	26F6	89FA	6586	89A6	0230	96	.WORD	32201, 25990,-30214, 9974,-30396, 26166,-30350, 26166
6636	6636	6636	6636	6636	6636	8F23	023E	97	.WORD	26166, 26166, 26166, 26166, 26166, 26166, 26166, 26166
A120	6696	6693	61C6	01C0	6656	615F	0240	98	.WORD	26166, 26198, 448, 25030, 26259, 26262,-24288,-28682
8CF6	6186	89A6	017D	26B3	8FF6	8912	024E	99	.WORD	-24176,-28682, 9907, 381,-30298, 24966,-29450, 384
6636	6636	6636	6636	6636	89F6	01AB	0250	100	.WORD	26306,-30218, 26166, 26166, 26166, 26166, 26166, 26166
66C6	01E0	6287	6296	6636	6636	01AB	025E	101	.WORD	26166, 26166, 26166, 25238, 25223, 480, 26310, 256
8B91	618E	8F9B	A729	8F91	A190	6696	0260	102	.WORD	26270,-24176,-28783,-22743,-28773, 24974,-29807, 409
6159	8993	8F9E	6152	8991	667E	7081	026E	103	.WORD	-30298, 26238,-30319, 24914,-28770,-30317, 24921,-28767
669F	8991	66B2	01BF	6299	0180	8FF6	027E	104	.WORD	-30317, 384, 25241, 447, 26290,-30319, 26271, 24966
6298	010F	6495	01F1	6494	0136	A190	028E	105	.WORD	25235, 310, 25748, 497, 25749, 271, 25240,-24192
61CA	61C4	0180	66BA	0140	A62A	66C2	0290	106	.WORD	-29521,-22998, 320, 26298, 384, 25028, 25034, 25234
						6636	029E			
						8FA1	02A0			
						8993	02AE			
						6186	02B0			
						6293	02C0			
						A180	02CE			
						8CAF	02D0			
						6292	02DE			
							02E0			
							02EE			
							02FO			
							02FE			
							0300			
							030E			
							0310			
							031E			
							0320			
							032E			
							0330			
							033E			
							0340			
							034E			
							0350			
							035E			
							0360			
							036E			

8FC2	615A	6288	6298	010F	6690	010C	0370	107	.WORD	268, 26256, 271, 25240, 25224, 24922,-28734, 320
E98F	66B2	01BF	6299	0180	E98F	0140	037E	108	.WORD	26306, -5745, 384, 25241, 447, 26290, -5745, 26270
8AD4	7D38	6638	4698	4494	7001	66C2	0380	109	.WORD	260, 28673, 17556, 18072, 26168, 32056,-29996, 23701
7D38	4698	4495	F18E	6288	6630	669E	038E	110	.WORD	24208, 26160, 25224, -3698, 17557, 18072, 32056,-29991
8E6D	6182	89D1	7D00	0104	4690	0104	0390	111	.WORD	-30256, 18064, 260, 32000,-30255, 24962,-29075, 9752
5691	0502	30F0	896A	8BE4	60F8	5C95	039E	112	.WORD	261, 24824,-29724,-30358, 12528, 1282, 22161, 26753
A688	3D50	3D40	3D00	3D10	3DF0	5E90	03A0	113	.WORD	7552, 15856, 15632, 15616, 15680, 15696,-22904, 268
A698	89FB	1D01	7101	012E	0542	8AD9	03AE	114	.WORD	32184, 1346, 302, 28929, 7425,-30213,-22888, 366
669A	2784	9D11	21A0	26F6	6299	89D0	03B0	115	.WORD	25016, 25241, 9974, 8608,-25327, 10116, 26266, 271
5990	972D	615A	6881	5691	0800	2618	03BE	116	.WORD	30388, 2048, 22161, 26753, 24922,-26835, 22928,-27087
618A	950C	21A0	9612	798A	8EFB	0105	03C0	117	.WORD	25488,-28933, 31114,-27118, 8608,-27380, 24970, 25488
819A	0117	9517	9417	5990	9127	6881	03CE	118	.WORD	-25051,-28377, 22928,-27625,-27369, 279,-32358, 281
61C4	0180	941B	A180	8F3E	21A0	9631	040E	119	.WORD	-30265, 8608,-28866,-24192,-27621, 384, 25028, 25752
9939	2418	9423	21A0	2408	9420	6390	0410	120	.WORD	8608,-27616, 9224, 8608,-27613, 9240,-26311, 16784
0101	469B	9925	819A	012C	9D25	6390	041E	121	.WORD	-25563,-25307, 300,-32358,-26331, 18075, 257, 26059
21A0	2180	9533	21A0	8EFB	618A	9E25	0420	122	.WORD	-30213, 24970,-28933, 8608,-27341, 8576, 8608,-27338
943D	A180	4698	89C7	013C	89FB	0119	042E	123	.WORD	8576,-30213, 316,-30265, 18072,-24192,-27587,-24176
9750	6188	6881	8129	0554	F188	89C7	0430	124	.WORD	-29643, -3704, 1364,-32471, 26753, 24968,-26800, 24969
667E	669F	014E	669E	0106	9550	6498	043E	125	.WORD	-27568,-27312, 262, 26270, 334, 26271, 26238,-32101
1D61	9659	6182	9940	015B	7101	21A0	0440	126	.WORD	265, 28929, 347,-26304, 24962,-27047, 7521, 1286
7090	653E	669E	6101	010B	1D84	4190	044E	127	.WORD	-28318, 7556, 267, 24833, 26270, 25918, 28816, 15616
21A0	0800	753A	663A	469A	7990	9C25	0450	128	.WORD	-28265, 31120, 18074, 26170, 30010, 2048, 8608,-27546
2408	946C	21A0	6498	6390	610A	65CB	045E	129	.WORD	505, 24842, 25488, 25752, 8608,-27540, 9224, 8608
3D00	9381	2180	9572	21A0	2418	89FB	0460	130	.WORD	-27537, 9240, 8608,-27278, 8576,-27775, 15616, 9488
30F0	66C2	0990	8129	937C	60FA	9536	046E	131	.WORD	281, 24826,-27780,-32471, 2448, 26306, 12528, 9648
4190	7001	0103	8933	2217	2206	2180	0470	132	.WORD	-32471, 8710, 8727,-30413, 259, 28673, 16784,-27495
6570	4690	928F	7D70	4690	7101	A190	047E	133	.WORD	267, 28929, 18064, 32112,-28017, 18064, 25968, 263
7D90	8C34	2100	753A	469A	1DB3	8C35	0480	134	.WORD	28929, 7603, 18074, 30010, 8448,-29644, 32144, 9488
21A0	6690	0111	919D	0110	969C	6189	048E	135	.WORD	-32471,-26980, 272,-28259, 273, 26256, 8608,-28866

7D08 0104 4698 992E 9A84 7D38 4698	0700	164	.WORD	18072, 32056,-25980,-26322, 18072, 260, 32008,-26321
992F 070E				
4190 7081 89FB 8C41 A190 9C88 A180	0710	165	.WORD	-24192,-25464,-24176,-29631,-30213, 28801, 16784,-29374
8D42 071E				
61C8 0180 6493 669E 0180 669F 0159	0720	166	.WORD	345, 26271, 384, 26270, 25747, 384, 25032,-26269
9963 072E				
7101 0100 893D 9F7D 4190 7101 0103	0730	167	.WORD	259, 28929, 16784,-24675,-30403, 256, 28929, 18072
4698 073E				
2614 896E 9EA6 6182 89FB 65C8 0120	0740	168	.WORD	288, 26056,-30213, 24962,-24922,-30354, 9748, 263
0107 074E				
65CD 469D 0148 6881 8B6C 5691 76B4	0750	169	.WORD	30388, 22161,-29844, 26753, 328, 18077, 26061,-30395
8945 075E				
21A0 6489 9EB3 21A0 26B0 6499 0180	0760	170	.WORD	384, 25753, 9904, 8608,-24909, 25737, 8608, 25488
6390 076E				
9AB3 6670 8983 98BD 60F0 2190 9EB6	0770	171	.WORD	-24906, 8592, 24816,-25667,-30333, 26224,-25933, 8608
21A0 077E				
9BC8 60F0 2180 9DC2 21A0 6488 9CBF	0780	172	.WORD	-25409, 25736, 8608,-25150, 8576, 24816,-25656,-30332
8984 078E				
812B 6297 4190 6296 0105 9ABF 6670	0790	173	.WORD	26224,-25921, 261, 25238, 16784, 25239,-32469, 9872
2690 079E				
0100 66B0 01F0 66D0 0105 6580 102A	07A0	174	.WORD	4138, 25984, 261, 26320, 496, 26288, 256, 24816
60F0 07AE				
0000 0000 0000 811A 0105 4690 831B	07B0	175	.WORD	-31973, 18064, 261,-32486, 0, 0, 0, 0
0000 07BF				
0000 0000 0000 0000 0000 0000 0000	07C0	176	.WORD	0, 0, 0, 0, 0, 0, 0, 0
0000 07CE				
0000 0000 0000 0000 0000 0000 0000	07D0	177	.WORD	0, 0, 0, 0, 0, 0, 0, 0
0000 07DE				
0000 0000 0000 0000 0000 0000 0000	07E0	178	.WORD	0, 0, 0, 0, 0, 0, 0, 0
0000 07EE				
0000 0000 0000 0000 0000 0000 0000	07F0	179	.WORD	0, 0, 0, 0, 0, 0, 0, 0
0001 07FE				
0800	0800	180	.END	

LPA\$SRMCODE 00000000 RG 01

-----+
 ! Psect synopsis !
 -----+

PSECT name	Allocation	PSECT No.	Attributes
ABS	00000000 (0.)	00 (0.)	NOPI C USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
LPASCODE	00000800 (2048.)	01 (1.)	NOPI C USR CON REL LCL NOSHR EXE RD NOWRT NOVEC WORD

-----+
 ! Performance indicators !
 -----+

Phase	Page faults	CPU Time	Elapsed Time
Initialization	29	00:00:00.06	00:00:01.18
Command processing	101	00:00:00.48	00:00:01.59
Pass 1	76	00:00:01.59	00:00:03.53
Symbol table sort	0	00:00:00.00	00:00:00.00
Pass 2	70	00:00:00.67	00:00:01.37
Symbol table output	2	00:00:00.01	00:00:00.01
Psect synopsis output	1	00:00:00.01	00:00:00.01
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	282	00:00:02.82	00:00:07.70

The working set limit was 900 pages.
 7354 bytes (15 pages) of virtual memory were used to buffer the intermediate code.
 There were 10 pages of symbol table space allocated to hold 1 non-local and 0 local symbols.
 180 source lines were read in Pass 1, producing 15 object records in Pass 2.
 0 pages of virtual memory were used to define 0 macros.

-----+
 ! Macro library statistics !
 -----+

Macro library name	Macros defined
_\$255\$DUA28:[SYSLIB]STARLET.MLB;2	0

0 GETS were required to define 0 macros.

There were no errors, warnings or information messages.

MACRO/LIS=LIS\$:LAMRMCODE/OBJ=OBJ\$:LAMRMCODE MSRC\$:LAMRMCODE/UPDATE=(ENH\$:LAMRMCODE)

MELDR

MDL32

LALOAD
MAP

MDL32
MAP

XFLOADER
MAP

LALOADER
LIS

XFLOADER
LIS

LADAMCODE
LIS

LALOAD
LIS

LADRMCODE
LIS

LALOADER
MAP

LADRMCODE
LIS

LADMT
LIS

MARBLI

MARBLI
MAP

MARBLI
LIS

[Faint, illegible text in the left margin]