

NASA Apollo LUMINARY 131 (1C) Program Source Code Listing

GAP: ASSEMBLE REVISION 131 OF AGC PRECCRAM LUMINARY BY NASA 2021112-091 17:53 DEC. 19,1969 LPDAP .025 PAGE 1423

USER'S PAGE NO. 11 E 6 S4

L P-AXIS RCS AUTOPILOT

BRANCH FOR RATE COMMAND

EXTEND DETENTCK
BZF

C 00C6 1
1 3071 0

REF 2 LAST 1422
16,3031
16,3032

CA ZERR
TS

3 4755 1
55,464 1

REF 282 LAST 1422
REF 4 LAST 1413
MINIMUM IMPULSE MODE

CA COUX
TS

2 0C22 0
55,634 0

REF 25 LAST 1413
REF 20 LAST 1413

CCS OLDPMIN
TCF

11,460 0
1 3054 1

REF 2 LAST 1404
16,3037
16,3040

CA BIT3
EXTEND CHAN31
RAND

3 4751 0
0 0C06 1
02 031 1

REF 42 LAST 1411
16,3042
16,3043

EXTEND
BZF +XPIN

0 0006 1
1 3064 1

REF 11 LAST 1422
16,3044
16,3045

CA BIT4
EXTEND
RAND

3 4750 1
0 0006 1
02 031 1

REF 57 LAST 1411
16,3046
16,3047

EXTEND
BZF -XPIN

0 0006 1
1 3062 1

REF 12 LAST 1423
16,3050
16,3051
16,3052

TCF JETSOFF

1 3446 C

REF 1
16,3053

EXTEND
READ

C 0006 1
C 031 C

REF 13 LAST 1423
16,3054
16,3055

CS A
MASK

4 0000 0
7 5741 1

REF 493 LAST 1422
16,3056
16,3057

TS OLOPMIN
TCF JETSOFF

55,466 0
1 3446 0

REF 3 LAST 1423
16,3057
16,3060

CS TEN
+2

4 4363 1
3 4363 0

REF 8 LAST 1404
16,3062
16,3063

CA TEN
TJP

55,424 1
3 4753 1

REF 9 LAST 1423
16,3064
16,3065

CA ONE
TS

55,460 0
1 3354 1

REF 156 LAST 1414
16,3066
16,3067

TCF PJETSLEC -6

1 3354 1

REF 4 LAST 1423
16,3070

MANUAL RATE COMMAND MODE
=====

BY ROBERT F. STINGFL

THIS MODE PROVIDES RCAM MANUAL CONTROL THRU 2 CONTROL LAMS:
THE DIRECT RATE MODE AFFORDS APPROPRIATE CONTROL WITHOUT OVERSHOOT. THE PSEUDO-AUTO MODE PROVIDES PRECISE
RATE CONTROL AND ATTITUDE HOLD.

1) DIRECT RATE AND 2) PSEUDO-AUTO.

ANYTHING LESS THAN LAMS, CORRECTED
IN JET SELECTION ROUTINE.

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R0446 IN DIRECT RATE, JETS ARE FIRED WHEN STICK POSITION CHANGES BY A FIXED NUMBER OF INCREMENTS IN ONE DAP CYCLE.
 R0448 THE BREAKOUT LEVEL IS 6 D/S FOR M-ONLY AND 3 D/S FOR CSM-DOCKED. THIS LAW NULLS THE RATE ERROR TO WITHIN
 R0450 THE TARGET DEADBAND, WHICH EQUALS THE BREAKOUT LEVEL.
 R0451 IN PSEUDO-AUTO, BODY-FIXED RATE AND ATTITUDE ERRORS ARE SUPPLIED TO TJETLAW, WHICH EXERCISES CONTROL.
 R0453 CONTROL SWITCHES FROM DIRECT RATE TO PSEUDO-AUTO IF THE TARGET DB IS ACHIEVED OR IF TIME IN (1) EXCEEDS 4 SEC.
 R0455 IF THE INITIAL COMMAND DOES NOT EXCEED THE BREAKOUT LEVEL, CONTROL GOES TO PSEUDO-AUTO IMMEDIATELY.

R0457 SINCE P-AXIS CONTROL IS SEPARATE FROM Q-R AXES CONTROL, IT IS POSSIBLE TO USE (1) IN P-AXIS AND (2) IN Q-R AXES,
 R0460 OR VICE VERSA. THIS ALLOWS A DEGREE OF ATTITUDE HOLD IN UNCONTROLLED AXES. DUE TO U,V CONTROL, HOWEVER, Q AND
 R AXES ARE COUPLED AND MUST USE THE SAME CONTROL LAW.

R0463 HAND CONTROLLER COMMANDS ARE SCALED BY A LINEAR/QUADRATIC LAW. FOR THE M-ALONE, MAXIMUM COMMANDED RATES ARE 20
 R0466 AND 4 D/S IN NORMAL AND FINE SCALING; HOWEVER, STICK SENSITIVITY AT ZERO COUNTS (OBTAINED AT A STICK DEFLECTION
 R0468 OF 2 DEGREES FROM THE CENTERED POSITION) IS 5 OR 1 D/S PER DEGREE. NORMAL AND FINE SCALINGS FOR THE CSM-DOCKED
 R0470 CASE IS AUTOMATICALLY SET TO 1/10 THE ABOVE VALUES. SCALING IS DETERMINED IN ROUTINE 3.
 R0472 ZEROENBL ENABLES COUNTERS SO THEY CAN BE READ NEXT TIME
 R0474 JUSTOUT FIRST DETECTION OF OUT OF DETENT (BY OURRECBIT)

R0476 REF 14 LAST 1423 16,3071 C 0006 1 DETENTCK EXTEND CHAN31
 R0477 REF 1 LAST 1423 16,3072 00 031 0 READ CH31TEMP
 R0478 REF 1 16,3073 551443 1 TS CH31TEMP
 R0479 REF 50 LAST 1414 16,3074 7 4735 0 MASK BIT15
 R0480 REF 1 16,3075 C 0006 1 EXTEND
 R0481 REF 1 16,3076 1 3223 0 BZF RHCMOVED
 R0482 REF 1 16,3077 3 4740 0 CAF OURRECBIT
 R0483 REF 40 LAST 1422 16,3100 7 0111 1 MASK DAPB00LS
 R0484 REF 2 LAST 1422 16,3101 C 0006 1 EXTEND
 R0485 REF 2 LAST 1422 16,3102 1 3467 0 BZF PURGENCY
 R0486 ***** JUST IN RATE COMMAND LAST PASS.
 R0487 REF 32 LAST 1385 16,3103 2 4743 0 CA BIT9
 R0488 REF 29 LAST 1422 16,3104 7 1262 1 MASK RC SFLAGS
 R0489 REF 1 16,3105 0 0006 1 EXTEND
 R0490 REF 1 16,3106 1 3120 0 BZF RUTH
 R0491 REF 53 LAST 1422 16,3107 3 4737 0 CAF BIT13
 R0492 REF 15 LAST 1424 16,3110 0 0006 1 EXTEND
 R0493 REF 15 LAST 1424 16,3111 02 031 1 RAND CHAN31
 R0494 REF 1 16,3112 0 0006 1 EXTEND
 R0495 REF 1 16,3113 1 3220 0 BZF RATEDAPP

R0496 REF 1 16,3114 4 5014 0 CS BIT9,11
 R0497 REF 30 LAST 1424 16,3115 7 1262 1 MASK RC SFLAGS
 R0498 REF 31 LAST 1424 16,3116 55762 1 TS RC SFLAGS
 R0499 REF 2 LAST 1424 16,3117 1 3220 0 TCF RATEDAPP

R0500 REF 32 LAST 1424 16,3120 3 1262 0 RLTH
 R0501 REF 1 16,3121 7 4742 0 CA MASK PB BIT
 R0502 REF 1 16,3122 0 0006 1 EXTEND
 R0503 REF 3 LAST 1424 16,3123 1 3125 0 BZF +2
 R0504 REF 3 LAST 1424 16,3124 1 3220 0 TCF RATEDAPP

CHECK OUT-OF-DETENT BIT.

BRANCH IF OUT OF DETENT.

IN DETENT. CHECK THE RATE COMMAND BIT.

BRANCH IF NOT IN RATE COMMAND LAST PASS.

JUST IN DETENT??

CHECK FOR ATTITUDE HOLD.

BRANCH IF IN ATTITUDE HOLD.

IN AUTO, OVERRIDE I-V-AXIS ZERO ORBIT (BIT 11) AND JUST-IN BIT (9).

IN ATTITUDE HOLD.

BRANCH IF P-RATE DAMPING IS FINISHED.

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0505 REF 33 LAST 1424 16,3125 3 1247 0 CA RCSFLAGS
0506 REF 1 16,3126 7 4741 0 MASK ORBIT
0507 16,3127 C 0706 1 EXTEND
0508 REF 1 LAST 1424 16,3130 1 3134 0 BZF RATEDONE
0509 REF 4 LAST 1424 16,3131 1 3220 0 TCF RATEDAMP
R0510 =====
0511 REF 60 LAST 1422 4753 1/10SEC = 8111
0512 REF 5 LAST 1363 4771 40CVC = OCT50
0513 16,3132 74777 0 PORBIT OCT 74777
0514 REF 14 LAST 953 5014 BITS9,11 EQUALS EBANK5
0515 16,3133 00056 1 LIARATP DEC 46
R0516 =====
0517 REF 2 LAST 1424 16,3134 4 4740 1 RATEDONE CS OURRCBIT
0518 REF 41 LAST 1424 16,3135 0 0004 0 INHINT
0519 REF 42 LAST 1425 16,3136 7 0111 1 MASK DAPBOOLS
0520 16,3137 54 111 1 TS DAPBOOLS
R0521 READ CDUS INTO CDU DESIRED REGISTERS
0522 REF 54 LAST 1424 16,3140 3 4737 0 CAF 8113
0523 16,3141 0 0006 1 EXTEND
0524 REF 16 LAST 1424 16,3142 C2 031 1 RAND CHAN31
0525 16,3143 0 0006 1 EXTEND
0526 16,3144 1 3150 1 BZF *4
0527 REF 26 LAST 1423 16,3145 2 0032 0 CA COUX
0528 REF 21 LAST 1423 16,3146 55 634 0 TS COUXD
0529 16,3147 C 3152 1 TC *5
0530 REF 54 LAST 1405 16,3150 C 4674 0 TC 18NMCALL
0531 REF 11 LAST 1403 16,3151 C 40154 0 FCADR ZATTERD
0532 16,3152 C 0003 1 RELINT
0533 REF 3 LAST 1424 16,3153 1 3467 0 TCF PURGENCY
0534 REF 5 LAST 1423 16,3154 55 464 1 TS PERRR
0535 REF 3 LAST 1425 16,3155 3 4740 0 JUSTOUT CA OURRCBIT
0536 REF 43 LAST 1425 16,3156 26 111 1 ADS DAPBOOLS
0537 REF 283 LAST 1423 16,3157 3 4755 1 CA ZERO
0538 REF 5 LAST 1416 16,3160 55 466 1 TS DXERROR
0539 REF 6 LAST 1425 16,3161 55 467 0 TS DXERROR +1
0540 REF 4 LAST 1416 16,3162 55 450 0 TS DYERROR
0541 REF 5 LAST 1425 16,3163 55 451 1 TS DYERROR +1
0542 REF 4 LAST 1417 16,3164 55 452 1 TS DZERROR
0543 REF 5 LAST 1425 16,3165 55 453 0 TS DZERROR +1
0544 REF 2 LAST 1416 16,3166 55 454 1 TS PLAST
0545 REF 2 LAST 1416 16,3167 55 455 0 TS OLAST
0546 REF 2 LAST 1417 16,3170 55 456 0 TS RLAST
0547 REF 1 16,3172 54 044 0 TS 0-RHCCTR
0548 REF 1 16,3173 54 044 0 TS R-RHCCTR
0549 REF 34 LAST 1425 16,3174 7 1262 1 CA PORBIT
0550 PEF 34 LAST 1425 16,3174 7 1262 1 MASK RCSFLAGS
0551 REF 35 LAST 1425 16,3175 55 222 1 TS PCSFLAGS
    
```

BRANCH IF Q,R RATE CAMPING IS FINISHED.

MANUAL COMMAND AND DAMPING COMPLETED IN ALL AXES.

(X-AXIS CVERRIDE)

INITIALIZATION - FIRST MANUAL PASS.

BITS 10 AND 11 OF RCSFLAGS ARE 0.

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L P-AXIS RCS AUTOPILOT

0555	REF 1	16,3176	C 3201	1	ZERGENBL	TC	RELINT	
0556	REF 3	16,3200	1 3446	0	JETSOFF	TCF		
0557	REF 2	16,3201	22 044	1	ZERGENBL LXCH	CA		
0558	REF 1	16,3202	3 0042	1	Q-RHCCTR	CA		
0559	REF 1	16,3203	531463	0	SAVEHAND	DXCH		
0560	REF 284	16,3204	3 4755	1	ZERO	CA		
0561	REF 1	16,3205	54 043	1	P-RHCCTR	TS		
0562	REF 3	16,3206	54 042	0	Q-RHCCTR	TS		
0563	REF 3	16,3207	54 044	0	R-RHCCTR	TS		
0563C5								
05631	REF 5	16,3210	0 0004	0	INHINT	EXTEND		
05632	REF 5	16,3212	23*265	1	QXCH	EXTEND		
05633	REF 9	16,3213	0 6022	1	TC	C13QSAV		
0564	REF 1	16,3214	3 3623	0	BITS8,9	CA		
0565	REF 23	16,3215	0 0006	1	EXTEND	CA		
0566	REF 6	16,3216	05 013	0	MOR	CHAN13		
0567	REF 6	16,3217	0 1265	1	TC	C13QSAV		
0568	REF 285	16,3220	3 4755	1	RATEDAMP	CA		
0569	REF 2	16,3221	4 0493	1	TS	P-RHCCTR		
0570	REF 1	16,3222	1 3232	0	RATEROR	TS		
05701	*REF 36	16,3223	4 1262	1	RHMOVED	CS		
05702	*REF 33	16,3224	7 4743	1	MASK	BIT9		
05703	*REF 37	16,3225	27*262	1	ADS	RCSFLGS		
0571	*REF 4	16,3226	3 4740	0	CA	OURRCBIT		
0572	REF 44	16,3227	7 0111	1	MASK	DAPBOOLS		
0573	REF 1	16,3230	0 0006	1	EXTEND	JUSTCUT -1		
0574	REF 1	16,3231	1 3154	0	BZF	COUX		
0575	REF 27	16,3232	3 0032	0	RATEROR	CA		
0576	REF 22	16,3233	55*036	0	TS	COUX		
0577	REF 3	16,3234	10 043	1	CCS	P-RHCCTR		
0578	REF 1	16,3235	1 3240	0	TCF	+3		
0579	REF 1	16,3236	1 3240	0	TCF	+2		
0580	REF 1	16,3237	1 3240	0	TCF	+1		
0581	REF 1	16,3240	6 0000	1	DOUBLE	DOUBLE		
0582	REF 1	16,3241	6 0000	1	DOUBLE	DOUBLE		
0583	REF 1	16,3242	6 3133	0	AD	LINRATP		
0584	REF 4	16,3243	0 0006	1	EXTEND	MP		
0585	REF 277	16,3244	7 0043	1	CA	P-RHCCTR		
0586	REF 1	16,3245	3 0001	0	EXTEND	L		
0587	REF 6	16,3246	0 0006	1	EXTEND	STIKSENS		
0588	REF 6	16,3247	7 1444	0	MP	PLAST		
0589	REF 3	16,3250	57*454	0	XCF	PLAST		
0590	REF 4	16,3251	4 0000	0	COM	PLAST		
0591	REF 4	16,3252	6 1454	0	AD	DAPTEMPI		
0592	REF 25	16,3253	55*736	0	TS	ZERGENBL		
0593	REF 2	16,3254	3 3201	1	TC			

COUNTERS ZEROED AND ENABLED

SET JUSTIN BIT TO 1

P CONTROL

FINDCDUM REQUIRES THAT COUX=COUX DURING X-AXIS OVERRIDE

LINEAR/QUADRATIC CONTROLLER SCALING (SEE EXPLANATION IN Q,R-AXES RCS AUTOPILOT)

INTERVAL* ZERO AND ENABLE ACA COUNTERS.

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05931	REF 5	LAST 1426	16,3255	C	0003	1	RELINT		
0594	REF 15	LAST 1417	16,3256	4	1454	1	CS		
0595	REF 1	LAST 1417	16,3257	6	1421	1	AD	PLAST	
0596	REF 1	LAST 1426	16,3260	5	1427	0	TS	OMEGAP	
0597	REF 26	LAST 1426	16,3261	11	1736	0	CCS	EDOTP	
0598			16,3262	1	3265	0	TCF	DAPTEMPI	
0599			16,3263	1	3273	0	TCF	+3	
0600			16,3264	1	3275	0	TCF	+R	
0601	REF 5	LAST 296	16,3265	1	3265	1	AD	+1	
0602			16,3266	6	1476	0	AD	-RATEDB	
0603			16,3266	0	0006	1	EXTEND	+4	
0604			16,3267	6	3273	1	BZMF	CA	
0605	REF 1	LAST 1414	16,3270	3	4771	1	CA	40CVC	
0606	REF 1	LAST 1426	16,3271	5	1445	1	TS	TCP	
0607	REF 38	LAST 1426	16,3272	3	1262	0	TC	PEGI	
0608	REF 2	LAST 1424	16,3273	7	4742	0	CA	RCSFLAGS	
0609			16,3274	7	4742	0	MASK	PBIT	
0610			16,3275	0	0006	1	EXTEND	+2	
0611	REF 2	LAST 1427	16,3276	1	3300	0	DZF		
0612	REF 7	LAST 1425	16,3277	0	1304	0	TC	PEGI	
0613	REF 1	LAST 1425	16,3300	3	1446	0	CA	DXERROR	
0614	REF 6	LAST 1425	16,3301	5	1751	1	TS	E	
0615	REF 4	LAST 1425	16,3302	5	1464	1	TS	PERRR	
0616	REF 28	LAST 1426	16,3303	3	3473	1	TC	PURGENCY	+4
0617	REF 23	LAST 1426	16,3304	3	0032	0	CA	COUX	
0618	REF 286	LAST 1426	16,3305	5	1634	0	TS	CDUXD	
0619	REF 8	LAST 1427	16,3306	3	4755	1	CA	ZERC	
0620	REF 9	LAST 1427	16,3307	5	1446	1	TS	DXERROR	
0621	REF 7	LAST 1427	16,3310	5	1447	0	TS	DXERROR	*1
0622	REF 7	LAST 1427	16,3311	5	1464	1	TS	PERRR	
0623	REF 2	LAST 1427	16,3312	11	1427	0	CCS	EDOTP	
0624			16,3313	0	3316	0	TC	+3	
0625			16,3314	0	3316	0	TC	+2	
0626	REF 1	LAST 1427	16,3315	0	3316	0	TC	+1	
0627	REF 1	LAST 1427	16,3316	5	1736	0	TS	ABSEDDTP	
0628	REF 1	LAST 1427	16,3317	6	1476	0	AD	TARGETDB	
0629	REF 1	LAST 1427	16,3320	0	0006	1	EXTEND		
0630	REF 3	LAST 1427	16,3321	6	3331	0	BZMF	LAST	
0631	REF 2	LAST 1427	16,3322	3	1445	0	CA	TCP	
0632	REF 2	LAST 1427	16,3323	3	0006	1	EXTEND		
0633	REF 39	LAST 1427	16,3324	6	3331	0	BZMF	RCSFLAGS	
0634	REF 3	LAST 1427	16,3325	4	1262	1	CS	PBIT	
0635	REF 40	LAST 1427	16,3326	7	4742	0	MASK	PBIT	
0636	REF 4	LAST 1427	16,3327	27	262	1	AD	RCSFLAGS	
0637	REF 41	LAST 1427	16,3330	1	3334	1	TCF	+4	
0638	REF 4	LAST 1427	16,3331	4	4742	0	CS	PBIT	
0639	REF 42	LAST 1427	16,3332	7	1262	1	MASK	RCSFLAGS	
0640	REF 3	LAST 1427	16,3333	5	1262	1	TS	RCSFLAGS	
0641	REF 3	LAST 1427	16,3334	4	1427	0	CCS	EDOTP	
0642	REF 1	LAST 1427	16,3335	0	0006	1	EXTEND		
			16,3336	7	1550	1	MP	1/ANETP	

IF P COMMAND CHANGE EXCEEDS BREAKOUT LEVEL, GO TO DIRECT RATE CONTROL. IF NOT CHECK FOR DIRECT RATE CONTROL LAST TIME.

CHECK FOR DIRECT RATE COMMAND LAST TIME.

TO PURE RATE COMMAND PSEUDO-AUTO CONTROL X-ATTITUDE ERROR (SP) LOAD P-AXIS ERROR FOR MODEL FDAOI DISPLAY DIRECT RATE CONTROL.

ZERC P-AXIS ERROR FOR MODEL FDAOI DISPLAY

IF RATE ERROR IS LESS THAN DEADBAND, FIRE, AND SWITCH TO PSEUDO-AUTO.

IF TIME IN RATE COMMAND EXCEEDS 4 SEC.

BIT 10 IS 1.

BIT 10 IS 0.

1/2JTACC SCALED AT 2EXP(71/PI)

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0643 REF 454 LAST 1423 20 001 1
0644 REF 10 LAST 1419 16 3340 C 2310 1
0645 REF 1 LAST 1423 16 3342 7 721 0
0647 REF 5 LAST 1423 16 3343 58 524 1
0648 REF 2 LAST 1427 16 3344 3 1736 1
0649 REF 2 LAST 131 16 3345 6 1475 0
0650 REF 1 LAST 1428 16 3346 0 0006 1
0651 REF 1 LAST 1428 16 3347 6 3352 0
    
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0652 REF 29 LAST 1421 16 3350 3 6245 1
0653 REF 7 LAST 1428 16 3351 1 3361 1
0654 REF 7 LAST 1428 16 3352 3 1524 0
0655 REF 7 LAST 1428 16 3353 27 24 1
A0656
    
```

P-JET-SELECTION-ROUTINE (RCTATION)

INPUT: NUMBERT 4, 5, 6 FOR WHICH PAIR OR 4 JETS
TJP + FOR +P ROTATION

OUTPUT: CHANNEL 6 FOR P-AXIS SKIP
PJUMPADR (SMALL TJP)
LJTLST CALL

ORDER OF POLICIES TRIED IN CASE OF FAILURE.

+P 7,15 8,16
-P 4,12 3,11
4,7 8,11
7,12 11,16
12,15 3,16
4,15 3,8
ALARM

```

REF 1 LAST 1428 16 3354 3 4747 1
REF 31 LAST 1330 16 3355 7 01G1 0
REF 495 LAST 1428 16 3356 1C 000 0
REF 157 LAST 1423 16 3357 3 4753 1
REF 34 LAST 1422 16 3360 6 4751 C
REF 3 LAST 1422 16 3361 55 742 0
REF 158 LAST 1428 16 3362 3 4753 1
REF 278 LAST 1426 16 3363 54 001 1
REF 8 LAST 1428 16 3364 11 524 1
REF 4 LAST 1426 16 3365 1 3372 C
REF 5 LAST 1428 16 3366 1 3446 0
REF 159 LAST 1428 16 3371 1 3371 0
REF 159 LAST 1428 16 3371 22 007 0
REF 1 LAST 1428 16 3372 6 4753 1
REF 1 LAST 1428 16 3373 55 736 C
    
```

A OVERSUB
EXTEND 25/32
TS TJP
CA ABSEDOPT
AD -2JETLIM
EXTEND
BZPF +3

A CONTAINS TJET SCALED AT 2EXP(4)(16/25)
4. JET TIME
COMPARING DELTA RATE WITH 2' JET LIMIT

GOES TO PJETSLEC FOR TWO JETS

SIX
TCF +80
CA TJP
ADS TJP

CA ARBSYST
TCF JETSOFF
ZL TCF JETSCFF
AD ONE
TS ABSTJ

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REF	LINE	OPERATION	ADDRESS	DATA	OPERATION	ADDRESS	DATA
0688	REF 4	LAST 1422	16,3374	23,743 0	LXCH	ROTINDE	
0689	REF 30	LAST 1428	16,3375	0,3535 0	TC	SELECTP	
0690	REF 4	LAST 1428	16,3376	4,6245 0	CS	SIX	
0691	REF 4	LAST 1428	16,3377	6,1742 1	AD	NUMBERT	
0692			16,3400	0,0006 1	EXTEND		
0693			16,3401	1,3403 1	BZF	*2	
0694	REF 94	LAST 1411	16,3402	4,4752 1	CS	TWO	
0695	REF 35	LAST 1428	16,3403	6,4751 0	AD	FOUR	
0696	REF 2	LAST 134	16,3404	5,521 0	TS	ND.PJETS	
0697	REF 2	LAST 1422	16,3405	3,1740 0	CA	POLYTEMP	
0698	REF 2	LAST 1396	16,3406	0,5744 0	CS	WRITEP	
0699	REF 2	LAST 1428	16,3407	4,1736 0	TS	ABSTJ	
0700	REF 1		16,3410	6,3616 0	AD	*150MST6	
0701			16,3411	0,0006 1	EXTEND		
0702	REF 2	LAST 1421	16,3412	6,3630 1	BZNF	QRAXIS	
0703	REF 1		16,3413	6,3576 0	AD	-136MST6	
0704			16,3414	0,0006 1	EXTEND		
0705			16,3415	6,3422 0	BZNF	*5	
0706	REF 3	LAST 1429	16,3416	27,736 0	ADS	ABSTJ	
0707	REF 5	LAST 1429	16,3417	51,743 0	INDEX	ROTINDE	
0708	REF 1		16,3420	3,3625 0	CA	MINTIMES	
0709	REF 9	LAST 1428	16,3421	55,524 1	TS	TJP	
0710	REF 4	LAST 1429	16,3422	2,1736 1	CA	ABSTJ	
0711			16,3423	22,007 0	ZL		
0712	REF 4	LAST 1404	16,3424	0,0004 0	INHINT		
0713	REF 55	LAST 1425	16,3425	53,471 0	DXCH	T6FURTHA	
0714	REF 1		16,3426	0,4674 0	TC	IBNKCALL	
0715	REF 39	LAST 1421	16,3427	371,43 0	CAOR	JTLST	
0716	REF 43	LAST 1427	16,3430	4,4740 1	CS	BIT12	
0717	REF 44	LAST 1429	16,3431	7,1262 1	MASK	RCSFLAGS	
0718	REF 1		16,3432	55,262 1	TS	RCSFLAGS	
0719	REF 3	LAST 1429	16,3433	0,3435 0	TC	ALTSYST	
0720	REF 3	LAST 1429	16,3434	1,3630 0	TCF	QRAXIS	
0721	REF 32	LAST 1428	16,3435	3,0101 1	ALTSYST	CA	FLAGHRDS
0722	REF 23	LAST 1428	16,3436	54,001 1	TS	L	
0723	REF 2	LAST 1428	16,3437	3,4747 1	CA	AGRSYST	
0724	REF 19	LAST 1406	16,3440	0,0006 1	EXTEND		
0725	REF 33	LAST 1429	16,3441	06,001 0	RXOR	LCHAN	
0726	REF 19	LAST 1406	16,3442	54,101 0	TS	FLAGHRDS	
0727	REF 406	LAST 1415	16,3443	0,0003 1	RELINT		
0728	REF 2	LAST 1429	16,3444	0,0002 0	TC	Q	
0729	REF 2	LAST 1429	16,3445	0,3435 0	DKALT	TC	ALTSYST
0730	REF 3	LAST 1429	16,3446	0,5743 1	JETSOFF	TC	WRITEP -1

GO TO QRAXIS OR TO GTS.

BIT 12 SET TO 0.

ALTERNATE P-AXIS JETS