

ADBR	= ***** G	ADCS	= ***** G	ANGH2	= ***** G
ANGL2	= ***** G	ANGMID	= ***** G	FIRE	= ***** G
FLAG2	= ***** G	MULPLY	= ***** G	PC	= %000007
PTNUM	= ***** G	RKTSIZ	= ***** G	R0	= %000000
R1	= %000001	R2	= %000002	R3	= %000003
R4	= %000004	R5	= %000005	R6	= %000006
R7	= %000007	SHOTS2	= ***** G	SINCOS	= ***** G
SP	= %000006	TSPEED	= ***** G	UPDAT2	000000RG
UPD21	000176R	UPD215	000204R	UPD217	000210R
UPD22	000226R	UPD23	000232R	UPD24	000314R
UPD25	000340R	XDISP2	= ***** G	XSIZE2	= ***** G
XVELH2	= ***** G	YVELL2	= ***** G	YDISP2	= ***** G
YSIZE2	= ***** G	YVELH2	= ***** G	YVELL2	= ***** G
	= 000356R				

END ?

; \*\*\*\*\*

# SUBROUTINE UPDAT2

VERSION 3B

BILL SEILER

AUG. 24, 1974

UPDATES RKT2 AND FIRES ITS TORPEDOES

ENTER THE ROUTINE WITH R2 A POINTER AT YSIZE  
AND #1401 PUSHED INTO THE ADCS

R0=MULTIPLIER (NOT DESTROYED)

R2=POINTER AT RKT DATA

R3=LOW WORD RESULT OF MULPLY

R4=HIGH WORD RESULT OF MULPLY AND MULTIPLICAN(DESTROYED)

R5=SINE OF ANGLE IN SINCOS RETURN

000000	R0=X0
000001	R1=X1
000002	R2=X2
000003	R3=X3
000004	R4=X4
000005	R5=X5
000006	R6=X6
000007	R7=X7
000006	SP=R6
000007	PC=R7

. TITLE UPDAT2

. GLOBL UPDAT2, MULPLY, SINCOS, PTNUM, ANGH2, ANGL2

. GLOBL XDISP2, YDISP2, XVELL2, YVELL2, XVELH2, YVELH2

. GLOBL XSIZE2, YSIZE2, FLAG2, FIRE, TSPEED, RKTSIZ

. GLOBL ANG MID, SHOTS2, ADCS, ADBR

000000

. CSECT

000000	016700'	UPDAT2: MOV	ANGH2, R0	; GET ANG2
000000				
000004	004767'	JSR	PC, SINCOS	; DO A SINCOS
000000				
000010	010067'	MOV	R0, ANGH2	; SAVE NORMALIZED ANGH2
000000				
000014	012700'	MOV	#RKTSIZ, R0	; SET RKT SIZE
000000				
000020	004767'	JSR	PC, MULPLY	; RKTSIZE*COS(ANGH2)
000000				
000024	010467'	MOV	R4, XSIZE2	; XSIZE2=RKTSIZE*COS(ANGH2)
000000				
000030	010504	MOV	R5, R4	; PUT SINE IN FOR MULPLY
000032	004767'	JSR	PC, MULPLY	; RKTSIZE*SIN(ANGH2)
000000				
000036	010422	MOV	R4, (R2)+	; YSIZE2=RKTSIZE*SIN(ANGH2)
000040	016700'	MOV	ADBR, R0	; GET ACC2 FROM ATOD
000000				

000044	012767'	MOV	#1001, ADC5	; START ATOD FOR ANGL2
	001001			
	000000			
000052	005722	TST	(R2)+	; DID RKT2 FIRE LAST LOOP?
000054	003050	BGT	UPD21	; YES-DONT FIRE THIS TIME
000056	022700'	CMP	#FIRE, R0	; NO-IS RKT2 FIRING NOW?
	000000			
		PAGE	001	
000062	003063	BGT	UPD23	; NO-UPDATE RKT2 VEL
000064	005367'	DEC	SHOTS2	; YES-ANY TORPS LEFT?
	000000			
000070	003445	BLE	UPD215	; NO-THEN OUT OF AMMO!
000072	005267'	INC	FLAG2	; YES-SET THE FLAG AND SHOOT
	000000			
000076	012705'	MOV	#PTNUM, R5	; SET UP PTR AT PTS
	000000			
000102	011500	MOV	(R5), R0	; GET # OF TORPS
000104	005225	INC	(R5)+	; ADD ONE MORE TO TORP CTR
000106	006300	ASL	R0	
000110	006300	ASL	R0	
000112	006300	ASL	R0	; MULT BY 8 TO SKIP PRESENT PTS
000114	060005	ADD	R0, R5	; MOVE PTR OVER PRESENT PTS
000116	016700'	MOV	TSPEED, R0	; SET FOR MULPLY
	000000			
000122	004767'	JSR	PC, MULPLY	; TSPEED*YSIZE2
	000000			
000126	062203	ADD	(R2)+, R3	; ADD YVELL2 TO TSPEED*YSIZE2
000130	005504	ADC	R4	; ADD CARRY
000132	062204	ADD	(R2)+, R4	; ADD HIGH ORDER WORDS
000134	010425	MOV	R4, (R5)+	; PUT TORP Y VEL IN ARRAY
000136	012215	MOV	(R2)+, (R5)	; PUT YDISP2 IN ARRAY
000140	066715'	ADD	YSIZE2, (R5)	; CALC YNOSE2 IN ARRAY
	000000			
000144	060425	ADD	R4, (R5)+	; UPDATE TORP OUT OF RKT2
000146	012204	MOV	(R2)+, R4	; SET XSIZE2 FOR MULPLY
000150	004767'	JSR	PC, MULPLY	; TSPEED*XSIZE2
	000000			
000154	062203	ADD	(R2)+, R3	; ADD LOW ORDER WORDS
000156	005504	ADC	R4	; ADD CARRY TO HIGH WORD
000160	062204	ADD	(R2)+, R4	; ADD HIGH ORDER WORDS
000162	010425	MOV	R4, (R5)+	; PUT TORP XVEL IN ARRAY
000164	012215	MOV	(R2)+, (R5)	; PUT XDISP2 IN ARRAY
000166	066715'	ADD	XSIZE2, (R5)	; CALC XNOSE2 IN ARRAY
	000000			
000172	060425	ADD	R4, (R5)+	; UPDATE TORP OUT OF RKT2
000174	000405	BR	UPD217	; GO UPDAT RKT2 POSITION
000176	022700' UPD21:	CMP	#FIRE, R0	; RKT2 STILL FIRING?
	000000			
000202	003011	BGT	UPD22	; NO-GO UPDATE VEL OF RKT2
000204	062702 UPD215:	ADD	#14, R2	; YES-MOVE PTR TO ANGLES
	000016			
000210	066767' UPD217:	ADD	YVELH2, YDISP2	; THEN UPDATE DISP ONLY
	000000			
	000000			
000216	066767'	ADD	XVELH2, XDISP2	; NOT VEL.
	000000			
	000000			
000224	000433	BR	UPD24	; GO UPDATE ANGLES
000226	005067' UPD22:	CLR	FLAG2	; NOT FIRING SO CLEAR FLAG2
	000000			
000232	004767' UPD23:	JSR	PC, MULPLY	; ACC2*YSIZE2(IN R4)
	000000			
000236	006204	ASR	R4	
000240	006003	ROR	R3	

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000242 006204 ASR R4
000244 006003 ROR R3
000246 006204 ASR R4
000250 006003 ROR R3 ; SCALE YACC2
000252 060322 ADD R3, (R2)+ ; YVELL2=YVELL2+ACC2*YSIZE2
000254 005504 ADC R4 ; ADD CARRY
000256 060412 ADD R4, (R2) ; YVELH2=YVELH2+ACCH2
000260 062222 ADD (R2)+, (R2)+ ; YDISP2=YDISP2+YVELH2
000262 012204 MOV (R2)+, R4 ; MOV XSIZE2 IN FOR MULPLY
000264 004767 JSR PC, MULPLY ; ACC2*XSIZE2
000000
000270 006204 ASR R4
000272 006003 ROR R3
000274 006204 ASR R4
000276 006003 ROR R3
000300 006204 ASR R4
000302 006003 ROR R3 ; SCALE XACC2
000304 060322 ADD R3, (R2)+ ; XVELL2=XVELL2+ACC2*XSIZE2
000306 005504 ADC R4 ; ADD CARRY
000310 060412 ADD R4, (R2) ; XVELH2=XVELH2+XACCH2
000312 062222 ADD (R2)+, (R2)+ ; XDISP2=XDISP2+XVELH2
000314 016700 UPD24: MOV ADBR, R0 ; GET ATOD ANGL2
000000
000320 012767 MOV #401, ADC5 ; START ATOD FOR ACC1
000401
000000
000326 005001 CLR R1 ; CLEAR FOR FAKE SIGN EXTEND
000330 162700 SUB #ANGMID, R0 ; CENTER CONTROL # FOR ANGLE
000000
000334 100001 BPL UPD25 ; IF POSITIVE SKIP R1=0
000336 005301 DEC R1 ; MAKE R1=-1 (177777)
000340 000300 UPD25: SWAB R0 ; GET HIGH BYTE IN LOW OF R1
000342 110001 MOV B R0, R1 ; PUT IN LOW OF R1
000344 105000 CLRB R0 ; CLEAR LOW BYTE OF R0
000346 060022 ADD R0, (R2)+ ; ADD LOW WORDS
000350 005501 ADC R1 ; ADD CARRY TO HIGH WORD
000352 060122 ADD R1, (R2)+ ; ADD HIGH WORDS
000354 000207 RTS PC ; ALL DONE!!!!!!!!!!!!!!!!!!!!!!
000001 .END

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000000 ERRORS

PAL-115 V003A

\*S H

\*B H

\*L T

\*T T