Jan Pedersen 23 June 1986

Key: '09 = 12K Dandetiger
'08 = 4K Dandelion
'00 = Dolphin

'32 = Dorado (as reported by Gwan)
'32L = Dorado (as reported by Larry)
'86-4 = 4K Daybreak
'86-8 = 8K Daybreak

X = Has microcode
P = Prolog microcode set
- = Doesn't have microcode
? = Don't know

Opcodes listed by entry in UFN table

op	' 09	' 08	' 00	' 32	′ 32L	' 86-4	' 86-8	Name
000	X	X	X	X	-	X	X	-X-
001	X	X	X	X	X	X	X	CAR
002	X	X	X	X	X	X	X	CDR
003	X	X	X	X	X	X	X	LISTP
004	X	X	X	X	X	X	X	NTYPX
005	X	X	X	Χ	Χ	X	X	TYPEP
006	X	X	X	X	X	X	X	DTEST {new COERCE}
007	_	_	_	_	_	_	_	CDDR {unused}
007								CDDR (unuseu)
010	Х	X	Х	Х	Х	Х	Х	FN0
	X	X	X	X	X	X	X	
015								
015	X	X	X	X	X	X	X	FNX
016	X	X	X	X	X	X	X	APPLYFN
017	_	-	_	-	X	-	-	CHECKAPPLY{?}
020	X	X	X	X	X	X	X	RETURN
021	X	X	X	X	X	X	X	BIND
022	X	X	X	X	X	X	X	UNBIND
023	X	X	X	X	X	X	X	DUNBIND
024	X	X	X	X	X	X	X	RPLPTR.N
025	X	X	X	X	X	X	X	GCREF
026	X	_	_	_	_	_	_	ASSOC
027	X	X	X	X	X	X	X	GVAR←
030	X	_	X	Χ	X	X	X	RPLACA
031	X	_	X	X	X	X	X	RPLACD
032	X	X	X	X	X	X	X	CONS
033	_	_	_	_	_	_	_	<pre>{unused}{will be GETPROP}</pre>
033	Х	_	_	_	_	_	_	FMEMB
035	_	_	_	_	_	_	_	
	_	_	_	_	_	_	_	{unused} {will be GETHASH}
036		_						{unused}{will be PUTHASH}
037	X	_	X	X	X	X	X	CREATECELL
0.40	17		**	**	**	17	17	DIN
040	X	-	X	X	X	X	X	BIN
041	_	-	-	-	-	-	-	BOUT {unused}
042	P	_	_	-	-	-	-	{Prolog}OPFETCHPLUSOPDISP
043	-	_	_	-	-	_	-	{unused}{will be LIST1}
044	_	-	_	-	-	-	-	DOCOLLECT {unused}
045	-	_	-	-	_	-	-	ENDCOLLECT {unused}
046	X	-	X	_	_	X	X	RPLCONS
047	X	_	-	_	_	-	-	LISTGET
050	-	_	_	-	-	_	_	ELT
051	-	-	-	_	_	-	-	NTHCHC
052	-	_	-	_	_	-	-	SETA
053	_	_	_	_	_	_	_	RPLCHARCODE {unused}
054	X	X	X	X	X	X	X	EVAL
055	_	_	_	_	_	_	_	{unused}EVALV
056	X	X	_	_	X	X	X	TYPECHECK
057	X	X	X	?	X	X	X	STKSCAN
060	Х	_	_	_	_	_	_	BUSBLT
061	X	_	_	_	_	_	_	MISC8{IBLT1 and IBLT2}
062	X	_	_	_	_	_	_	POLY {Poly; Mat. Multiply}
063	X	Х	_	_	Х	Х	Х	TYPEMASK.N
064	P	_	_	_	_	_	_	{Prolog}PROLOGREADPTR
065	P	_	_	_	_	_	_	
		_	_	_	_	_	_	{Prolog}PROLOGREADTAG
066 067	P P	_	_	_	_	_	_	{Prolog}PROLOGWRITETAGPTR
007	г	_	_	_	_	_	_	{Prolog}PROLOGWRITE0PTR

070 071 072 073 074 075 076	X - X X X X X X	- X - X X X	- - - - ? - X	- - - - ? - X	- X - X X X	- x - x x x	- X X X X X X X	PSEUDOCOLOR DOVEMISC EQL DRAWLINE STOREN COPYN RAID {unused}RETURN FOR LLBREAK
100	X	X	X	X	X	X	X	IVARO
	X	X	X	X	X	X	X	
107	X	X	X	X	X	X	X	IVARX
110	X	X	X	X	X	X	X	PVARO
	X	X	X	X	X	X	X	
117	X	X	X	X	X	X	X	PVARX
120	X	X	X	X	X	X	X	FVAR0 FVARX
	X	X	X	X	X	X	X	
127	X	X	X	X	X	X	X	
130	X	X	X	X	X	X	X	PVARO← PVARX←
	X	X	X	X	X	X	X	
137	X	X	X	X	X	X	X	
140 141 142 143 144 145 146 147	X X X X X X X	X X X X X X X	x - x x x x x	X - X X X X X X X X	X X X X X X X	X X X X X X X	X X X X X X X	GVAR ARG0 IVARX← FVARX← COPY MYARGCOUNT {unused} MYALINK ACONST
150 151 152 153 154 155 156 157	X X X X X X X	X X X X X X X	X X X X X X X	X X X X X X X	X X X X X X X	X X X X X X X X	X X X X X X X X	'NIL 'T '0 '1 SIC SNIC SICX GCONST
160 161 162 163 164 165 166	X X X X X X X	X X X X - - X X	X X X X X X X	X X X ? ? ? X X	X X X - X X X X	X X X X - - X X	X X X X - - X	ATOMNUMBER READFLAGS READRP WRITEMAP READPRINTERPORT WRITEPRINTERPORT PILOTBITBLT RCLK
170 171 172 173 174 175 176 177	X X X X X X X	X X X X X X X	X X X X X X X X 2	X X X X X X X	X - - X X X X	X X X X X X X	X X X X X X X	MISC1 MISC2 RECLAIMCELL GCSCAN1 GCSCAN2 SUBRCALL CONTEXT {unused}AUDIO
200	X	X	X	X	X	X	X	JUMP00
	X	X	X	X	X	X	X	
207	X	X	X	X	X	X	X	JUMP07
210	X	X	X	X	X	X	X	JUMP10
	X	X	X	X	X	X	X	
217	X	X	X	X	X	X	X	JUMP17
220	X	X	X	X	X	X	X	FJUMP00
	X	X	X	X	X	X	X	
227	X	X	X	X	X	X	X	FJUMP07
230	X	X	X	X	X	X	X	FJUMP10← FJUMP17←
	X	X	X	X	X	X	X	
237	X	X	X	X	X	X	X	
240	X X	X X	X X	X X	X X	X X	X X	TJUMP00

247	Х	Х	Х	X	Х	X	X	TJUMP07
250	Х	Х	Х	Х	Х	X	Х	TJUMP10
230	X	X	X	X	X	X	X	
257	X	X	X	X	X	X	X	TJUMP17
260	Х	Х	Х	Х	Х	Х	X	JUMPX
261	X	Х	X	Х	X	X	X	JUMPXX
262	X	X	X	X	X	X	X	FJUMPX
263	X	X	X	X	X	X	X	TJUMPX
264	X	X	X	X	X	X	X	NFJUMPX
265	X	X	X	X	X	X	X	NTJUMPX
266	X	-	_	_	_	-	_	ARRAYINDEX1
267	X	-	-	-	_	_	-	ARRAYINDEX2
270	X	X	X	X	X	X	X	PVAR0←
	X	X	X	X	X	X	X	· · ·
276	X	X	X	X	X	X	X	PVAR6←
277	X	Х	X	Х	X	X	Х	POP
300	X	X	-	-	-	X	X	POP.N
301	X	X	_	-	_	X	X	ATOMCELL.N
302	X	X	X	X	X	X	X	GETBASEBYTE
303	_	_	_	_	_	_	_	{unused}
304	X	X	X	X	X	X	X	BLT
305	X	-	-	-	-	_	-	PIXELBLT
306	- V	- V	- V	- v	- V	-	- V	{unused}
307	X	X	X	X	X	X	X	PUTBASEBYTE
310	X	X	Х	Х	Х	X	X	GETBASE.N
311	X	Х	X	Х	X	X	X	GETBASEPTR.N
312	X	X	X	X	X	X	X	GETBITS.N.FD
313	-	_	-	_	_	-	-	{unused}{new GETBASEFIXP}
314	-	-	-	-	_	-	-	<pre>{unused}{new PUTBASEFIXP}</pre>
315	X	X	X	X	X	X	X	PUTBASE.N
316	X	X	X	X	X	X	X	PUTBASEPTR.N
317	Х	X	X	X	X	X	X	PUTBITS.N.FD
320	Х	Х	X	Х	X	X	X	ADDBASE
321	X	X	X	X	X	X	X	VAG2
322	X	X	X	X	X	X	X	HILOC
323	X	X	X	X	X	X	X	LOLOC
324	X	X	X	X	X	X	X	PLUS2{see notes}
325	X	X	X	X	X	X	X	DIFFERENCE (see notes)
326 327	X X	TIMES2 { see notes }						
321	Λ	Λ	Λ	Λ	Λ	Λ	Λ	QUOTIENT{see notes}
330	X	X	X	X	X	X	X	<pre>IPLUS2{see notes}</pre>
331	X	X	X	X	X	X	X	<pre>IDIFFERENCE(see notes)</pre>
332	X	X	X	X	X	X	X	ITIMES2{see notes}
333	X	X	X	X	X	X	X	IQUOTIENT(see notes)
334 335	X -	X -	X -	X -	X -	X X	X X	<pre>IREMAINDER(see notes) (upused)(IDIUS N)</pre>
336	_	_	_	_	_	X	X	<pre>{unused} {IPLUS.N} {unused} {IDIFFERENCE.N}</pre>
337	_	_	_	_	_	_	_	{unused}
340	X	X	X	X	X	X	X	LLSH1{see notes}
341	X	X	X	X	X	X	X	LLSH8(see notes)
342	X	X	X	X	X	X	X	LRSH1{see notes}
343 344	X X	LRSH8{see notes} LOGOR2{see notes}						
345	X	X	X	X	X	X	X	LOGAND2{see notes}
346	X	X	X	X	X	X	X	LOGXOR2{see notes}
347	-	-	-	-	-	-	_	{unused} {new ALSH}
350	Х	_	Х	Х	Х	_	Х	FPLUS2
351	X	_	X	X	X	_	X	FDIFFERENCE
352	X	_	X	X	X	_	X	FTIMES2
353	X	_	X	X	X	_	X	FQUOTIENT
354	X	_	_	_	_	-	-	UBFLOAT2 {UFADD, UFSUB,
								UFISUB, UFMULT, UFDIV,
								UGREAT, UMAX, UMIN, UREM}
355	X	-	-	-	X	-	-	UBFLOAT1 (UTOB, BTOU, UABS,
	Λ							UNEG, UFIX}
0 = 6								
356	Х	-	-	-	-	_	_	ARRAYREAD (GENERAL, UNBOXED)
356 357		_	_	_	-	-	-	ARRAYREAD { GENERAL, UNBOXED } ARRAYWRITE { GENERAL, UNBOXED }
	Х							
357	X X	-	-	-	-	-	-	ARRAYWRITE { GENERAL, UNBOXED }

363	X	X	X	X	X	X	X	GREATERP
364	X	X	?	?	X	_	X	EQUAL
365	X	_	X	X	X	-	X	MAKENUMBER
366	X	_	X	X	X	_	_	BOXIPLUS
367	X	-	X	X	X	-	-	BOXIDIFFERENCE
370	-	-	-	-	-	_	-	MISC5
371	X	-	_	-	-	_	-	FFTSTEP
372	X	-	-	-	-	-	-	MISC3
								{Floating Point Array ops:
								EXP, MAG, FLOAT, COMPLEX,
								BLKMAX, BLKMIN, BLKABSMAX,
								BLKABSMIN, FLOATTOBYTE}
373	X	_	_	_	_	_	_	MISC4
								{Floating Point Array ops:
								TIMES, PERM, PLUS,
								DIFFERENCE, MAGIC,
								BITMAPBIT}
374	_	_	?	-	X	-	_	{reserved for DOLPHIN}
375	X	X	X	X	X	X	X	SWAP
376	X	X	X	X	X	X	X	NOP
377	-	-	-	-	-	-	-	{unused}

notes:

4K microcode:

PLUS2, DIFFERENCE, TIMES2, QUOTIENT will ufn if args not INTEGERS
IPLUS2, IDIFFERENCE will accept FIXP's as arguments, but will ufn if result is not a smallp or

smallneg
ITIMES2, IQUOTIENT, IREMAINDER will ufn if both args are not smallp

12K microcode:
PLUS2, DIFFERENCE, TIMES2, QUOTIENT will try floating point if args not INTEGERS
IPLUS2, IDIFFERENCE will accept FIXP's as arguments, and box the result if it is not a smallp or smallneg
ITIMES2, IQUOTIENT, IREMAINDER will ufn if both args are not smallp