

IHB File No. S3/1401/WG

**CIRCULAR LETTER 56/2003
6 August 2003**

IHO TIDAL COMMITTEE – LIST OF HARMONIC CONSTITUENTS

Dear Hydrographer,

The IHB is pleased to be able to forward the attached list of Tidal Harmonic Constituents. This list has been prepared by Mr. Bernard Simon of SHOM and Cdr. John Page of the UKHO on behalf of the IHO Tidal Committee. The Tidal Committee would welcome any comments on this list. It is requested that any such comments are sent directly to the authors at: John.Page@ukho.gov.uk and simon@shom.fr with a copy to the IHB at: sshipman@ihb.mc.

The list is also available for download on the Tidal Committee page of the IHO web site www.iho.shom.fr.

On behalf of the Directing Committee
Yours sincerely,

Vice Admiral Alexandros MARATOS
President

Annex A: List of Harmonic Constituents

List of Harmonic Constituents

Name	Speed (Deg/hr)	XDO	
		Numerical	Alphabetical

Long Term Constituents

Zo	0.000 000	0 555 555	Z ZZZ ZZZ
Sa	0.041 067	0 565 545	Z ZAZ ZYZ
Sa	0.041 069	0 565 555	Z ZAZ ZZZ
Ssa	0.082 137	0 575 555	Z ZBZ ZZZ
Sta	0.123 204	0 585 544	Z ZCZ ZYY
Msm	0.471 521	0 636 555	Z AXA ZZZ
Mnum (Mvm)	0.471 521	0 636 555	Z AXA ZZZ
Mm	0.544 375	0 654 555	Z AZY ZZZ
MSf	1.015 896	0 735 555	Z BXZ ZZZ
MSo	1.015 896	0 735 555	Z BXZ ZZZ
SM	1.015 896	0 735 555	Z BXZ ZZZ
Mf	1.098 033	0 755 555	Z BZZ ZZZ
KOo	1.098 033	0 755 555	Z BZZ ZZZ
MKo	1.098 033	0 755 555	Z BZZ ZZZ
Snu2 (S?2)	1.487 417	0 816 555	Z CVA ZZZ
SN	1.560 270	0 834 555	Z CXY ZZZ
MStm	1.569 554	0 836 555	Z CXA ZZZ
Mfm	1.642 408	0 854 555	Z CZY ZZZ
2SM	2.031 792	0 915 555	Z DVZ ZZZ
MSqm	2.113 929	0 935 555	Z DXZ ZZZ
Mqm	2.186 782	0 953 555	Z DZX ZZZ
2SMN	2.576 166	-----	Z EVY ZZZ

Diurnal Constituents

2Q1	12.854 286	1 257 554	A WZB ZZY
NJ1	12.854 286	1 257 554	A WZB ZZY
2OK1	12.845 003	-----	-----
muK1 (μ K1)	12.927 140	-----	-----
nuJ1 (?J1)	12.927 140	-----	-----
sigma1 (s1)	12.927 140	1 275 554	A WBZ ZZY
Q1	13.398 661	1 356 554	A XZA ZZY
NK1	13.398 661	1 356 555	A XZA ZZZ
rho1 (?1)	13.471 515	1 374 554	A XBY ZZY
nuK1 (vK1)	13.471 515	1 374 554	A XBY ZZY
O1	13.943 036	1 455 554	A YZZ ZZY
MK1	13.943 036	1 455 554	A YZZ ZZY
MS1	13.984 104	1 465 557	A YAZ ZZB
MP1	14.025 173	1 475 555	A YBZ ZZZ
MP1	14.025 173	1 475 556	A YBZ ZZA
tau1 (t1)	14.025 173	1 475 556	A YBZ ZZA
M1B	14.487 410	1 554 554	A ZZY ZZY
M1B	14.487 410	1 554 556	A ZZY ZZA
M1C	14.492 052	1 555 555	A ZZZ ZZZ
M1	14.492 052	1 555 556	A ZZZ ZZA
M1	14.492 052	1 555 557	A ZZZ ZZB
NO1	14.496 694	1 556 556	A ZZA ZZA

List of Harmonic Constituents

Name	Speed (Deg/hr)	XDO	
		Numerical	Alphabetical
M1A	14.496 694	1 556 556	A ZZA ZZA
M1	14.496 694	1 556 556	A ZZA ZZA
LP1	14.569 548	1 574 554	A ZBY ZZY
chi1(?1)	14.569 548	1 574 556	A ZBY ZZA
pi1(p 1)	14.917 865	1 625 564	A AWZ ZAY
TK1	14.917 865	1 625 564	A AWZ ZAY
P1	14.958 931	1 635 554	A AXZ ZZY
SK1	14.958 931	1 635 555	A AXZ ZZZ
S1	15.000 000	1 645 555	A AYZ ZZZ
S1	15.000 000	1 645 557	A AYZ ZZB
S1	15.000 002	1 645 566	A AYZ ZAA
SP1	15.041 069	1 655 555	A AZZ ZZZ
K1	15.041 069	1 655 555	A AZZ ZZZ
MO1	15.041 069	1 655 555	A AZZ ZZZ
K1	15.041 069	1 655 556	A AZZ ZZA
RP1	15.082 135	1 665 544	A AAZ ZYY
psi1(? 1)	15.082 135	1 665 546	A AAZ ZYA
phi1(F 1)	15.123 206	1 675 556	A ABZ ZZA
KP1	15.123 206	1 675 556	A ABZ ZZA
lambdaO1 (?O1)	15.512 590	1 736 554	A BXA ZZY
theta1(?1)	15.512 590	1 736 556	A BXA ZZA
MQ1	15.585 443	1 754 555	A BZY ZZZ
J1	15.585 443	1 754 556	A BZY ZZA
2PO1	15.974 827	1 815 554	A CVZ ZZY
SO1	16.056 964	1 835 555	A CXZ ZZZ
SO1	16.056 964	1 835 556	A CXZ ZZA
2KO1	16.139 102	-----	-----
OO1	16.139 102	1 855 556	A CZZ ZZA
ups1(?1)	16.683 476	1 954 556	A DZY ZZA
KQ1	16.683 476	1 954 556	A DZY ZZA

Semi-Diurnal Constituents

2MN2S2	26.407 938	2 096 555	B UDA ZZZ
3M(SK)2	26.870 175	2 175 555	B VBZ ZZZ
3MKS2	26.870 175	2 175 555	B VBZ ZZZ
2NS2	26.879 459	2 177 555	B VBB ZZZ
3M2S2	26.952 313	2 195 555	B VDZ ZZZ
3MS2	26.952 313	2 195 555	B VDZ ZZZ
2NK2S2	26.961 596	2 197 555	B VDB ZZZ
OQ2	27.341 696	2 256 555	B WZA ZZZ
MNK2	27.341 696	2 256 555	B WZA ZZZ
OQ2	27.341 696	2 256 557	B WZA ZZB
MNS2	27.423 834	2 276 555	B WBA ZZZ
eps2(e2)	27.423 834	2 276 555	B WBA ZZZ
MnuS2(M?S2)	27.496 687	2 294 555	B WDY ZZZ
2ML2S2	27.496 687	2 294 557	B WDY ZZB
MNK2S2	27.505 971	2 296 555	B WDA ZZZ
2MS2K2	27.803 934	2 335 555	B XXZ ZZZ
2MK2	27.886 071	2 355 555	B XZZ ZZZ

List of Harmonic Constituents

Name	Speed (Deg/hr)	XDO	
		Numerical	Alphabetical
O2	27.886 071	2 355 555	B XZZ ZZZ
NLK2	27.886 071	2 355 557	B XZZ ZZB
2N2	27.895 355	2 357 555	B XZB ZZZ
mu2 (μ 2)	27.968 208	2 375 555	B XBZ ZZZ
2MS2	27.968 208	2 375 555	B XBZ ZZZ
SNK2	28.357 592	2 436 555	B YXA ZZZ
NA2	28.398 661	2 446 555	B YYA ZZZ
NA2	28.398 663	2 446 565	B YYA ZAZ
N2	28.439 730	2 456 555	B YZA ZZZ
KQ2	28.439 730	2 456 555	B YZA ZZZ
NB2	28.480 796	2 466 545	B YAA ZYZ
NA2*	28.480 798	2 466 555	B YAA ZZZ
nu2 (?2)	28.512 583	2 474 555	B YBY ZZZ
2KN2S2	28.604 004	2 496 555	B YDA ZZZ
3MSN2	28.604 004	-----	-----
MSK2	28.901 967	2 535 555	B ZXZ ZZZ
Delta2 (d2)	28.901 967	-----	-----
OP2	28.901 967	2 535 555	B ZXZ ZZZ
OP2	28.901 967	2 535 557	B ZXZ ZZB
Gamma2 (?2)	28.911 251	2 537 557	B ZXB ZZB
MA2	28.943 036	2 545 555	B ZYZ ZZZ
MPS2	28.943 036	2 545 556	B ZYZ ZZA
Alpha2 (a2)	28.943 038	2 545 567	B ZYZ ZAB
M(SK)2	28.943 038	2 545 567	B ZYZ ZAB
M2	28.984 104	2 555 555	B ZZZ ZZZ
KO2	28.984 104	2 555 555	B ZZZ ZZZ
M(KS)2	29.025 171	2 565 545	B ZAZ ZYZ
MSP2	29.025 173	2 565 554	B ZAZ ZZY
MB2	29.025 173	2 565 555	B ZAZ ZZZ
MA2*	29.025 173	2 565 555	B ZAZ ZZZ
MKS2	29.066 242	2 575 555	B ZBZ ZZZ
Delta2 (d2)	29.066 242	2 575 555	B ZBZ ZZZ
M2(KS)2	29.148 379	2 595 555	B ZDZ ZZZ
2KM2S2	29.148 379	2 595 555	B ZDZ ZZZ
2SN(MK)2	29.373 488	2 616 555	B AVA ZZZ
lambda2(?2)	29.455 625	2 636 557	B AXA ZZB
SNM2	29.455 625	-----	-----
L2	29.528 479	2 654 557	B AZY ZZB
2MN2	29.528 479	2 654 557	B AZY ZZB
L2A	29.528 479	2 654 557	B AZY ZZB
L2B	29.537 763	2 656 555	B AZA ZZZ
NKM2	29.537 763	2 656 555	B AZA ZZZ
2SK2	29.917 863	2 715 555	B BVZ ZZZ
T2	29.958 933	2 725 565	B BWZ ZAZ
S2	30.000 000	2 735 555	B BXZ ZZZ
KP2	30.000 000	2 735 555	B BXZ ZZZ
R2	30.041 067	2 745 547	B BYZ ZYB
K2	30.082 137	2 755 555	B BZZ ZZZ
MSnu2(MS?2)	30.471 521	2 816 555	B CVA ZZZ
MSN2	30.544 375	2 834 555	B CXY ZZZ
xi2(?2)	30.553 658	2 836 555	B CXA ZZZ

List of Harmonic Constituents

Name	Speed (Deg/hr)	XDO	
		Numerical	Alphabetical
eta2(?2)	30.626 512	2 854 555	B CZY ZZZ
KJ2	30.626 512	2 854 557	B CZY ZZB
2KM(SN)2	30.708 649	2 874 555	B CBY ZZZ
2SM2	31.015 896	2 915 555	B DVZ ZZZ
2MS2N2	31.088 749	2 933 555	B DXX ZZZ
SKM2	31.098 033	2 935 555	B DXZ ZZZ
2Snu2(2S?2)	31.487 417	-----	B ETA ZZZ
3(SM)N2	31.487 417	-----	B ETA ZZZ
2SN2	31.560 270	-----	B EVY ZZZ
SKN2	31.642 408	-----	B EXY ZZZ
3S2M2	32.031 792	-----	B FTZ ZZZ
2SK2M2	32.113 929	-----	B FVZ ZZZ

Third-Diurnal Constituents

MQ3	42.382 765	3 356 554	C XZA ZZY
NO3	42.382 765	3 356 554	C XZA ZZY
MQ3	42.382 765	3 356 555	C XZA ZZZ
NO3	42.382 765	3 356 555	C XZA ZZZ
MO3	42.927 140	3 455 554	C YZZ ZZY
2MK3	42.927 140	3 455 554	C YZZ ZZY
MO3	42.927 140	3 455 555	C YZZ ZZZ
2NKM3	42.936 423	3 457 556	C YZB ZZA
2MS3	42.968 208	3 465 557	C YAZ ZZB
2MP3	43.009 277	3 475 556	C YBZ ZZA
M3	43.476 156	3 555 557	C ZZZ ZZB
NK3	43.480 798	3 556 555	C ZZA ZZZ
NK3	43.480 798	3 556 556	C ZZA ZZA
SO3	43.943 036	3 635 554	C AXZ ZZY
MP3	43.943 036	3 635 554	C AXZ ZZY
MP3	43.943 036	3 635 555	C AXZ ZZZ
MS3	43.984 104	3 645 557	C AYZ ZZB
MK3	44.025 173	3 655 555	C AZZ ZZZ
MK3	44.025 173	3 655 556	C AZZ ZZA
NSO3	44.496 694	3 736 556	C BXA ZZA
2MQ3	44.569 548	3 754 556	C BZY ZZA
SP3	44.958 931	3 815 554	C CVZ ZZY
SP3	44.958 931	3 815 555	C CVZ ZZZ
S3	45.000 000	3 825 557	C CWZ ZZB
SK3	45.041 069	3 835 555	C CXZ ZZZ
SK3	45.041 069	3 835 556	C CXZ ZZA
K3	45.123 206	3 855 555	C CZZ ZZZ
K3	45.123 206	3 855 556	C CZZ ZZA
2SO3	46.056 964	-----	C EVZ ZZA

List of Harmonic Constituents

<i>Name</i>	<i>Speed (Deg/hr)</i>	<i>XDO</i>	
		<i>Numerical</i>	<i>Alphabetical</i>

Quarter-Diurnal Constituents

4MS4	55.936 417	4 195 555	D VDZ ZZZ
4M2S4	55.936 417	4 195 555	D VDZ ZZZ
2MNK4	56.325 801	4 256 555	D WZA ZZZ
3NM4	56.335 084	4 258 555	D WZC ZZZ
2MNS4	56.407 938	4 276 555	D WBA ZZZ
2MnuS4	56.480 792	4 294 555	D WDY ZZZ
3MK4	56.870 175	4 355 555	D XZZ ZZZ
MNLK4	56.870 175	4 355 557	D XZZ ZZB
N4	56.879 459	4 357 555	D XZB ZZZ
2N4	56.879 459	4 357 555	D XZB ZZZ
3MS4	56.952 313	4 375 555	D XBZ ZZZ
2NKS4	56.961 596	4 377 555	D XBB ZZZ
MSNK4	57.341 696	4 436 555	D YXA ZZZ
MN4	57.423 834	4 456 555	D YZA ZZZ
Mnu4 (M?4)	57.496 687	4 474 555	D YBY ZZZ
2MLS4	57.496 687	4 474 557	D YBY ZZB
MNKS4	57.505 971	4 476 555	D YBA ZZZ
2MSK4	57.886 071	4 535 555	D ZXZ ZZZ
MA4	57.927 140	4 545 555	D ZYZ ZZZ
M4	57.968 208	4 555 555	D ZZZ ZZZ
2MRS4	58.009 275	4 565 547	D ZAZ ZYB
2MKS4	58.050 346	4 575 555	D ZBZ ZZZ
SN4	58.439 730	4 636 555	D AXA ZZZ
3MN4	58.512 583	4 654 555	D AZY ZZZ
ML4	58.512 583	4 654 555	D AZY ZZZ
ML4	58.512 583	4 654 557	D AZY ZZB
KN4	58.521 867	4 656 555	D AZA ZZZ
NK4	58.521 867	4 656 555	D AZA ZZZ
2SMK4	58.901 967	4 715 555	D BVZ ZZZ
M2SK4	58.901 967	4 715 555	D BVZ ZZZ
MT4	58.943 038	4 725 565	D BWZ ZAZ
MS4	58.984 104	4 735 555	D BXZ ZZZ
MR4	59.025 171	4 745 547	D BYZ ZYB
MK4	59.066 242	4 755 555	D BZZ ZZZ
2SNM4	59.455 625	4 816 555	D CVA ZZZ
2MSN4	59.528 479	4 834 555	D CXY ZZZ
2MSN4	59.528 479	4 834 557	D CXY ZZB
SL4	59.528 479	4 834 557	D CXY ZZB
2MKN4	59.610 616	4 854 555	D CZY ZZZ
ST4	59.958.933	4 905 565	D DUZ ZAZ
S4	60.000 000	4 915 555	D DVZ ZZZ
SK4	60.082 137	4 935 555	D DXZ ZZZ
K4	60.164 275	4 955 555	D DZZ ZZZ
2SMN4	60.544 375	-----	-----
3SM4	61.015 896	-----	D FTZ ZZZ
2SKM4	61.098 033	-----	D FVZ ZZZ

List of Harmonic Constituents

<i>Name</i>	<i>Speed (Deg/hr)</i>	<i>XDO</i>	
		<i>Numerical</i>	<i>Alphabetical</i>

Fifth-Diurnal Constituents

MNO5	71.366 869	5 356 554	E XZA ZZY
2MQ5	71.366 869	5 356 554	E XZA ZZY
2NKMS5	71.453 648	5 377 556	E XBB ZZA
3MK5	71.911 244	5 455 554	E YZZ ZZY
2MO5	71.911 244	5 455 554	E YZZ ZZY
2NK5	71.920 528	5 457 556	E YZB ZZA
3MS5	71.952 313	5 465 557	E YAZ ZZB
3MP5	71.993 381	5 475 556	E YBZ ZZA
NSO5	72.382 765	5 536 554	E ZXA ZZY
M5	72.460 261	5 555 556	E ZZZ ZZA
M5	72.460 261	5 555 557	E ZZZ ZZB
M5	72.464 902	5 556 556	E ZZA ZZA
MNK5	72.464 902	5 556 556	E ZZA ZZA
MB5	72.501 329	5 565 556	E ZAZ ZZA
MSO5	72.927 140	5 635 554	E AXZ ZZY
2MP5	72.927 140	5 635 554	E AXZ ZZY
2MS5	72.968 208	5 645 557	E AYZ ZZB
3MO5	73.009 277	5 655 556	E AZZ ZZA
2MK5	73.009 277	5 655 556	E AZZ ZZA
NSK5	73.471 515	5 734 556	E BXY ZZA
3MQ5	73.553 652	5 754 556	E BZY ZZA
MSP5	73.943 036	5 815 554	E CVZ ZZY
MSK5	74.025 173	5 835 555	E CXZ ZZZ
MSK5	74.025 173	5 835 556	E CXZ ZZA
3KM5	74.107 310	5 855 554	E CZZ ZZY
2SP5	74.958 931	-----	E ETZ ZZY
2SK5	75.041 069	-----	E EVZ ZZA
(SK)K5	75.123 206	-----	E EXZ ZZA

Sixth-Diurnal Constituents

2(MN)K6	84.765 530	6 157 555	F VZB ZZZ
5MKS6	84.838 384	6 175 555	F VBZ ZZZ
2(MN)S6	84.847 668	6 177 555	F VBB ZZZ
5M2S6	84.920 521	6 195 555	F VDZ ZZZ
3MNK6	85.309 905	6 256 555	F WZA ZZZ
N6	85.319 189	6 258 555	F WZC ZZZ
3MNS6	85.392 042	6 276 555	F WBA ZZZ
3NKS6	85.401 326	6 278 555	F WBC ZZZ
3MnuS6	85.464 896	6 294 555	F WDY ZZZ
4MK6	85.854 280	6 355 555	F XZZ ZZZ
2NM6	85.863 563	6 357 555	F XZB ZZZ
M2N6	85.863 563	6 357 555	F XZB ZZZ
4MS6	85.936 417	6 375 555	F XBZ ZZZ
2NMKS6	85.945 701	6 377 555	F XBB ZZZ

List of Harmonic Constituents

Name	Speed (Deg/hr)	XDO	
		Numerical	Alphabetical
2MSNK6	86.325 801	6 436 555	F YXA ZZZ
2MN6	86.407 938	6 456 555	F YZA ZZZ
2Mnu6(2M?6)	86.480 792	6 474 555	F YBY ZZZ
2MNO6	86.480 792	6 474 555	F YBY ZZZ
2MNKS6	86.490 075	6 476 555	F YBA ZZZ
3MSK6	86.870 175	6 535 555	F ZXZ ZZZ
MA6	86.911 244	6 545 555	F ZYZ ZZZ
M6	86.952 313	6 555 555	F ZZZ ZZZ
3MKS6	87.034 450	6 575 555	F ZBZ ZZZ
MTN6	87.382 767	6 626 565	F AWA ZAZ
MSN6	87.423 834	6 636 555	F AXA ZZZ
4MN6	87.496 687	6 654 555	F AZY ZZZ
2ML6	87.496 687	6 654 557	F AZY ZZB
MNK6	87.505 971	6 656 555	F AZA ZZZ
MKN6	87.505 971	6 656 555	F AZA ZZZ
MKnu6(MK?6)	87.578 825	6 674 555	F ABY ZZZ
2(MS)K6	87.886 071	6 715 555	F BVZ ZZZ
2MT6	87.927 142	6 725 565	F BWZ ZAZ
2MS6	87.968 208	6 735 555	F BXZ ZZZ
2MK6	88.050 346	6 755 555	F BZZ ZZZ
2SN6	88.439 730	6 816 555	F CVA ZZZ
3MTN6	88.471 517	6 824 565	F CWY ZAZ
3MSN6	88.512 583	6 834 555	F CXY ZZZ
MSL6	88.512 583	6 834 557	F CXY ZZB
NSK6	88.521 867	6 836 555	F CXA ZZZ
SNK6	88.521 867	6 836 555	F CXA ZZZ
MKL6	88.594 720	6 854 557	F CZY ZZB
3MKN6	88.594 720	6 854 555	F CZY ZZZ
MST6	88.943 038	6 905 565	F DUZ ZAZ
2SM6	88.984 104	6 915 555	F DVZ ZZZ
MSK6	89.066 242	6 935 555	F DXZ ZZZ
SKM6	89.066 242	6 935 555	F DXZ ZZZ
2KM6	89.148 379	6 955 555	F DZZ ZZZ
2MSTN6	89.487 412	-----	F EUY ZAZ
2(MS)N6	89.528 479	-----	F EVY ZZZ
2MSKN6	89.610 616	-----	F EXY ZZZ
S6	90.000 000	-----	F FTZ ZZZ

Seventh-Diurnal Constituents

2MNO7	100.350 974	7 356 554	G XZA ZZY
3MQ7	100.350 974	7 356 554	G XZA ZZY
4MK7	100.895 348	7 455 554	G YZZ ZZY
2NMK7	100.904 632	7 457 556	G YZB ZZA
MNSO7	101.366 869	7 536 554	G XZA ZZY
M7	101.444 365	7 555 557	G ZZZ ZZB
M7	101.449 007	7 556 556	G ZZA ZZA

List of Harmonic Constituents

<i>Name</i>	<i>Speed (Deg/hr)</i>	<i>XDO</i>	
		<i>Numerical</i>	<i>Alphabetical</i>
2MNK7	101.449 007	7 556 556	G ZZA ZZA
MNKO7	101.449 007	7 556 556	G ZZA ZZA
2MSO7	101.911 244	7 635 554	G AXZ ZZY
3MK7	101.993 381	7 655 556	G AZZ ZZA
MSKO7	103.009 277	7 835 554	G CXZ ZZY

Eighth-Diurnal Constituents

3M2NS8	113.831 772	8 177 555	H VBB ZZZ
4MNS8	114.376 146	8 276 555	H WBA ZZZ
5MK8	114.838 384	8 355 555	H XZZ ZZZ
2(MN)8	114.847 668	8 357 555	H XZB ZZZ
5MS8	114.920 521	8 375 555	H XBZ ZZZ
2(MN)KS8	114.929 805	8 377 555	H XBB ZZZ
3MSNK8	115.309 905	8 436 555	H YXA ZZZ
3MN8	115.392 042	8 456 555	H YZA ZZZ
3Mnu8(3M?8)	115.464 896	8 474 555	H YBY ZZZ
3MNKS8	115.474 180	8 476 555	H YBA ZZZ
4MSK8	115.854 280	8 535 555	H ZXZ ZZZ
MA8	115.895 348	8 545 555	H ZYZ ZZZ
M8	115.936 417	8 555 555	H ZZZ ZZZ
4MKS8	116.018 554	8 575 555	H ZBZ ZZZ
2MSN8	116.407 938	8 636 555	H AXA ZZZ
3ML8	116.480 792	8 654 555	H AZY ZZZ
2MNK8	116.490 075	8 656 555	H AZA ZZZ
3M2SK8	116.870 175	8 715 555	H BVZ ZZZ
2(NS)8	116.879 459	8 717 555	H BVB ZZZ
3MT8	116.911 246	8 725 565	H BWZ ZAZ
3MS8	116.952 313	8 735 555	H BXZ ZZZ
3MK8	117.034 450	8 755 555	H BZZ ZZZ
2SNM8	117.423 834	8 816 555	H CVA ZZZ
2SMN8	117.423 834	8 816 555	H CVA ZZZ
2MSL8	117.496 687	8 834 557	H CXY ZZB
MSNK8	117.505 971	8 836 555	H CXA ZZZ
4MSN8	117.578 825	8 854 555	H CZY ZZZ
2MST8	117.927 142	8 905 565	H DUZ ZAZ
2(MS)8	117.968 208	8 915 555	H DVZ ZZZ
2MSK8	118.050 346	8 935 555	H DXZ ZZZ
2(MK)8	118.132 483	8 955 555	H DZZ ZZZ
3SN8	118.439.730	-----	H ETA ZZZ
2SML8	118.512 583	-----	H EVY ZZB
2SKN8	118.521 867	-----	H EVA ZZZ
MSKL8	118.594 720	-----	H EXY ZZB
3SM8	118.984 104	-----	H FTZ ZZZ
2SMK8	119.066 242	-----	H FVZ ZZZ
S8	120.000 000	-----	H HRZ ZZZ

List of Harmonic Constituents

Name	Speed (Deg/hr)	XDO	
		Numerical	Alphabetical

Ninth-Diurnal Constituents

3MNO9	129.335 076	9 356 554	I XZA ZZY
2M2NK9	129.888 738	9 457 556	I YZB ZZA
2(MN)K9	129.888 738	9 457 556	I YZB ZZA
MA9	130.387 400	9 545 555	I ZYZ ZZZ
3MNK9	130.433 113	9 556 556	I ZZA ZZA
4MK9	130.977 488	9 655 556	I AZZ ZZA
3MSK9	131.993 383	9 835 556	I CXZ ZZA

Tenth-Diurnal Constituents

5MNS10	143.360 251	-----	J WBA ZZZ
3M2N10	143.831 772	-----	J XZB ZZZ
6MS10	143.904 625	-----	J XBZ ZZZ
3M2NKS10	143.913 909	-----	J XBB ZZZ
4MSNK10	144.294 009	-----	J YXA ZZZ
4MN10	144.376 146	-----	J YZA ZZZ
4Mnu10(4M?10)	144.449 000	-----	J YBY ZZZ
5MSK10	144.838 384	-----	J ZXZ ZZZ
M10	144.920 521	-----	J ZZZ ZZZ
5MKS10	145.002 658	-----	J ZBZ ZZZ
3MSN10	145.392 042	-----	J AXA ZZZ
6MN10	145.464 896	-----	J AZY ZZZ
4ML10	145.464 896	-----	J AZY ZZB
3MNK10	145.474 180	-----	J AZA ZZZ
2(SN)M10	145.863 563	-----	J BVB ZZZ
4MS10	145.936 417	-----	J BXZ ZZZ
2MS10	145.936 419	-----	J BXZ ZAZ
4MK10	146.018 554	-----	J BZZ ZZZ
2(MS)N10	146.407 938	-----	J CVA ZZZ
2MNSK10	146.490 075	-----	J CXA ZZZ
5MSN10	146.562 929	-----	J CZY ZZZ
3M2S10	146.952 313	-----	J DVZ ZZZ
3MSK10	147.034 450	-----	J DXZ ZZZ
3SMN10	147.423 834	-----	J ETA ZZZ
2SMKN10	147.505 971	-----	J EVA ZZZ
4M2SN10	147.578 825	-----	J EXY ZZZ
3S2M10	147.968 208	-----	J FTZ ZZZ
2(MS)K10	148.050 346	-----	J FVZ ZZZ

Eleventh-Diurnal Constituent

4MSK11	160.977 486	-----	K CXZ ZZA
--------	-------------	-------	-----------

List of Harmonic Constituents

<i>Name</i>	<i>Speed (Deg/hr)</i>	<i>XDO</i>	
		<i>Numerical</i>	<i>Alphabetical</i>

Twelfth-Diurnal Constituents

5M2NS12	171.799 980	-----	L VBB ZZZ
3(MN)12	172.271 501	-----	L WZC ZZZ
6MNS12	172.344 355	-----	L WBA ZZZ
4M2N12	172.815 876	-----	L XZB ZZZ
7MS12	172.888 730	-----	L XBZ ZZZ
4M2NKS12	172.898 013	-----	L XBB ZZZ
5MSNK12	173.278 113	-----	L YXA ZZZ
3N2MS12	173.362 457	-----	L YZA YZZ
5MN12	173.360 251	-----	L YZA ZZZ
5Mnu12(5M?12)	173.433 104	-----	L YBY ZZZ
6MSK12	173.822 488	-----	L ZXZ ZZZ
3M2SN12	173.831 772	-----	L ZXB ZZZ
MA12	173.863 557	-----	L ZYZ ZZZ
M12	173.904 625	-----	L ZZZ ZZZ
4MSN12	174.376 146	-----	L AXA ZZZ
4ML12	174.449 000	-----	L AZY ZZB
4MNK12	174.458 284	-----	L AZA ZZZ
2(MSN)12	174.847 668	-----	L BVB ZZZ
5MT12	174.879 455	-----	L BWZ ZAZ
5MS12	174.920 521	-----	L BXZ ZZZ
5MK12	175.002 658	-----	L BZZ ZZZ
3M2SN12	175.392 042	-----	L CVA ZZZ
6MSN12	175.464 896	-----	L CXY ZZZ
3MNKS12	175.474 180	-----	L CXA ZZZ
5MSN12	175.547 033	-----	L CZY ZZZ
4MST12	175.895 350	-----	L DUZ ZAZ
4M2S12	175.936 417	-----	L DVZ ZZZ
4MSK12	176.018 554	-----	L DXZ ZZZ
3(MS)12	176.952 313	-----	L FTZ ZZZ
3M2SK12	177.034 450	-----	L FVZ ZZZ

Fourteenth-Diurnal Constituents

5MSN14	203.360 251	-----	N AXA ZZZ
5MNK14	203.442 388	-----	N AZA ZZZ
6MS14	203.904 625	-----	N BXZ ZZZ